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*Cooperative*  
**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL BRANCH**

**AGRICULTURAL RESEARCH SERVICE**

**UNITED STATES DEPARTMENT OF AGRICULTURE**



# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

GREENBUG populations widespread but mostly low in the Panhandle and South Plains areas of Texas. (page 163).

CHINCH BUG outlook for 1955. (page 164).

BEET LEAFHOPPER outlook for the Intermountain Region. Conditions also reported from Texas. (page 165).

PINK BOLLWORM surface debris inspection report. (page 167).

CATTLE GRUBS abundant some areas of Utah. Maryland and Oklahoma also report activity. (page 168).

Summary of INSECT CONDITIONS-1954-in West Virginia (page 171) and Illinois (page 175).

Status of SOUTHWESTERN CORN BORER - 1954. (page 182).

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Reports in this issue are for the week ending February 25, 1955, unless otherwise designated.

WEATHER FOR THE WEEK ENDING FEBRUARY 28, 1955

East of the Mississippi River temperatures for the week were unseasonably mild, and precipitation generally exceeded one-half inch except in Florida, the Carolinas, and southern portions of Georgia and Alabama. The heaviest rains (2 to over 4 inches) fell in the Ohio Valley, Kentucky, and Tennessee where some streams were overflowing at the close of the period. Temperatures rose rather steadily throughout the period and by the end maxima in the 50's extended northward to the Great Lakes. Above-normal temperatures gradually reduced the snow cover in the North, and stimulated crop growth in the South. The week's precipitation maintained ample soil moisture, except that more rain would be helpful in southern Georgia and northwestern Florida where 1954 was the driest year on record. West of the Mississippi River temperatures for the week averaged below normal by 9° to 18° in the northern Great Plains, by as much as 15° in the central Rocky Mountain region, and 6° in the Pacific Northwest. In the northern Great Plains minima fell to subzero levels each night, and most sections experienced the coldest week of the winter. One of the lowest temperatures reported was -40° at Warroad, Minn. On the same date minima were -20° or lower in central and northeastern South Dakota, all of North Dakota, and a minimum of -11° occurred in northwestern Iowa. Winds and considerable cloudiness added to the disagreeableness of the severe cold. Freezing weather overspread most of the far Southwest at the beginning of the period damaging some cantaloupes in the Yuma area of Arizona and making orchard heating necessary in some districts of the Los Angeles area of California. At the end of the period a general freeze covered the Pacific Northwest, minima falling to 32° at Portland, Oreg., and 27° and 28° at Seattle and Tatoosh Islands, Wash., respectively

Precipitation was generally very light west of the Mississippi, except for moderate to heavy rains along the Pacific Coast and heavy snows in the mountains. Precipitation was entirely lacking in the western portions of the lower Great Plains where continued drought and occasional strong winds further dimmed small grain and pasture prospects. Moisture was also negligible in southern Arizona where ranges need rain and water supplies for livestock are shrinking.

Heavy snows in the western mountains brightened the water supply outlook for the coming crop season considerably. Many stations in the Cascade and Sierra Nevada Mountains reported depth increases of 2 feet or more. Increases in the Rocky Mountains, although somewhat lower, were nevertheless substantial. In (Weather continued on page 170 ).

## CEREAL AND FORAGE INSECTS

GREENBUG (Toxoptera graminum) - TEXAS - Surveys for small grain insects from February 7 to 17 in 23 panhandle and south plains counties indicate that low populations of greenbugs exist in all counties, with the exception of a few. Heaviest infestations were found in the following counties: Swisher 30 to 70, Deaf Smith 10 to 40, Randall 75 to 150 and Donley 100 greenbugs per foot of row. Infestations in Haskell County range from 10 to 50 per linear foot of row. (Ashdown, Daniels, Cleveland).

CHINCH BUG (Blissus leucopterus) - OKLAHOMA - Samples from bunch grass averaged 841 per square foot. Numbers following 10° F. weather were not decreased. (Fenton).

BROWN WHEAT MITE (Petrobia latens) - TEXAS - Scarce in 26 panhandle counties in those fields severely damaged by drought. Highest counts were between 5 to 10 mites per foot of row. (Ashdown, Cleveland, Daniels).

CUTWORMS - TEXAS - Several counties in the panhandle averaged 1 or less per foot of row, except Lubbock County where the count ran up to 5. (Ashdown, Cleveland, Daniels).

ALFALFA WEEVIL (Hypera postica) - NEVADA - Adult activity in limited numbers in western area. Some control starting. (Gallaway, Feb. 19).

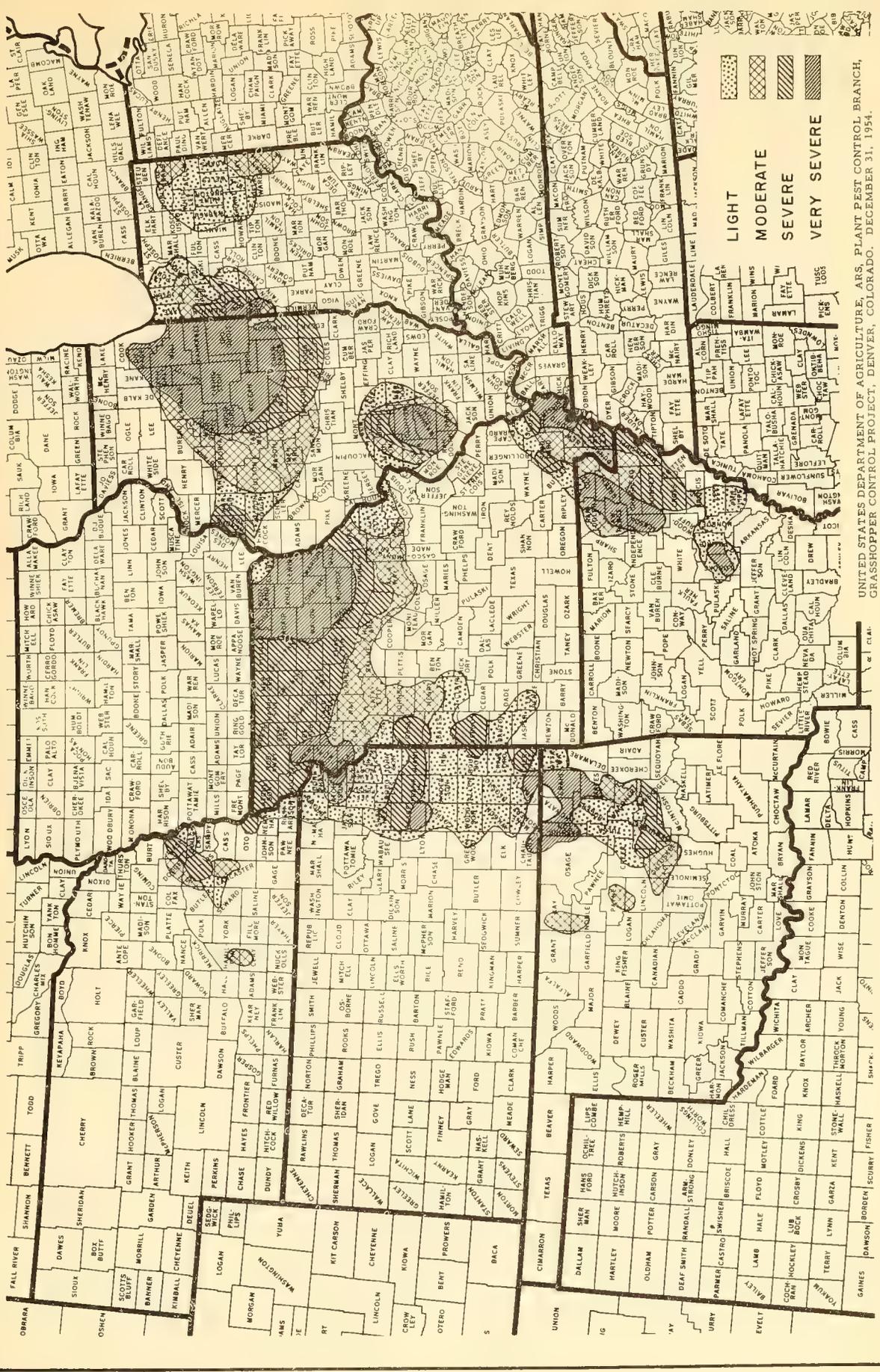
YELLOW CLOVER APHID (Myzocallis trifolii) - TEXAS - Again found in alfalfa fields in the panhandle and is likely to increase now that the alfalfa is beginning to grow. Cold weather of February 10 greatly decreased the numbers. (Ashdown, Cleveland, Daniels). ARIZONA - Scattered infestations in Maricopa, Gila and Yuma Counties. These infestations seem to be relatively stable at present. (Ariz. Coop. Rept.). NEVADA - Viviparous reproduction in progress in many alfalfa fields of southern area. Present numbers indicate possible economic populations will develop on second cutting. (Gallaway, Feb. 19).

POTATO LEAFHOPPER (Empoasca fabae) - TEXAS - Collected on alfalfa, January 26, in Brazos County. Det. D. A. Young. (Cowger). It will be noted that this is an earlier date than the collection in Louisiana (CEIR 4(8):153).

#### Chinch Bug Outlook for 1955

The problem in 1955 is not expected to differ greatly from that in 1954, when corn and sorghum were damaged in many local areas. Surveys were made late last fall after the adult chinch bugs were in hibernation in Arkansas, Illinois, Indiana, Kansas, Missouri, Nebraska, and Oklahoma. Scattered, locally severe or very severe ratings (see map) were found in northeastern Arkansas, east central Illinois, east central Kansas, northern Missouri, and northeastern Oklahoma. Elsewhere in the states surveyed, the ratings ranged from non-economic to threatening. (Grasshopper Cont. Proj.).

# CHINCH BUG INFESTATION IN FALL OF 1954



UNITED STATES DEPARTMENT OF AGRICULTURE, ARS, PLANT PEST CONTROL BRANCH,  
GRASSHOPPER CONTROL PROJECT, DENVER, COLORADO, DECEMBER 31, 1954.



### FRUIT INSECTS

A MITE (Tetranychus yumensis) - ARIZONA - Abundant in some established grapefruit at Yuma. (Ariz. Coop. Rept.).

SAN JOSE SCALE (Aspidiotus perniciosus) - GEORGIA - Some live scales being found in Fort Valley area on peach trees treated with 5 applications of insecticides in 1954. (Snapp).

### TRUCK CROP INSECTS

BEEF LEAFHOPPER (Circulifer tenellus) - TEXAS - Overwintered individuals found on winter and spring host plants from Crystal City to Vernon and west. Heavy damage in the Winter Garden area to spinach by curly top virus. At least one half the spinach crop has been lost. (Douglass, Peay, Cowger, Davis).

### Beet Leafhopper Conditions in Utah, Western Colorado, Southern Nevada Southeastern California and Central Arizona - 1955

The beet leafhopper spring movement from the southern desert breeding grounds to the cultivated districts of north and central Utah and western Colorado is expected to be moderate. The local movement is expected to be light in north and central Utah and western Colorado. The movement to southern Utah, southern Nevada, southeastern California and central Arizona is also expected to be moderate.

The overwintering population in the southern breeding area is considered to be approximately three times larger than that which occurred in 1954. Spring host plant conditions are favorable for leafhopper breeding in most southern and most northern portions of the southern breeding grounds. The acreage of host plants is about three times that of 1954. In the local breeding areas of northern Utah, a light population of leafhoppers entered the winter under favorable conditions. A light leafhopper movement is to be expected from some of the local areas. The spring movement to central and northern Utah cultivated districts under favorable conditions, is expected to be moderate. It must be emphasized that this statement is based upon present conditions. The movement of the leafhoppers into the cultivated districts of central Utah and western Colorado is expected to start by mid-April and probably will reach its peak by mid-May. The abundance of the population engaged in this movement will depend upon unpredictable weather fluctuations during the next month which

affect the development of the beet leafhopper and its host plants. Experience has shown when an early spring follows a mild winter it usually advances the date of the beet leafhopper movement from the uncultivated breeding areas to the cultivated districts. On the other hand, a late spring with excessive rainfall delays the date of the movement. The early winter temperatures have been below normal in the southern area. For these reasons, a later statement will be issued on beet leafhopper conditions. This will be based on additional information obtained from surveys now in progress. (Dorst, Knowlton).

BROWN WHEAT MITE (Petrobia latens) - TEXAS - Medium local infestations on onions in Nueces County. Damaged about 100 acres of onions in the Robstown area. (Nolan).

CABBAGE APHID (Brevicoryne brassicae) - WASHINGTON - Small colonies persist in brussels sprouts in gardens at Sumner. (Doucette, Feb. 15).

GREEN PEACH APHID (Myzus persicae) - NORTH CAROLINA - Very light infestation on turnips in Columbus County. (Rabb, Guthrie).

CLOVER MITE (Bryobia praetiosa) - ARIZONA - On squash on Yuma Mesa. Some leaves mottled. (Ariz. Coop. Rept.).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - FLORIDA - Averaged 1 larva per 100 square yards and was infesting ends and sides of tobacco plant beds at Quincy. (May). NORTH CAROLINA - Light infestation on turnips observed in Columbus County. (Rabb, Guthrie). MISSISSIPPI - Considerable damage to garden crops in Forrest County by larvae. (Sheffield, Feb. 18). TEXAS - Medium local infestation on turnips and cabbage in Washington County. Larvae causing damage, but are about ready to pupate. (Weaver).

SALT-MARSH CATERPILLAR (Estigmene acrea) - FLORIDA - A single newly-emerged adult was collected from a field at Gainesville. (Hetrick).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - FLORIDA - Averaged 75 adults per square foot of a tobacco plant bed at Quincy, Gadsden County. Control used. (May, Rhoades).

## COTTON INSECTS

PINK BOLLWORM (Pectinophora gossypiella) - FLORIDA - On the Wild Cotton Eradication Project the first pink bollworms of the season were found February 3 and 5 on a few mature wild cotton plants on Key Largo. Four specimens were recovered from 426 bolls. About 17 locations infested last season have been worked this season and all fruit inspected showed negative results. (Wild Cotton Erad. Proj.).

In the period February 1-15, the inspection of surface debris continued. Many reports continue to emphasize the small amount of cotton debris left in fields in the cultural control areas. MEXICO - Live pink bollworms were found at rate of 3.18 per hundred bolls inspected in the municipio of Matamoros, and 2.88 in Camargo, with the other 6 municipios of Tamaulipas giving negative results. TEXAS - In the three lower valley counties of Cameron, Hidalgo and Willacy, average number of live pink bollworms per 100 bolls was 1.78, or 5.24 per acre in surface debris. Results in the coastal bend counties of San Patricio and Nueces were 1.40 live pink bollworms per 100 bolls inspected, or 9.05 per acre. Bee and Live Oak Counties grouped together showed 3.09 live pink bollworms per 100 bolls inspected, or 15.8 per acre. In grouping Brazos and Washington Counties, results show 29.14 live pink bollworms per 100 bolls, or 2,376 live worms per acre. Medina County shows an average of 14.7 live pink bollworms per 100 bolls inspected, or 117.6 per acre. Tom Green County shows 26.4 live worms per 100 bolls, or 64.2 per acre. The last four counties mentioned appear to be "hot spots" and do not necessarily indicate the degree of infestation in the general area. Comparing the number of live pink bollworms per 100 bolls inspected as of February 15, the totals in Texas show that 5.5 live specimens have been found this year compared with 8.1 as of February 15 of last year.

Results were negative in ARIZONA, LOUISIANA and NEW MEXICO. In OKLAHOMA the inspection in Caddo and Washita Counties resulted in the finding of .81 live pink bollworms per 100 bolls inspected. (PBW Cont. Proj.).

## INSECTS AFFECTING OTHER FIBER PLANTS

A CERAMBYCID (Hippopsis lemniscata) - FLORIDA - The first occurrence of this insect on ramie was reported last September (CEIR 4(35): 816, 1954). One of the infested plots reported was left unharvested to observe development of the insects in ramie and their effect on the crop. Although first observations

indicated normal oviposition and incubation, by February 1955 no live larvae could be found. Considering that no larvae in ramie appeared to advance beyond the second instar and that most died in the first instar, it is thought that ramie may be a lethal host of H. lemniscata. Inspection of other host species showed that normal progress was made. (Genung).

#### FOREST, ORNAMENTAL AND SHADE TREE INSECTS

BARK BEETLE (Ips pini) - VIRGINIA - Damaging a two-acre plantation of red pine in Carroll County. (Lyon).

APHIDS - WASHINGTON - Small colonies of the rose aphid present on breaking buds at Sumner. Reproduction taking place. (Doucette, Feb. 15).

#### INSECTS AFFECTING MAN AND ANIMALS

CATTLE GRUBS (Hypoderma spp.) - UTAH - Seriously abundant in many herds in some areas of Washington County, February 19. (Hughes, Knowlton). Appearing in considerable numbers in beef cattle in Ogden Valley. Reports coming in from various parts of the State indicate the development of grubs quite generally in Utah. (Burningham, Knowlton). OKLAHOMA - Heel fly activity noted for the past 2 weeks in all parts of the State during warm days. (Stiles). MARYLAND - All of 22 one-year old Herefords in one herd, Montgomery County, infested with H. lineatum. From 5 to 25 grubs per animal. (U. Md., Ent. Dept.).

CATTLE LICE - VIRGINIA - Reported to have been so heavy in a Montgomery County herd that they apparently caused the death of one cow and near death of another. (Kalison). UTAH - Moderately numerous and troublesome in some areas of Washington County. In Juab County 3,000 cattle, in Millard County 7,000, and in Beaver County about 5,500 have been treated this winter. (Knowlton, Burtenshaw, Hughes).

LONG-NOSED CATTLE LOUSE (Linognathus vituli) - FLORIDA - Abundant on cattle at a ranch in Alachua County. Control requested. (Hetrick).

### STORED-PRODUCT INSECTS

A MITE (Aceria tulipae) - ILLINOIS - Collected on onion sets in storage in northeastern area during December and February. This is the first known report of the mite in Illinois. (Petty).

### MISCELLANEOUS INSECTS

BOXELDER BUGS (Leptocoris trivittatus) - VIRGINIA - Entering houses and causing annoyance in Richmond, Blacksburg and Radford. (Morris). MARYLAND - In homes, Montgomery County. (U. Md., Ent. Dept.).

TERMITES - VIRGINIA - Beginning to swarm in some parts of the State. The first winged forms for the year are reported from Richmond. (Matheny). NORTH CAROLINA - Flights of adult Reticulitermes flavipes observed in mid-February in Rockingham and Wake Counties. (Jones). OKLAHOMA - Zootermopsis angusticollis has been taken in a lumber yard in Duncan in fir shipped from the West Coast. (Bieberdorf).

Light Trap Collections: FLORIDA - Some of the more important insects taken at black light traps are as follows: At Bradenton, February 15--Feltia subterranea 1, Hyphantria cunea 1, Isia isabella 2, Laphygma frugiperda 1, Mocis latipes 1, Peridroma margaritosa 1, Prodenia dolichos 1, P. eridania 6, Udea rubigalis 1 (Kelsheimer, Kimball). At Gainesville, February 1 to 8--Feltia subterranea 1 and Pseudaletia unipuncta 4 (Denmark) At Homestead, January 25 to 30--Anomala undulata 11, Nezara viridula 2, Estigmene acrea 1, Feltia subterranea 11, Prodenia dolichos 5, P. latifascia 4, and Pseudaletia unipuncta 1 (Wolienbarger). At Sanford, February 2 to 7--Feltia subterranea 3, Heliothis armigera 1, and Pseudaletia unipuncta 1. (Wilson).

### RECENT IMPORTANT INTERCEPTIONS AT PORTS OF ENTRY

Of interest recently was the unusual interception of a living adult specimen of Monsteira unicostata Muls. & Rey (Tingidae), the so-called almond bug, or "La Chincheta del Almendro," on pomegranates in baggage from Italy at New York, N. Y. (Lineham). This insect has been reported injurious to almonds, apricots, cherries, pears and plums in Italy, Spain and parts of North Africa. It has also been reported attacking species of poplar, hawthorn and willow. Feeding by this lacebug causes yellow spotting of the leaves. When heavily infested, the foliage of the

trees also become unsightly due to a film of insect excreta deposited on the leaves. This film is said to hinder leaf respiration. Further damage is caused by the oviposition punctures of the adults in the leaf tissues. Leaf fall and abnormal second growth later in the season sometimes follows insect attack.

Observations on the biology of the almond bug indicate the eggs are deposited in small groups in the leaf tissues along the main veins on the underside of the leaves. A female may lay 6-15 eggs on a leaf. The eggs hatch in 13-15 days. There are 5 molts with a nymphal stage of 25-30 days duration. Nymphal cast skins remain attached to the leaves. As many as 3 or 4 generations may be produced in a year with considerable overlapping late in the season so that at times all stages may be found. Injury is said to be more serious in late summer. Overwintering occurs in the adult stage in cracks in the tree trunks or in the soil.

M. unicostata has been intercepted on two previous occasions, on plums and with chestnut wood in baggage from Italy at New York, N. Y. It is not known to be present in the United States (Compiled by Plant Quarantine Branch).

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Weather Continued:

the northern Great Plains cold, cloudy weather prevented any melting of the previous week's heavy snowfall which protected small grains from the subzero temperatures. East of the Mississippi River the snow cover retreated to the Canadian Border States, and depths were reduced considerably, by more than a foot in northern New England. (Summary Supplied U.S. Weather Bureau).

## SUMMARY OF INSECT CONDITIONS - 1954

### WEST VIRGINIA

Prepared by F. W. Craig, C. F. Bishop, C. K. Dorsey, Edwin Gould, C. F. Taylor, and E. O. Hamstead assisted in compiling the report and making surveys.

The discovery of the ALFALFA WEEVIL (Hypera postica) in Jefferson County and the EUROPEAN CHAFER (Amphimallon majalis) in Hampshire County were the outstanding insect pest developments of the year in West Virginia. The build-up of an UNSPOTTED TENEIFORM LEAF MINER (Callisto geminatella) in Berkeley County, the light, but scattered infestation of FALL CANKERWORM (Alsophila pometaria) and the LINDEN LOOPER (Erannis tiliaria) and the finding of a new infestation of a SCALE (Aspidiotus sp.) on hemlock in Parkersburg, were additional developments. ARMYWORM (Pseudaletia unipuncta) was reported from only one place, Pendleton County, as compared with a heavy and general infestation in 1953. Another group of insects, GALL APHIDS (Chermes abietis and (Pineus similis) which were quite general on spruce in 1953, were very light in 1954. The JAPANESE BEETLE (Popillia japonica) continued to spread and build-up in intensity in some of the older infested areas. The adults were relatively light in Berkeley and Jefferson Counties, continuing the downward trend of the past three years. Adults were very abundant in the southern section of Harrison and Barbour Counties and the northern tip of Upshur, and quite numerous through an eight-county area of the north central part of the State. The infestation continued to build-up in the Ohio Valley from Parkersburg to Moundsville and in the Kanawha Valley just east of Charleston. New outbreaks of this pest at Logan, Logan County, Welch, McDowell County, and Williamson, Mingo County, were discovered during the year. The colony south of Elkins in the Tygart Valley was found to be much stronger than had previously been expected and threatens to invade this rich agricultural section.

Limited surveys for the WHITE-FRINGED BEETLES (Graphognathus spp.) and COTTON STEM MOTH (Platyedra vilella) were negative. An extensive survey in Morgantown, Wheeling and Weirton sections for GYPSY MOTH (Porthetria dispar) was also negative.

### Fruit Insects:

The status of common insect pests of tree fruits did not, generally, in 1954, deviate much from the usual pattern but two relatively new insect to West Virginia created much interest and concern even though they were only found at widely scattered points. These two insects were APPLE MAGGOT (Rhagoletis pomonella) and the UNSPOTTED TENTIFORM LEAF MINER (Callisto geminatella). The former was found for the first time in a commercially sprayed orchard and the latter was severe in several orchards in the eastern panhandle, where it was widely distributed. Damage was most severe in the vicinity of Summit Point, Jefferson County, and the insect was found as far west as Augusta, Hampshire County, by late September. CODLING MOTH (Carpocapsa pomonella) was still the most important fruit pest but was considered to be slightly reduced in number from the normal. ROSY APPLE APHID (Anuraphis roseus) and WOOLLY APPLE APHID (Eriosoma lanigerum) were widespread and damaging in the eastern panhandle fruit section. The APPLE APHID (Aphis pomi) also caused severe damage in this section. RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) was not much of a problem until late in the season when it was abundant in the orchards of the eastern panhandle that had failed to control the broods, and in the northern panhandle where it even continued to cause damage to apples in common storage. FORBES SCALE (Aspidiotus forbesi) was widespread but probably less abundant than in 1953 and suffered heavy winter mortality. One orchard in Lewis County was heavily infested with SCURFY SCALE (Chionaspis furfura). LESSER PEACH BORER (Synanthedon pictipes) was plentiful in one orchard in Braxton County. ROSE CHAFER (Macrodactylus subspinosus) and the BLACK PEACH APHID (Anuraphis persicae-niger) were not reported though they have been troublesome in past years.

### Small Fruit Insects:

Several CATERPILLARS were destructive to strawberry foliage early in the summer in Randolph County. Included in this group were VARIEGATED CUTWORM (Peridroma margaritosa), Morrisonia confusa (also fed heavily on the blossoms), and Eupsilia sp.

### Truck Crop Insects:

Several outbreaks of the HARLEQUIN BUG (Murgantia histrionica) were reported from near Charleston during last of July and BEAN LEAF BEETLE (Cerotoma trifurcata) was reported causing damage in scattered areas early in the summer. MEXICAN BEAN BEETLE (Epilachna varivestis) was scarce during the early summer but was observed in destructive numbers by mid-

summer and during the fall. FLEA BEETLES were especially numerous on potatoes, tomatoes and corn but LEAFHOPPERS on beans were slightly less damaging than in 1953. Leafhopper damage to potatoes was very serious throughout the State, as usual. CORN EARWORM (Heliothis armigera) and the CORN SAP BEETLE (Carpophilus dimidiatus) were generally abundant and the former damaged both corn and tomatoes. IMPORTED CABBAGEWORM (Pieris rapae) was more abundant than usual in the Charleston area. The STALK BORER (Papaipema nebris) appeared by June 12 but reports of damage were not as frequent as in 1953.

#### Cereal and Forage Insects:

Among the cereal insects EUROPEAN CORN BORER (Pyrausta nubilalis) was present in reduced numbers in the three counties completely surveyed. In Monongalia County borers were common in a field of sweet corn July 23. In Berkeley County 8 to 10 borers per stalk were reported early in the season and in one field in late July as many as 12 to 20 borers per stalk were found. CORN FLEA BEETLE (Chaetocnema pulicaria) was abundant and there was considerable Stewart's disease in corn but probably less than in 1953. One outbreak of a SOD WEBWORM (Crambus luteolellus) was reported during the year and SEED-CORN MAGGOT (Hylemya cilicrura) caused some severe losses in the higher altitudes of Randolph County. LEAFHOPPER damage to the second cutting of alfalfa was light compared with the usual severe loss.

#### Forest Insects:

The LOCUST LEAF MINER (Chalepus dorsalis) was generally serious in Cabell County and in spots in the north central section of the State. Through the rest of the central section it was only moderate. The EASTERN TENT CATERPILLAR (Malacosoma americanum) was abundant in Greenbrier County and in local areas near Charleston and in Lewis County. Also common in the central area north of Charleston. Tents were scarce in the southwestern corner and in the eastern panhandle area. The FALL CANKERWORM and LINDEN LOOPER caused scattered light to heavy damage to many forest trees and would appear to be building up to a heavy and general infestation in the next few years. The BAGWORM (Thyridopteryx ephemeraeformis) was only moderately abundant and FALL WEBWORM (Hyphantria cunea) was very scarce. POPLAR AND WILLOW BORER (Cryptorhynchus lapathi) killed several trees (Populus spp.) in the Kanawha Valley and a few elm trees in White Sulphur Springs were defoliated by the ELM LEAF BEETLE (Galerucella xanthomelaena) during the summer. In the fall housewives in St. Albans, Romney and Berkeley Springs complained of the BOXELDER BUG (Leptocoris trivittatus) entering homes.

### Ornamental Pests:

Pests of evergreen trees, mostly reported from nurseries, included an outbreak of HEMLOCK SCALE (Aspidiotus ithacea). WHITE-PINE WEEVIL (Pissodes strobi) caused damage in small nursery plantings in Monongalia and Pleasant Counties and WHITE-PINE SAWFLY (Neodiprion pinetum) defoliated the lower limbs on a few white pine near Clarksburg. PINE BARK APHID (Pineus strobi) was generally prevalent but serious outbreaks were unusually scarce. SAWFLIES caused less damage to pine than generally. ARBORVITAE LEAF MINER (Argyresthia thuiella) continued abundant in the known infested spots and, in addition, was found in a few new spots. The JUNIPER WEBWORM (Dichomeris marginella) and the JUNIPER SCALE (Diaspis carueli) likewise continued to be destructive in the limited areas where it has become established. A Lecanium sp. was found on junipers in three nurseries in the north central section of the State. The BALSAM TWIG APHID (Mindarus abietinus) was found infesting spruce at Grafton. The relative light outbreak of SPRUCE GALL APHIDS has previously been mentioned. THRIPS on privet were serious throughout southern West Virginia and at Fort Ashby in Mineral County. No attempt has been made to collect and identify the species. Increasing damage to privet has been noted for several years. LACEBUGS on azaleas and rhododendron were also much more numerous than for a few years. Azaleas in Charleston generally were completely browned in August and September. A local outbreak of the GENISTA CATERPILLAR (Tholeria reversalis) on laburnum occurred in and near Huntington, Cabell County.

### Stored Products Insects:

The ANGOUMOUS GRAIN MOTH (Sitotroga cerealella) appeared frequently in stored corn infestations. Several infestations of the RED-LEGGED HAM BEETLE (Necrobia rufipes) were observed. BEAN WEEVIL (Acanthoscelides obtectus) was numerous in 1954 and caused considerable damage to stored beans.

### Insect Pests of Structures, etc:

The TERMITE (Reticulitermes flavipes) and the BLACK CARPENTER ANT (Camponotus herculeanus pennsylvanicus) were about normal in numbers in dwelling infestations.

### Household Pests:

A few reports of the CLOVER MITE (Bryobia praetiosa) being abundant on the trunks of apple trees and entering homes were received during the year.

SUMMARY OF INSECT CONDITIONS -1954

ILLINOIS

Prepared by Extension Service  
Entomologists

Cereal and Forage Crop Insects:

Small Grains: ENGLISH GRAIN APHID (*Macrosiphum granarium*), although abundant on wheat heads in one county, was of no consequence generally. The ARMYWORM (*Pseudaletia unipuncta*) appeared in outbreak proportions. Moth flight was first observed April 6 in southwestern Illinois and numbers of moths increased during the following three weeks. Heavy flights were observed in Champaign and Morris April 14. In northern area, moth flight peak occurred August 20, 21, and 22 when 67, 51, and 53 moths were collected. Early-instar armyworms were first observed April 1-15. Peak populations occurred from May 15 to June 15 as determined by random surveys:

Armyworm Larval Populations Averaged by Date and Section

	<u>Small Grains per Linear Ft.</u>		<u>Grasses per Sq. Ft.</u>	
	<u>5/16-31/54</u>	<u>6/1-15/54</u>	<u>5/16-31/54</u>	<u>6/1-15/54</u>
Northwest	0.0	0.20	--	--
Northeast	0.04	0.55	0.0	--
West	0.0	5.60	0.0	17.50
Central	1.0	2.09	0.71	--
East	0.02	0.49	0.33	8.00
West Southwest	0.06	--	0.0	--
East Southeast	0.28	0.87	0.67	--
Southwest	0.0	--	--	--
Southeast	1.66	--	--	--

Minor outbreaks occurred in early September. A total of 170,000 acres were treated for the control of this pest. The CHINCH BUG (*Blissus leucopterus*) left winter quarters and appeared in thin wheat fields where damage in isolated instances killed individual wheat plants. Early treatment reduced the damage. Heavy rains during early oviposition and hatching killed a portion of the population thus reducing the potential threat. Dry weather followed and migration of nymphs occurred in June and July. Reported wheat yields in isolated instances were reduced 10 to 15 bushels per acre. Control measures applied in time greatly reduced damage to corn. HESSIAN FLY (*Phytophaga destructor*) populations were highest in St. Clair County with only 6.4 percent of the tillers infested. WHEAT JOINTWORM (*Harmolita tritici*) infested 7.2 percent of the tillers in St. Clair County, the highest in the State.

Corn: The CORN FLEA BEETLE (Chaetocnema pulicaria) first appeared in southern Illinois April 7 and by April 14 it was collected in the northern most counties. Populations per 100 sweeps in roadside grasses beside old corn fields were as follows:

Av.	5/16-31	6/1-15	6/16-30	7/1-15	7/16-31	8/1-15	8/16-31
Entire State	2.1	7.9	4.5	110.5	122.3	358	322.9

WIREWORMS, BILLBUGS, and WEBWORMS were reported damaging corn in late May and early June. Adults of a LEAF BEETLE (Myochrous denticollis) caused damage to two fields of corn on muck land in southwestern Illinois last of May. A TORTRICID (Sparganothis sulfurana) was common feeding on silks in central and northern Illinois in July and August. The CORN ROOTWORM (Diabrotica longicornis) varied from 0 to 41 larvae per hill of corn. Damage was no worse than in 1953. Up to 83 percent of the silks were fed upon by the adults with as many as 8.3 adults per silk. As many as 40 percent of the silks in some fields were infested by adults of the SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi). The BLACK CUTWORM (Agrotis ypsilon) destroyed several thousand acres of corn in central and eastern Illinois in May. Damage ranged from 0 to 65 percent and the average of random samples was 9.6 percent. This was small corn and replanting was possible. A later infestation in northwestern and northeastern Illinois in late June caused serious damage since it was too late to replant. As many as 10 larvae were reported taken from one hill of sweet corn. The CORN EARWORM (Heliothis armigera) was more abundant than in most years. Early field corn averaged 3 percent silk infestation in southeast Illinois by July 16. An occasional larvae was found in the plant whorl farther north. July 23, 0 to 10 percent of the silks were infested in central and northern areas. During August as many as 50 percent of the ears were found infested in some fields in the northern one-half of the State. In early September, some field corn in southern Illinois had nearly 100 percent of ears infested. FALL ARMYWORM (Laphygma frugiperda) was abundant in many fields in September.

EUROPEAN CORN BORER (Pyrausta nubilalis) fall populations in 36 counties was 256 compared to the 1949 population in the same 36 counties of 420. In 1953 the population was 170. In southern Illinois, pupation began prior to May 7 and was completed by May 28 when emergence was noted and one egg mass was found on sweet corn in the East St. Louis area. In central Illinois, pupation was 0 - 16 percent by May 21 and was completed by June 13.

In northern Illinois, pupation was 0 to 4 percent by May 21 and was completed by June 18. Fifty percent emergence had occurred in southern Illinois by June 4 and in northern Illinois by June 18. By June 25, emergence was practically complete in most of the State, averaging 90 percent in the northern one-third of Illinois. Oviposition in the northern one-half of Illinois began from June 11 to June 18 and reached the peak between June 25 and July 2 after which it dropped very abruptly. By June 25, 30 to 35 percent of the eggs had hatched, and by July 2, 70 to 95 percent of the eggs had hatched in central and northern counties. Fifth-instar borers were observed the week of July 2 and reached peak by the week of July 23 when 64 percent of all borers were in the fifth instar. Fourteen percent of the borers had pupated by July 23. The number of borers found in the pupal stage reached peak (50 to 75 percent) in the central area the week of July 30. The peak (40 to 60 percent) was reached a week later in northern counties.

Moths began to emerge in the northern half of the State the week of July 23 and from 5 to 58 percent had emerged by August 6 and 85 to 100 percent by August 20. The first egg masses for the second generation in the northern half were observed week of July 30 when two masses per 100 plants were found in Livingston County. During the two-week period August 14 to August 27, the number of egg masses per 100 plants reached peak. At this time, from 28 to 260 masses per 100 plants were found. Hatching of second-generation larvae was well under way (28 percent) in western Illinois by August 13 but had not begun in northern Illinois except in sweet corn. By August 27, hatching was nearly complete in central Illinois and 70 percent completed in northern Illinois. A low egg mass count, 10 to 20 per 100 plants developed the last of August and first of September in southern Illinois indicating the third generation in that area.

The following table shows a brief general tabulation of the fall corn borer survey in Illinois:

<u>Section of State</u>	<u>Borers per 100 Plants</u>
Northwest	360
Northeast	232
West	231
Central	353
East	427
West Southwest	16
East Southeast	12
Southwest	6
Southeast	3

In general the corn borer population in the northern half of the State shows a considerable increase over last year's population. GRASSHOPPERS were not a serious pest of corn in 1954. However, they did move in from roadsides and legume fields and caused a small amount of damage on marginal rows.

Clover and Alfalfa: The CLOVER LEAF WEEVIL (Hypera punctata) was not quite as serious in 1954 as in 1953. but it still did a great amount of damage and spraying was necessary to save the crop in many cases. Larval populations gradually increased during March, declined slightly in April, and dropped off rather abruptly in May. State average during the last of March and through April was 20 to 30 larvae per square foot with some fields as high as 100 per square foot. Pupation began the last half of April, reached peak in May, then gradually declined during June. Adults began emerging the latter part of May or first of June and reached peak of abundance the first part of July. PEA APHID (Macrosiphum pisi) was again a major pest as in 1953 and treatments were necessary to save many clover fields. Average populations per field ranged from 0 to 196 aphids per square foot in the southern two-thirds of the State the week of April 9 and from 0 to 9 in the northern third, week ending April 16. By April 30, the average numbers in southern two-thirds of Illinois ranged from 21 to 840 per sweep and by May 28 the top figure reached 1,360 aphids per sweep. They may have reached greater numbers as in some cases they were recorded as one-half cup full per sweep and were not counted. The highest figure reached in northern Illinois was 391 per sweep, the week of June 11. During the last of May and in June, aphids attacked new seeding of clover and alfalfa in grain fields and did considerable damage completely destroying the stand in a few cases.

VARIEGATED CUTWORM (Peridroma margaritosa) was much more abundant and destructive to clover than for many years. It appeared in fields early in May and apparently reached peak abundance first half of June when fields in the eastern section averaged 10 per square foot, the central section averaged 16.8 per square foot and the western section (not randomly sampled) averaged 30 per square foot. Highest average for one field in these three sections respectively was 26, 54, and 32 per square foot. MEADOW SPITTLEBUG (Philaenus leucophthalmus) was less numerous than for the last three or four years. Few fields averaged more than one nymph per stem. Most fields averaged 0.5 or less. LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) and its close relative, H. meles, were very numerous throughout the southern two-thirds of State and undoubtedly caused much more damage than generally realized, especially to seed crops.

Adults of H. nigrirostris apparently had two peaks in clover fields, once the first of April when over-wintering adults moved into the fields and again in June when new adults emerged from cocoons. One hundred percent of clover stems in some fields were infested by larvae of one or the other of these two species. During May the following average percent of stems infested was recorded:

<u>Section of the State</u>	<u>Percent of Stems Infested</u>
Northwest	2.86
Northeast	60.00
West	10.00
East	72.00
Southwest	90.00
Southeast	83.00

Adults of H. nigrirostris were found throughout the State, while H. meles was found only in the southern two-thirds. POTATO LEAFHOPPER (Empoasca fabae) first appeared in fields April 26. Relatively speaking it was not as abundant in 1954 and did not damage alfalfa to extent of the previous few years. CLOVER HEAD WEEVIL (Tychius stephensi), which was first found in Illinois about three years ago is now known to be present in at least twelve counties in the northeastern one-fourth of the State. GRASSHOPPERS (Melanoplus spp.) damaged scattered fields throughout the State. LADY BEETLES, combined species, were rather numerous in most clover and alfalfa fields. GARDEN WEBWORM (Loxostege similalis) damaged some alfalfa in central and southern Illinois in July and August. As many as 20 larvae per sweep found in some fields first week in August. They also stripped new seedings of alfalfa in some areas in August. CLOVER ROOT BORER (Hylastinus obscurus) damaged several clover fields in northeastern Illinois. An examination of a field early in August showed 10 percent of the plants killed and 40 percent of the remaining plants infested by average of 5.5 larvae, 1.0 pupae, and 1.75 adults per root. GREEN CLOVER-WORM (Plathypena scabra) was more abundant than usual in clover and alfalfa fields but no serious damage was reported. ALFALFA CATERPILLAR (Colias philodice eurytheme) was common in alfalfa fields of central Illinois in early September.

Grass: FALSE CHINCH BUG (Nysius ericae) was reported damaging grass in three different cases first half of July.

Soybeans: CLOVER ROOT CURCULIO (Sitona hispidula) migrated from clover in Fayette County early in July and damaged marginal rows of soybeans. SPIDER MITES were abundant in some fields early in July. MARGINED BLISTER BEETLE (Epicauta pestifera)

was reported damaging soybeans in early August. GREEN CLOVERWORM was very destructive to soybeans in localized areas in the southern half of the State in August.

Truck Crop Insects:

BEEF LEAFHOPPER (Circulifer tenellus) was present on horse-radish in the East St. Louis area and is believed to have caused damage by spreading brittle root disease. CORN EARWORM (Heliothis armigera) moths were numerous and laying eggs and a few small larvae were found on advanced sweet corn by June 4 in East St. Louis area. By July 30, 20 to 50 percent of the ears in untreated sweet corn were reported to be infested in central Illinois. In the southern half of the State as many as 100 percent of the ears were infested with an average of 4.7 larvae per ear in some fields early in September. This pest also caused severe damage to tomato fruits where treatments were omitted. TOMATO RUSSET MITE (Vasates lycopersici), which did much damage to tomatoes in 1952 and 1953, was not present in 1954 except on greenhouse tomatoes where it probably had overwintered under the protection of the greenhouse. COLORADO POTATO BEETLE (Leptinotarsa decemlineata) adults were numerous on tomato plants in Cook County in May and severely damaged some fields. STRIPED CUCUMBER BEETLE (Acalymma vittata) severely damaged Hubbard and other late varieties of squash in Cook County in early June. ONION MAGGOT (Hylemya antiqua) caused some damage to onion sets in Cook County in June. PALE-SIDED CUTWORM (Agrotis malefida) damaged cabbage in Cook County during June. ONION THRIPS (Thrips tabaci) was abundant on "stickout" onions the latter part of June and caused damage to onions in Cook County in July. SIX-SPOTTED LEAFHOPPER (Macrostelus fascifrons) was abundant on carrots in Cook County the latter part of June.

POTATO LEAFHOPPER (Empoasca fabae) was extremely abundant on potatoes in Cook County the latter part of June. SQUASH BUG (Anasa tristis) was more abundant in northern and central Illinois than for several years. It caused severe damage to many pumpkin fields and treatments were necessary. TOMATO HORNWORM (Protoparce quinquemaculata) was numerous enough to necessitate treatment of some tomato fields in northern Illinois in July. YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) caused damage to onions in Cook County in July. SOUTHERN CABBAGEWORM (Pieris protodice) was present in outbreak numbers on horseradish in Madison and St. Clair Counties the last of August and early September. Counts of 10 per leaf were not uncommon.

Forest, Ornamental, and Shade Tree Insects:

SPIDER MITES, species undetermined, were abundant on spruce in McHenry County in early June. YELLOW-NECKED CATERPILLAR (Datana ministra) was abundant and almost completely defoliated many trees in Illinois the last of July and first of August.

Stored Grain Insects:

SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis) was very abundant in the debris of corn cribs and in bins of oats in early September. INDIAN-MEAL MOTH (Plodia interpunctella) was common in both ear and shelled 1953 corn in September 1954. MEAL MOTH (Pyralis farinalis) was also common in ear and shelled 1953 corn in September 1954.

Miscellaneous Insects:

CLOVER MITE (Bryobia praetiosa) was a general nuisance in many homes throughout the State until last of June when it disappeared and did not reappear until around the first of October when large numbers were observed on the sides of houses. BOXELDER BUGS (Leptocoris trivittatus) were abundant in the southern two-thirds of the State and began bunching up on tree trunks and the sides of houses causing many complaints in September. COTTON STEM MOTH (Platyedra vilella) was not found in the State although hollyhocks were examined in Lee, Marshall, MeLeon, and Champaign Counties.

Status of Southwestern Corn Borer - 1954

Surveys were conducted during 1954 to determine the intensity and/or distribution of the southwestern corn borer (Diatraea grandiosella) in Kansas, Missouri, Arkansas and Texas. The overall distribution of the insect in the United States, according to special State reports and Plant Pest Control Branch records, is shown on the accompanying map. Although D. grandiosella was once recorded in Baca County, Colorado (USDA Tech. Bul. 388:5, 1933); repeated efforts in the years since, according to a recent report by L. B. Daniels, have failed to find positive evidence. The Colorado county, therefore, is not shown as infested on the map.

Southwestern corn borer was found for the first time in 1954 in 6 new counties in Arkansas. Early season populations were heavy in areas of established infestations in this State, but light in the newly-infested areas. Indications are that the pest may move into the delta corn-growing area of the State. In Missouri, the borer spread rapidly northward during 1954 with 15 counties being found infested for the first time. Infestation in field corn in this State ranged from .01 to 44 percent. Three new counties were added during 1954 to the distribution in Kansas where the occurrence of the insect is now nearly statewide. Fifteen counties in north east Texas were reported infested for the first time.

Surveys during summer and fall in Texas showed southwestern corn borer to be the dominant species of stalk borer in the northeast, northwest, panhandle and plains areas. Average infestation ran as high as 50 percent in Hopkins County in the northeast and 100 percent in Hale County in the plains area.





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*Cooperative*  
**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL BRANCH**

**AGRICULTURAL RESEARCH SERVICE**

**UNITED STATES DEPARTMENT OF AGRICULTURE**

# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Economic Insect Survey Section  
Plant Pest Control Branch  
Agricultural Research Service  
United States Department of Agriculture  
Washington 25, D. C.

## COOPERATIVE ECONOMIC INSECT REPORT

## Highlights of Insect Conditions

A GRAIN MITE damaging small grains in north central and other areas of Texas and in Knox County, Tennessee. (page 185 ).

GREEN PEACH APHID abundant in Columbus County, North Carolina. Lighter in some other areas of the State. May have infestation later on tobacco. Arizona also reports abundance of this aphid. (page 187 ).

BOLL WEEVIL hibernation counts in Arkansas. (page 187 ).

Prospective abundance of CIGARETTE BEETLE in stored tobacco in 1955. (page ).

PHARAOH ANT recorded in Oregon for first time. (page 189 ).

Summary of INSECT CONDITIONS - 1954 - Minnesota. (page 192 ).

Summary of the more important FOREST INSECT conditions in 1954. (page 201 ).

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Request for Survey on Yellow Clover Aphid

The yellow clover aphid on alfalfa was reviewed in the CEIR 5(2): 37-40, Jan. 14, 1955. Since the above release Texas and Oklahoma have reported the insect for the first time from alfalfa. In order that the overall distribution of this insect may be determined it would be appreciated if agricultural workers, in states not known to be

who have an opportunity, would collect specimens suspected of being this species. If identification facilities are not available locally, specimens may be sent to the Economic Insect Survey Section, Plant Pest Control Branch, ARS, U. S. Department of Agriculture, Washington 25, D. C. Specimens should be preserved in alcohol or other approved preservative and appropriate information as to collector, host, location, and date should be supplied. The following description might be helpful in screening the material collected. The yellow clover aphid is whitish-yellow, about one-half the size of the pea aphid, has short cornicles compared with those of the latter species, and has dark spots and elongate hairs on the dorsal surface of the abdomen. In its feeding habits on alfalfa it differs from the pea aphid in that it forms colonies on the leaves, usually on the underside of the lower older leaves, while pea aphid colonies are found mostly on the terminal portion of the stems.

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Reports in this issue are for the week ending March 4, 1955, unless otherwise designated.

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#### WEATHER BUREAU'S 30-DAY OUTLOOK March 1955

The Weather Bureau's 30-day outlook for March calls for temperatures to average below seasonal normals over the Far West and also in the northern third of the nation. Above normal temperatures are expected over the southern half of the country east of the Continental Divide, with greatest departures in Texas. In other areas near normal is predicted. Precipitation is expected to exceed normal west of the Continental Divide and also in the Central Plains. Subnormal amounts are anticipated over the upper Lake Region and northern New England as well as in the Southeast. In unspecified areas about normal amounts are in prospect.

This report released by the Weather Bureau on March 1, 1955.

Weather forecast given here is based on the official 30-day "Resume and Outlook," published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington, D. C. Price: \$4.80 a year, \$2.40 for six months

Weather summary on page 191.

## CEREAL AND FORAGE INSECTS

GREENBUG (Toxoptera graminum) - KANSAS - Only one colony found in small grain surveyed in 13 central and south central counties. This was in a wheat field in northern Harper County. (Matthew)  
TEXAS - Medium spotted, local infestation on small grain in Dallas County. (Milikien). Local infestations of greenbug "spots" showing up on barley in Tarrant County. As parasites and predators numerous, it is believed that they will control the infestation. No greenbugs observed in central and south central Texas. (Chada).

A GRAIN MITE (Penthaleus major) - TENNESSEE - Spotted infestations damaging small grain fields in Knox County. (Mullett).  
TEXAS - Heavy widespread on oats and wheat in McLennan County. (Cowger). Heavy locally on oats in Coryell County. (Tomlin). Many fields in north central area showing heavy damage and populations high. Heavy infestations in Boerne area, south Texas. (Chada).

WHITE GRUBS - TENNESSEE - Damaging pastures in Bledsoe County. (Mullett).

ARMY CUTWORM (Chorizagrotis auxiliaris) - KANSAS - Average of about 1 larvae per 6-8 feet of row in wheat and barley in McPherson, Harvey and Sedgwick Counties. Larvae, about third instar, on surface of soil, but no damage observed. (Matthew).

BROWN WHEAT MITE (Petrobia latens) - TEXAS - Light infestations observed in north central, central and south Texas areas. (Chada).

SEED-CORN MAGGOT (Hylemya cilicrura) - TEXAS - Heavy local infestation on seed corn in Brazos County. (Randolph).

CORN LEAF APHID (Rhopalosiphum maidis) - TEXAS - Heavy local infestation on barley in Rockwall County. (Garner, Davis, Randolph).

ENGLISH GRAIN APHID (Macrosiphum granarium) - KANSAS - Small areas of infestations in two wheat fields in Harper and Sumner Counties. (Matthew).

COWPEA APHID (Aphis medicaginis) - TEXAS - Medium to heavy widespread infestation on vetch, alfalfa and clovers in Kaufman, Navarro and Rockwall Counties. (Davis, Garner, Randolph).

CLOVER LEAF WEEVIL (Hypera punctata) - ARKANSAS - Nearly full-grown larvae in crimson clover in Columbia County. (Warren). TEXAS - Light to medium widespread infestation on alfalfa and clovers in Burleson, Navarro, Kaufman and Rockwall Counties. Most fields examined infested. One crown of alfalfa in Navarro County has 23 larvae. (Davis, Garner, Randolph).

GREEN CLOVERWORM (Plathypena scabra) - TEXAS - Light widespread infestation on alfalfa, clover and vetch in Brazos, Burleson, Navarro, Kaufman, Rockwall and Madison Counties. (Randolph, Davis, Garner, Cowger).

YELLOW CLOVER APHID (Myzocallis trifolii) - ARIZONA - Slight increase on alfalfa, Yuma area, February 17 to 26; increased rapidly at Mesa in past 10 days, many nymphs and few winged forms present; moderate infestation at Camp Verde, Coconino County, elevation 3160 feet. (Ariz. Coop. Rept.).

EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - ARIZONA - Very light population of early instars on alfalfa at Mesa. Most of larvae still in stems. Only 2 adults found. (Ariz. Coop. Rept.).

APHIDS - TEXAS - Medium to heavy local infestation on alfalfa near Waco. (Cowger).

TEXAS LEAF-CUTTING ANT (Atta texana) - TEXAS - Heavy widespread infestation on most green foliage in Montgomery County. Has been exceptionally severe for past several months. (Clyburn).

ALFALFA CATERPILLAR (Colias philodice eurytheme) - ARKANSAS - Light numbers in Washington County. (Warren).

#### AN ADDITION

EUROPEAN CORN BORER (Pyrausta nubilalis) - ALABAMA - Marshall County should be added to list of known infested counties in this State. (See CEIR, 5(4) Map 1).

#### TRUCK CROP INSECTS

THRIPS - ARIZONA - Eight to 12 per plant on 20 acres of onions in Maricopa County, February 25. (Ariz. Coop. Rept.). TEXAS - Medium local infestation of Thrips tabaci on onions in Collin County. Average of 5 thrips per plant on freshly set onions. (Smith).

GREEN PEACH APHID (Myzus persicae) - NORTH CAROLINA - Abundant on turnip in Columbus County, averaging several aphids per leaf. (Rabb, Guthrie). Also found in lesser numbers on turnip in Wilson, Wayne, Pitt and Lenoir Counties, but hard to find north and west of these counties. Infestation of other crops such as tobacco, later in spring, seems likely. (Mitchell). ARIZONA - Moderate on 20 acres of lettuce at Litchfield Park, February 23. This species and Macrosiphum barri extremely numerous in most fields of lettuce in Salt River Valley. Aphids believed to be green peach aphid general on lettuce in Yuma Valley, 10 percent infestation. (Ariz. Coop. Rept.).

CABBAGE APHID (Brevicoryne brassicae) - NORTH CAROLINA - Observed in abundance on collards in Wake, Pitt and Bladen Counties. Appears to be general throughout the coastal plain. (Mitchell).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - NORTH CAROLINA - Nearly-grown larvae in some abundance on turnips in Columbus County. (Rabb, Guthrie). A few very small larvae on turnips in Lenoir County. (Mitchell).

A MIDGE (Smittia alterima (?)) - NORTH CAROLINA - Light infestations of larvae and ad lts in tobacco plant beds in Columbus and Wayne Counties. Adults easy to find on foliage in plant beds and on weeds in vicinity. (Rabb, Guthrie).

### COTTON INSECTS

Boll Weevil Hibernation Counts, Arkansas: Ground trash samples from 10 counties have been processed for hibernating boll weevil. Average number of weevils per acre by county was as follows: Hempstead 82, Lafayette 0, Ashley 97, Drew 64, Lincoln 0, Poinsett 0, Jackson 24, Craighead 226, North Logan 230, South Franklin 97. Considerable variation occurred between number of weevils recovered from various farms within a county. Number of samples were insufficient to indicate a reliable trend in some instances. On a per farm basis, greatest number of weevils per acre, 968, was recovered in Logan County.

In addition to boll weevil, counts were made of rice water weevil (Lissorhoptrus simplex) and bean leaf beetle (Cerotoma trifurcata) in samples collected in Craighead County. Average of 4840 rice water weevils per acre found on two farms while average of 20,020 bean leaf beetles per acre found on 5 farms.

A coccinellid was recovered at rate of 10,889 adults per acre in Drew County. Trash samples taken near peach orchards in Crawford County were examined for plum curculio (Conotrachelus nenuphar); however, none was found. (Warren).

#### FOREST, ORNAMENTAL AND SHADE TREE INSECTS

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus)  
KANSAS - Several heavy infestations in McPherson County. (Brady).

BEETLES (Ips sp. and Dendroctonus terebrans) - ARKANSAS - Active in certain areas, but no egg deposits or new broods observed week of February 21. (Warren).

A SILVER SPOTTED HALISIDOTA (Halisidota argentata) - OREGON - First active larvae noted this year were one half inch long on February 18. They attacked fir and blue spruce at Portland. (Roth).

LILY BULB THRIPS (Liothrips vaneeckei) - OREGON - Planting of Gibson lilies in a greenhouse at Portland showed serious distortion to the leaves. About 50 of 10,000 plants showed damage. Found in tips of damaged plants despite control measures. Many found between scales of bulbs. (Bock).

GENISTA CATERPILLAR (Tholeria reversalis) - This insect was found defoliating Laburnum vossii in nurseries in 1954. Plants were found on which all leaves, buds and green tissues of the cortex were consumed down to the soil level. The species was collected at Geneva, NEW YORK, Westminster, MARYLAND, and Millersville, PENNSYLVANIA. (Limber). In September severe damage was noted in the above-mentioned area of Pennsylvania. Larvae fed on leaves and bark of imported laburnum plants. (Sleesman).

#### INSECTS AFFECTING MAN AND ANIMALS

CATTLE GRUBS (Hypoderma spp.) - KANSAS - Reports from many counties indicate that cattle grubs have been exceedingly numerous this winter. Some areas had more grubs in cattle than for last five years. Began appearing in backs of cattle about November 15, 1954, with peak numbers in late December through January. (Matthew). ARKANSAS - H. lineatum infestations declining markedly. Counts on 72 head February 14-21 showed average of 2.6 grubs per animal compared with 6.6 grubs in mid-January. (Warren).

SCREW-WORM (Callitroga hominivorax) - FLORIDA - Survey between January 17-26 indicated that screw-worm was not active in northernmost counties of Peninsular Florida during December and January. Approximate northern limits of activity in January was established on a line running eastward from northern Dixie County through northern Alachua County to northern St. Johns County. In Levy, Gilchrist, and Alachua Counties infestations had been light since cold weather in mid-December while Dixie, Lafayette and Bradford Counties had had a few cases. Continuous cases were reported from Flagler County and along St. Johns River in St. Johns and Clay Counties. (New).

#### STORED-PRODUCT INSECTS

##### Prospective Abundance of Cigarette Beetle in 1955

On basis of available information obtained during past winter the population in VIRGINIA (Richmond, Danville, Lynchburg, and Petersburg) is appreciably lower than in 1954 or 1953. KENTUCKY and TENNESSEE has the lowest population in several years. In eastern NORTH CAROLINA and SOUTH CAROLINA populations are as heavy or heavier than in 1954 and 1953. In central and western NORTH CAROLINA (Durham, Reidsville, Winston-Salem) conditions vary with locality. Critical temperatures were "border line" and a variation of 2 or 3 degrees could make appreciable difference. On the whole, infestations in this area should be somewhat less than in 1954, but there could be a marked difference in the beetle population of groups of warehouses in the same city. (Tenhet).

A DERMESTID (Trogoderma parabile) - UTAH - Infesting corn meal at Logan. Det. W. H. Anderson. (Knowlton, Sandau).

ARIZONA - Heavy infestation in barley at Sahuarita. Det. W. H. Anderson. (Ariz. Coop. Rept.).

POTATO TUBERWORM (Gnorimoschema operculella) - MARYLAND - Infesting potatoes in storage in Prince Georges County. (U. Md., Ent. Dept.).

#### MISCELLANEOUS INSECTS

PHARAOH ANT (Monomorium pharaonis) - OREGON - Collected, January 21, in a building at Mt. Angel. This species is recorded from the State for the first time. (Roth).

BROWN-BANDED ROACH (Supella supellectilium) - ARIZONA - Causing complaints from households at Mesa. (Ariz. Coop. Rept.)

CLOVER MITE (Bryobia praetiosa) - OKLAHOMA - Some houses in Logan County Infested. (Howell).

BOXELDER BUG (Leptocoris trivittatus) - PENNSYLVANIA - Numbers entering a house in Centre County, February 25. (Udine).

OLD HOUSE BORER (Hylotrupes bajulus) - MARYLAND - Infestation in steps of house in Anne Arundel County. (U. Md., Ent. Dept.).

Light Trap Collections:

TEXAS - Following moths were taken at Weslaco during February: Heliothis armigera 74, Prodenia ornithogalli 54, Pseudaletia unipuncta 85, Alabama argillacea 0. (Marsh).

LOUISIANA -

	St. Joseph		Baton Rouge		Franklin	
	Dec.	Jan.	Dec.	Jan.	Dec.	Jan.
<u>Agrotis ypsilon</u>	12	7	36	30	24	6
<u>Pseudaletia unipuncta</u>	100	49	220	56	61	12
<u>Agrotis gladiaria</u>	11					
<u>Prodenia ornithogalli</u>	4	4	5	27		
<u>Feltia subterranea</u>	2	12	124	118	28	25
<u>Laphygma frugiperda</u>	1					
<u>Agrotis malefida</u>		1	5	3	9	2
<u>Peridroma margaritosa</u>		2	1	1	2	4
<u>Empoasca spp.</u>		7		4		

(Newsom)

WEATHER FOR THE WEEK ENDING MARCH 7, 1955

The first part of the week was unusually warm for the season in the East where maximum temperatures in the high 60's or low 70's extended northward to Iowa, the Ohio Valley, Pennsylvania, and Maryland. These high temperatures, although reduced by the passage of a cold front during the weekend, resulted in weekly averages of 15° above normal over much of the Southeast. In contrast, temperatures were severely cold west of the Great Lakes most of the week. Minima ranged down to -25° in North Dakota, and in the Pacific Northwest Spokane, Wash., reported -3° on the 4th, Seattle, Wash., 11°, and Portland, Oreg., 28°. Precipitation, most of which occurred over the weekend, was heavy from the southern Great Lakes region to the northern portions of the Southern States, in the Virginias, and the Middle Atlantic and New England States. These heavy rains resulted in flooding along the Ohio River and many of its tributaries. Rainfall was again heavy along the north Pacific Coast. In the remainder of the Country precipitation was very light, particularly in the lower Great Plains and far Southwest where most stations reported no precipitation at all.

The drought in the western portions of the lower Great Plains, centered over the western third of Texas, eastern New Mexico, extreme western Oklahoma, southwestern Kansas, east-central and southeastern Colorado, continued as occasional strong winds caused additional soil erosion.

The week's snowfall was mostly limited to extreme northern areas where depths were increased. In the Cascade Mountains the snow-pack increased 44 inches at Government Camp, Oreg., and 50 inches at White Pass, Wash. The greatest increase in the northern Rockies was 14 inches at Summit, Mont. In the upper Mississippi Valley and upper Great Lakes depths were increased by a few inches and now range up to 28 inches. In northern New York and New England some stations reported substantial increases. Boonville, N. Y., reported a fall of 22.7 inches from Sunday night to Tuesday morning (March 8) increasing the present depth to 60 inches. (Summary Supplied by U. S. Weather Bureau).

## SUMMARY OF INSECT CONDITIONS - 1954

### MINNESOTA

Reported by J. W. Butcher

#### General Conditions in 1954

While considerable variation naturally occurred between different portions of the State, the average temperature for the year was slightly higher than normal and the total precipitation slightly below normal. Colder and wetter than average weather prevailed during April and May. This caused a lag of about three weeks in plant development during the early part of the season. Warmer and drier than average weather during June and July provided conditions favorable for rapid growth. Summer-like temperatures extending well into October allowed many plants to mature, and enabled more of the late-season insects to successfully complete feeding and development.

#### Forest Insects:

FOREST TENT CATERPILLAR (Malacosoma disstria) infestation was markedly reduced to lowest level since beginning of the current outbreak in 1949. Aerial and ground surveys showed that the bulk of noticeable defoliation was confined to comparatively small areas along the east central edge of the State. Less than one million acres received moderate to heavy defoliation, a drastic reduction from the estimated 15 million acres in 1953 and over 20 million acres during the peak year of 1952. The largest area of attack occurred in Pine County and extended into eastern Kanabec and southeastern Carlton Counties. Much of the aspen and other susceptible broad-leaf trees received variable light to moderate defoliation in adjoining parts of Lake, St. Louis, Carlton, Aitkin, Kanabec, Isanti, and Chisago Counties. Colder than normal temperatures throughout most of May, not only delayed hatching dates and increased the hatching period longer than in any other year during this outbreak, but also slowed early season development of both the caterpillar and its host trees. This factor caused a great reduction of the potential larval population in many areas where high egg mass counts were made during the fall of 1953. High populations of Sarcophaga aldrichi were found throughout all infested areas and, by June 10, became so abundant in many northern localities that a nuisance problem was created. In addition to the effects of parasites, the overpopulation of caterpillars resulting in starvation of larvae, and unseasonably cold temperatures during and following hatching, have caused considerable mortality in many areas. It appears that the current outbreak will

be contained and should diminish to a sub-economic level during the next year. As of now, no mortality of aspen has been attributed to defoliation by the caterpillar alone. LARCH SAWFLY (Pristophora erichsonii) adults emerged during the first week of June, with peak population around June 20. While mature larvae were first found on July 1, general signs of defoliation did not become evident until after July 15. The overall population and subsequent defoliation levels again followed the typical fluctuating pattern of this current outbreak. Defoliation was extended farther south in Minnesota, resulting in a larger total area. However, the intensity of infestation was somewhat lessened as evidenced by smaller spots of heavy to complete defoliation. While 1954 was the sixth consecutive year of defoliation in many areas, records show that most of the tamarack in any one area has not been seriously stripped in two successive years. Through 1954, the larch sawfly has not been the sole agent responsible for the small amounts of tamarack mortality. JACK PINE BUDWORM (Choristoneura pinus) damage was found in six different areas in Crow Wing, Cass, Wadena, Hubbard and Beltrami Counties. Each infestation covered estimated 1 to 5 square miles of jack pine. While most trees exhibited only light stripping of new foliage, several spots of heavy defoliation of older trees were evident. However, in locations south of Gull Lake and in the northern part of Hubbard County, many young trees showed almost complete defoliation but the older stock was only lightly attacked. No mortality of pine is expected as a result of this one year's defoliation. The surprising amount of budworm activity strongly indicates the beginning of a build-up. Susceptible type jack pine, with increased staminate flower production, predominates in some areas. Extensive surveys for budworm are being planned in 1955.

SPRUCE BUDWORM (Choristoneura fumiferana) was reported in low population levels from over 50 locations throughout the spruce-fir areas of Cook, Lake, and St. Louis Counties. A few specimens were also found in northern Itasca County near Dora Lake. Defoliation was not noticeable in the infested areas. However, the general presence of budworm in numerous locations suggests a possible population increase to outbreak proportions. This represents a serious potential threat to all native balsam and spruce in Minnesota. Plans are being made to carry out an intensive survey program, concentrated in susceptible forest type areas, in order to give more information about budworm distribution and abundance. INTRODUCED PINE SAWFLY (Diprion simile) populations increased in many white pine stands causing noticeable defoliation at 11 widely separated locations in the east central and central districts. Adults began

emerging from overwintering cocoons about June 1. An increased number of second generation larvae continued to feed until late in October. Additional control work may become necessary in order to protect valuable stands of white pine. During August and September, high populations of the VARIABLE OAK LEAF CATERPILLAR (Heterocampa manteo) developed on basswood, birch, elm and oak covering a relatively large section of the State. The area of infestation began south of St. Cloud in the central district and extended north-northwest for over 150 miles. Heavy to complete defoliation was noted in at least 25 different locations ranging in size from several acres up to several square miles. The extent of defoliation in 1955 cannot be predicted, however, variable oak leaf caterpillar is not considered a serious threat to forested areas at this time. 1954 was the off year for the WALKINGSTICK (Diapheromera femorata) but the insect was reported. This insect is one of Minnesota's most important defoliators in odd-numbered years. BIRCH SKELETONIZER (Bucculatrix canadensisella) caused moderate to heavy local damage in Cass and Hubbard Counties. BRONZE BIRCH BORER (Agrius anxius) was generally light in birch previously infested by forest tent caterpillar. FALL CANKERWORM (Alsophila pometaria) caused light to moderate defoliation, scattered throughout State. FALL WEBWORM (Hyphantria cunea) generally light. EASTERN TENT CATERPILLAR (Malacosoma americanum) defoliation was light and scattered. ELM LEAF MINER (Fenusa ulmi) caused much heavy injury. General in Twin Cities - some throughout southern areas. AN OAK TWIG PRUNER (Hypermallus villosus) was light to moderate in central district.

SPRING CANKERWORM (Paleacrita vernata) caused scattered light to moderate defoliation, while LACEBUGS caused moderate to heavy damage of leaves, especially birch. High populations in many northern areas. WALNUT CATERPILLAR (Datana integerrima) was locally light to moderate over State. WHITE-MARKED TUSsock MOTH (Hemerocampa leucostigma) caused moderate to heavy defoliation in Twin Cities area. BLACK PINE LEAF SCALE (Aspidiotus californicus) caused moderate to heavy damage locally in Crow Wing and Stearns Counties. Scattered locations throughout jack pine areas. PINE WEBWORM (Tetralopha robustella) was mostly light in spotted locations throughout jack pine areas; moderate in Anoka county. PINE TORTOISE SCALE (Toumeyella numismaticum) was scattered throughout jack pine areas. Locally moderate to heavy in Itasca, St. Louis, Carlton, Crow Wing, and Sherburne Counties. Some mortality of young pines near Hibbing. A PITCH TWIG MOTH (Petrova albicapitana), mostly light injury in Stearns, Sherburne

and Crow Wing Counties; moderate near Brainerd. RED PINE SAWFLY (Neodiprion nanulus) caused light defoliation in Washington and Cass Counties. PINE SPITTLEBUG (Aphrophora parallela) - Light feeding, scattered throughout northern areas. WHITE PINE WEEVIL (Pissodes strobi) generally light and scattered throughout northern half of State; moderate near Cloquet. COOLEY SPRUCE GALL APHID (Chermes cooleyi) caused moderate injury, St. Louis County. SPRUCE NEEDLE MINER (species undetermined) caused mostly light to moderate injury in scattered locations throughout State. Moderate to heavy injury to black spruce in several locations in St. Louis County. YELLOW-HEADED SPRUCE SAWFLY (Pikonema alaskensis), mostly light, scattered throughout balsam-spruce area. Some trees showed heavy defoliation. EASTERN LARCH BEETLE (Dendroctonus simplex) light to moderate generally in fallen tamarack and blow-down areas.

#### Shade Trees and Woody Ornamental Insects:

SPIDER MITES common on all types of nursery stock and ornamentals throughout entire State; heavy concentrations in northern areas. OYSTERSHELL SCALE (Lepidosaphes ulmi) heavy in northeast and west central districts as well as Twin Cities area. Present throughout entire State. SAN JOSE SCALE (Aspidiotus perniciosus) infestation apparently limited to one village in Nicollet County. Eradication measures underway. EUROPEAN FRUIT LECANIUM (Lecanium corni) - Heavy concentration developed in Twin Cities area. Spots of high populations in south central and northeast districts. COTTONY MAPLE SCALE (Pulvinaria innumerabilis) concentrations heavy in local spots around Twin Cities, present throughout entire State. EUROPEAN ELM SCALE (Gossyparia spuria) heavy in Hopkins. A POPLAR LEAF BEETLE (Chrysomela sp.) general over State. Defoliation heavy in some poplar and willow plantings. ROSE CHAFER (Macrodactylus subspinosus) infestation in New Brighton and other suburban areas on lighter soils, moderate to heavy defoliation. PINE NEEDLE SCALE (Phenacaspis pinifoliae) population building up in concentrations around Twin Cities and in south central district.

#### Fruit Insects :

In southeast and east central: CODLING MOTH (Carpocapsa pomonella) damage was severe in neglected orchards; adults emerged June 6-12. MITES (Metatetranychus ulmi and Tetranychus bimaculatus) damage severe generally, populations high. APPLE MAGGOT (Rhagoletis pomonella) - First emergence July 7 (EC); control generally successful. APPLE CURCULIO (Tachypterellus quadrigibbus) and PLUM CURCULIO

(Conotrachelus nenuphar) damage light in 1954. RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) caused considerable damage in few orchards in southeast. OYSTERSHELL SCALE (Lepidosaphes ulmi), in southeast, not a serious problem in 1954. STRAWBERRY WEEVIL (Anthonomus signatus) general, but no change from 1953 population. STRAWBERRY LEAF ROLLER (Ancyliis comptana fragariae) general, present in neglected field, no change from 1953 population. SPIDER MITES general, apparent increase in population over 1954. A STRAWBERRY SAWFLY (prob. Empria ignota) general, populations high, especially in renovated plantings. CYCLAMEN MITE (Tarsonemus pallidus) general, varieties Red Rich, Wayzata, generally infested. THRIPS general, poor yields most fields attributed to thrips.

#### Cereal and Forage Crop Insects:

EUROPEAN CORN BORER (Pyrausta nubilalis) - A winter mortality survey conducted in 25 counties in the southern two-thirds of State in April, 1954, showed 25 percent borer mortality, compared with 20 percent mortality in the spring of 1953. In October, 1954, 66 counties were surveyed to evaluate the size of corn borer population. The average number of borers per 100 plants was higher in 1954 than in 1953, with highest infestation in southwest and west central areas. The possibility of an increased borer population in 1955 is very good if weather conditions are favorable during the egg-laying period, especially in the south - west and west central counties. The major Minnesota insect outbreak in 1954 was caused by the ARMYWORM (Pseudaletia unipuncta). Adults of this insect apparently flew or were blown into the State in large numbers from states to the south, possibly as a result of one of the most severe southwest windstorms on record which occurred on June 7th. During this storm, wind velocities approached 100 miles per hour. Colder and wetter than average weather during April and May caused a lag of about three weeks in seasonal plant development. Lush, moist grasses and grains in most northwest counties subsequent to armyworm egg laying were optimum for larval survival and development. Where armyworm infestations ordinarily appear confined to local areas in fields, in 1954 most fields had general infestations although considerable variation in intensity was apparent from field to field. Some damage became apparent on corn in the southern counties but grains and grasses had lost their succulence and larval survival to the late instars was not high. In the Red River Valley areas, however, larval survival was high as grasses and grains remained attractive.

By July 16, large scale control work was underway as a result of close cooperation with the State Entomologist's Office, Agricultural Extension, and the Chemical and Spraying Industry. The following summary of the 1954 armyworm control program illustrates the scope of the undertaking:

Total Acreage Treated (Ground and Air Spray Equipment)	\$1,186,500*
Total Cost of Treatment @ \$2.00 per acre	2,373,000
Loss to Minnesota Agriculture Because of Failure to Treat	11,999,560
Savings to Minnesota Agriculture as Result of Treatment	39,416,930

\*This estimate is probably conservative since spraying done on canning corn and flax is not included. Also, no estimates are provided for those counties where less than 1000 acres were treated.

Where insecticides were applied at recommended dosages, control was excellent. A special survey made in early August showed numerous armyworm moths but no evidence of egg-laying, probably because of extremely warm dry weather and advanced grain maturity. Parasitism was high in many areas, but surprisingly low in others.

GRASSHOPPERS - There were no early grasshopper problems in small grain crops and only infrequent problems in late grain crops. The State had a very late hatch except for east central Minnesota where lighter soils are found. No hatch occurred in many areas until the second alfalfa cutting, and at the time of small grain harvesting. Nearly all of the heavy infestations occurred in legumes grown for hay. Ten spraying demonstrations were carried out in the State in which over 18,000 acres were sprayed for grasshopper control during the year. State-wide grasshopper adult and egg surveys carried out in 1954 indicated that if warm dry weather is prevalent in the spring of 1955, dangerous infestations are likely in much of the State. By far, the predominant species in Minnesota in 1954 was Melanoplus femur-rubrum. M. bivittatus, M. mexicanus, M. packardii and M. differentialis were also present in the listed order of importance. SWEETCLOVER WEEVIL (Sitona cylindricollis) - Average percent leaf surface of sweet clover destroyed was 34.5 percent in 1953 in untreated fields in northwest Minnesota and 20.2 percent in 1954. In both 1953 and 1954 weevils were observed feeding in new and old seedings of alfalfa. Only in locations where sweetclover was not available did the sweetclover weevil seriously injure alfalfa. Averaged 0-4 per sweep in sweetclover in southeast, southwest and south central.

Following figures are minimum and maximum for season:

In Alfalfa: PLANT BUGS (Lygus sp.) southeast, 0-6 per sweep average; south central, 0-1 per sweep average; southwest, 0-1 per sweep; central, 0-1 per sweep; northwest, 0-1 per sweep. ALFALFA PLANT BUG (Adelphocoris lineolatus) southeast, 0-2 sweep; south central, 0-5 per sweep; west central, 0-4 per sweep; northwest, 0-4 per sweep; southwest, 0-1 per sweep. POTATO LEAF HOPPER (Empoasca fabae) southeast, 0-1 per sweep; east central, 0-1 per sweep; northwest, 0-1 per sweep. VARIEGATED CUTWORM (Peridroma margaritosa) southwest, heavy damage locally. PEA APHID (Macrosiphum pisi) southeast, 0-7 per sweep; south central 0-18 per sweep; southwest, 0-18 per sweep; northwest, 0-7 per sweep; west central, 0-100 per sweep. SIX-SPOTTED LEAFHOPPER (Macrostelus fascifrons) southeast, 0-1 per sweep. In red clover: PLANT BUGS (Lygus sp.) northwest, 0-10 per sweep; east central, 0-9 per sweep; southeast, 0-1 per sweep. ALFALFA PLANT BUG northwest, 0-1 per sweep; east central, 0-1 per sweep; southeast, 0-1 per sweep. POTATO LEAFHOPPER east central, 0-1 per sweep; southeast, 0-1 per sweep; northwest, 0-1 per sweep. CLOVER SEED MIDGE (Dasyneura leguminicola) east central, 0-1 per sweep; northwest, 0-1 per sweep; southeast, 0-1 per sweep. PEA APHID east central, 0-5 per sweep; northwest, 0-3 per sweep; southeast, 0-1 per sweep. RAPID PLANT BUG (Adelphocoris rapidus) southeast east central, and northwest, 0-1 per sweep. A WEEVIL (Miccotrogus picirostris) northwest, southeast, 0-1 per sweep. LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) east central, northwest, north central, 0-1 per sweep.

SEED-CORN MAGGOT (Hylemya cilicrura) caused light injury. On soybeans in south central area. CORN LEAF APHID (Rhopalosiphum maidis) infested 25 percent tassels of corn in south central area. WIREWORMS, 0-5 per hill, in corn in southwest. A MOTH (Nomophila noctuella) was abundant on grasses in east central area. On oats: ENGLISH GRAIN APHID (Macrosiphum granarium) in central, south central, averaged 2-4 per sweep; in west central, southwest, 0-1 per sweep.

#### Truck Crop Insects:

GARDEN WEBWORM (Loxostege similalis) was heavy on tobacco in southwest and sugar beets in central area. ASPARAGUS BEETLE (Crioceris asparagi) overwintering adults caused moderate to severe damage to commercial plantings in Steele County during late May. Moderate to severe damage in south central area in June. IMPORTED CABBAGEWORM

(Pieris rapae) and DIAMONDBACK MOTH (Plutella maculipennis) were present in about the same numbers in 1954 as in 1953, while CABBAGE LOOPER (Trichoplusia ni) was more abundant in 1954 than in 1953. The heaviest damage, especially on late cabbage, was caused by P. rapae (3rd generation) during August. Cabbage in the Twin Cities area showed leaf damage from diamondback moth larval feeding early in the season, but this insect is not believed to be as important in Minnesota as are the other two species. COLORADO POTATO BEETLE (Leptinotarsa decemlineata) continued to be a problem in the Red River Valley where some growers could not get good control using DDT dusts. Some small plantings in southern Minnesota were damaged in July where growers had not used adequate controls, but southern Minnesota growers usually have no difficulty controlling this pest using DDT sprays. 50-100 percent defoliation in east central area and abundant in west central June 21-22. CORN EARWORM (Heliothis armigera) moth flights observed in southern Minnesota during the week of July 9. Insect was not as abundant on sweet corn at St. Paul as in 1953. FLEA BEETLES caused light damage to potatoes in Hennepin County, but growers reported no difficulty in controlling this pest. Light flea beetle damage to cabbage seedlings occurred at Hollandale and Castle Rock during May and June. ONION MAGGOT (Hylemya antiqua) was abundant in 1954. Very little economic damage was reported although damage to University check plots at Castle Rock and Brooklyn Center reached 90 percent. Ten to 25 percent damage to garlic in east central in May. Lack of extensive damage may be credited to vigorous control activities directed against this insect. Inquiries indicate that this insect may be increasing in importance in the Moorhead area. ONION THRIPS (Thrips tabaci) were generally present in 1954 and abundant enough in some fields to cause severe damage. PEA APHID (Macrosiphum pisi) was as abundant in southern Minnesota in 1954 as in 1953 and would have done serious damage to the canning crop if chemical controls had not been used. A large percentage of the crop was sprayed at least once. POTATO LEAFHOPPER (Empoasca fabae) continued to be a major pest on potatoes, although it was not generally as abundant in 1954 as in 1953. 40 per 20 sweeps on green beans in southeast August 8. It was first collected in Minnesota at Hollandale on May 25.

The SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) became abundant rather early in the season; as many as 300 per sweep were taken on old lettuce at White Bear on July 1. Aster yellows caused by a virus transmitted by this insect was very prevalent also. Forty to 60 percent of the carrots in small

gardens around the Twin Cities showed virus symptoms. Heavy losses of celery (50 percent) in Dakota County, and lettuce and celery (40 percent) in St. Louis County were reported. 40<sup>0</sup> per 20 sweeps on carrots and lettuce in east central area June 24; 4500-6000 per 20 sweeps on lettuce July 1 in this area. STALK BORER (Papaipema nebris) caused 10 percent damage to sweet corn in south central area in early July. Ninety to 100 percent damage several tomato fields in east central area in July. STRIPED CUCUMBER BEETLE (Acalymma vittata), east central June 25, 3-43 per plant, 25 percent foliage damaged on cucurbits.

## THE MORE IMPORTANT FOREST INSECTS IN 1954

### A SUMMARY OF CONDITIONS

Prepared by the Division of Forest Insect Research  
Forest Service

#### INTRODUCTION

The status of major insect pests throughout the forested regions of the Nation in 1954 was determined through cooperative surveys by federal land-managing agencies, state forestry and conservation organizations, private land-owners and lumber operators, and other individuals. This summary of insect conditions during the year was compiled from reports that have been made available to date. Although other reports were received of insect outbreaks in local areas, they were of minor importance and for that reason are not included in this summary. To facilitate reference to insect conditions in different parts of the country, the status of pests has been assembled on a regional basis.

#### CONDITIONS IN BRIEF

Infestations of many of the most important forest insects in the country increased in scope and severity during 1954 over that experienced during the past few years.

1. The spruce budworm was epidemic throughout most of the mixed conifer and spruce-fir forests of the Nation. Outbreaks were most severe in the Pacific Northwest and in the Rocky Mountain states. A new infestation in the Lake States, the first in many years, was found on the Keweenaw Peninsula in northern Michigan.
2. Discovery of the gypsy moth in the vicinity of Lansing, Michigan, in 1954 represented the first established infestation of this major pest outside of the northeastern states since its introduction into the United States in 1869.
3. Bark beetles and engraver beetles continued in outbreak numbers in most of the coniferous forests of the Nation and caused severe loss of valuable timber in the fir forests of the Northwest; the spruce and fir forests in the northern and southern Rocky Mountains; and the pine stands in the South and West.
4. Several species of defoliating insects occurred in epidemic proportions in many areas in all regions. Outbreaks of pine sawflies occurred in the South and West; tent caterpillars in

the Northeastern and Lake States; and needleminer infestations in California.

5. Twig and terminal-feeding insects continued to be major pests in most areas of forest regeneration.
6. Prompt action by forest protection agencies in applying suppressive measures for control averted major loss of timber in many areas. Large scale control was directed against the Engelmann spruce beetle in Idaho, Montana, and Colorado; the Douglas-fir beetle in Oregon; pine bark beetles in the southern and western regions; and the gypsy moth in Michigan, New England, and New York.

#### CONDITIONS IN CALIFORNIA

With three notable exceptions, conditions of forest insects in California were at the same comparatively low level as they were during 1953. The exceptions are: (1) the Douglas-fir beetle, currently epidemic in coastal Douglas-fir stands; (2) the lodgepole needleminer-mountain pine beetle complex in Yosemite National Park, which is creating another ghost forest in the high country lodgepole pine; and (3) the fir engraver beetle, which is causing heavy scattered losses throughout the Sierra. Mountain pine beetle-caused losses in sugar pine remain at a high endemic level throughout most of the west-side Sierra. Serious damage by the western pine beetle and pine engravers throughout most of the pine belt was noteworthy by its absence. Bark-beetle losses in southern California showed a decided improvement generally, but the California flatheaded borer in Jeffrey pine continued to exact a heavy toll, particularly in areas where no control has been attempted. Both sugar pine and Douglas-fir cone crops were hard hit by cone and seed insects again during the year.

THE DOUGLAS-FIR BEETLE (*Dendroctonus pseudotsugae* Hopk.) - Heavy Douglas-fir losses due to the Douglas-fir bark beetle are occurring throughout an estimated 200,000 acres in the Klamath River and Trinity River drainages. Surveys in late June and July indicate a probable total loss of 100,000,000 board feet. This infestation increased considerably over last year, and at present possesses a potential capable of causing further severe losses should conditions continue to favor high insect populations. Steps are being taken to shift logging operations into areas of heavy loss so as to salvage as much of the beetle-killed timber as possible.

THE LODGEPOLE NEEDLEMINER (*Recurvaria milleri* Busck) - The lodgepole needleminer was recorded in epidemic proportions on approximately 46,000 acres in Yosemite and Kings Canyon National Parks. Populations were found to be at high levels and no downward trend in infestations

was noted during the season. The current outbreak is believed to have started in 1945 and has been on the increase since that time. Although the needleminer is capable of causing tree mortality, this seldom happens because of the rapidity with which defoliated trees are attacked and killed by the mountain pine beetle.

THE MOUNTAIN PINE BEETLE (*Dendroctonus monticolae* Hopk.) - Tree mortality caused by the mountain pine beetle increased during 1954, particularly in lodgepole pine that was severely defoliated by the needleminer. The insect continued to exact heavy losses in second-growth ponderosa pine on the east shore of Lake Tahoe, Nevada, and severe damage was reported in sugar pine seed trees from the Sierra Nevada Range in the central part of California.

THE CALIFORNIA FLATHEADED BORER (*Melanophila californica* Van Dyke) - The California flatheaded borer has been responsible for heavy losses in Jeffrey pine stands in southern California for many years and infestations have been particularly severe since 1952. Current infestations on 25,000 acres appear to be on a level consistent with conditions experienced during 1953. The selective removal of high risk trees from the stand is being used as a measure for control.

THE JEFFREY PINE BEETLE (*Dendroctonus jeffreyi* Hopk.) - Jeffrey pine losses in portions of Mono County due to the Jeffrey pine beetle, in conjunction with attacks by the California flatheaded borer, increased over previous years. Successful control of infestations is being obtained by removing high risk trees through selective cuttings. In areas benefited by light logging, losses have been reduced from a high level of 250 to 15 board feet per acre.

THE FIR SAWFLY, *Neodiprion* sp. - Fir sawfly damage is in evidence throughout most of the Sierra Nevada Mountains extending from the North Warner Mountains in Modoc County to the Sierra National Forest in the south. Although damage is widespread, serious tree losses have not been reported. The heavy defoliation which occurred within the LaPorte area during the past two years has died down, primarily as a result of a native virus disease affecting the sawfly larvae.

CONE AND SEED INSECTS, *Conophthorus* beetles and seed chalcids - Heavy losses in cones and seeds of Douglas-fir and sugar pine, caused by various cone and seed insects, were reported from most portions of the state. Preliminary sampling of the damage to Douglas-fir cones and seeds showed losses ranging from 53 to 89 percent. Damage to the sugar pine seed crop was somewhat spotty, varying with little damage in some areas to very serious damage in others.

CONDITIONS IN THE PACIFIC NORTHWEST

The spruce budworm, Douglas-fir beetle, and silver fir beetle continue to be the most serious insect problems in the forests of Oregon and Washington. However, several other major pests were found in epidemic proportions during the year, among which is a serious outbreak of the balsam woolly aphid attacking Pacific silver fir in southern Washington.

THE DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae Hopk.) - The Douglas-fir beetle epidemic remains aggressive in Oregon and Washington forests and survey results show heavy infestations on 5,071,000 acres. A recent summary of tree mortality in the high-value coastal forests revealed that more than 3 billion board feet of timber have been killed since the outbreak began in 1950. In addition to the killing by the beetle, there has been an estimated 10 billion board feet of blowdown of Douglas-fir which has provided the breeding grounds for the epidemic. In most control areas the infestation is declining. However, in the eastern part of both states where the killing is associated with defoliation by the spruce budworm, tree mortality continues to be severe.

SILVER FIR BEETLE (Pseudohylesinus spp.) - The area and intensity of silver fir beetle infestations in the Washington Cascades increased during 1954. Infestations are now found on 650,230 acres, a majority of which is moderately or heavily infested. A special survey during the year revealed that the beetles have been responsible for a total loss of 528,000,000 board feet of timber, nearly 10 percent of the total stand volume in the areas affected. In addition to silver fir beetle outbreaks in southern Washington, trees are also being attacked by the balsam woolly aphid which is resulting in a particularly bad situation.

THE WESTERN PINE BEETLE (Dendroctonus brevicornis Lec.) - The extent and intensity of infestations of the western pine beetle in Oregon and Washington were sharply down from conditions during 1953. A few centers of heavy loss remain on the Deschutes National Forest and the Yakima Indian Reservation in Oregon. Attention to removal of trees that are of high risk to beetle attack during the normal course of logging operations is steadily reducing the hazard of loss to western pine beetle attack.

THE MOUNTAIN PINE BEETLE (Dendroctonus monticolae Hopk.) - The recorded damage caused by the mountain pine beetle in all tree species susceptible to attack in Oregon and Washington declined from 322,400 acres in 1953 to 207,120 acres in 1954. The extensive outbreak on the Chiwawa River drainage area, Wenatchee National Forest, Washington,

continued unabated during the year. The large center of activity by this bark beetle in the vicinity of Anoga Butte on the Deschutes National Forest in Oregon continued in epidemic status. However, logging has reduced the outbreak in ponderosa pine in the forest areas near Baker, Oregon.

THE FIR AND PINE ENGRAVER BEETLES, Ips and Scolytus spp. - The engraver beetles attacking true firs and the Ips species attacking ponderosa pine declined in intensity during the year. Scolytus infestations in fir occur primarily in inaccessible locations along the crest of the Cascade Mountain range where the timber is largely of non-commercial quality. Ips killing in ponderosa pine was reduced to a below-normal level for the region.

THE ENGELMANN SPRUCE BEETLE (Dendroctonus engelmanni Hopk.) - A large increase in infestations of the Engelmann spruce beetle occurred in Washington during the year. The greatest increase occurred on a portion of the Snoqualmie National Forest where infestation centers have been present since 1952. Except for the excellent spruce stands in the American River drainage where current infestations are most severe, Engelmann spruce stands in Oregon and Washington are too scattered to warrant large expenditures needed for direct control.

THE SPRUCE BUDWORM (Choristoneura fumiferana (Clem.)) - The spruce budworm epidemic that developed in the Douglas-fir and true fir forests of Oregon and Washington in 1944 is still in progress. Through continued action programs in control, the epidemic has been reduced from a peak of 2,276,000 acres to 1,034,440 acres in 1954. The trend of budworm infestations is decidedly upward in all unsprayed areas. In the Blue Mountain Region of eastern Oregon, timber that has been severely weakened by budworm defoliation has subsequently been attacked and killed by the Douglas-fir beetle.

THE BALSAM WOOLLY APHID (Chermes piceae (Ratz)) - Pacific silver fir in southern Washington was found to be seriously attacked by an insect tentatively identified as Chermes piceae. A total of 129,920 acres is known to be heavily infested and an additional 146,240 acres was found to be infested by Chermes and silver fir beetle combined. This aphid has been attacking and killing grand fir in the Willamette Valley in Oregon since about 1930 but not until 1954 had it been reported on silver fir growing under forest conditions. Experience with this insect in eastern Canada indicates that direct measures for control are not practicable.

SPRUCE APHID (Neomyzaphis abietina (Wlkr.)) - Spruce aphid infestation of Sitka spruce along the Oregon and Washington coast reached a peak in 1953 and declined in 1954. The recorded epidemic infestation in 1953

was 22,600 acres as compared with 4,480 acres in 1954. Practically all of this year's epidemic infestation was in the Willapa Bay area in Washington and was a twofold increase in acreage for that state. The infestation in Oregon was much reduced in 1954.

LOGEPOLE PINE SAWFLY (Neodiprion sp.) - The lodgepole pine sawfly outbreak that covered 20,000 acres in 1952 and 69,700 acres in 1953 on the Willamette and Deschutes National Forests in Oregon has subsided without any appreciable tree killing. A few of the most seriously defoliated trees have succumbed to attacks by bark beetles, but no aggressive outbreak of beetles has developed in the sawfly defoliation area. Cool weather and above normal rainfall favored tree growth in 1954; consequently most of the defoliated trees put on good needle growth and apparently will recover.

Ground examinations in 1954 showed the sawfly to be rather generally distributed in the affected area. However, feeding was light and no epidemic infestation was recorded.

The decline of the sawfly outbreak is attributed to parasites, predators and other factors of natural control acting in combination with suspended development (diapause) of a large part of the sawfly population. In the fall of 1953 most of the sawflies remained in their cocoons in the soil rather than emerging and laying eggs as they normally do. The relatively few overwintering eggs produced the light brood of 1954. The larvae in the cocoons laid over; some emerged in the fall of 1954; some are still in the soil; and many succumbed to insect parasites, rodents, disease, and weather. As a result of this sequence of events the outbreak appears to be ended.

#### CONDITIONS IN THE INTERMOUNTAIN STATES

The year 1954 was one in which damage to the forest resources in the Intermountain States continued at an unprecedented high level. This was in the form of extensive mortality of mature trees from bark beetle attacks and of widespread mortality of immature trees and partial defoliation of mature and immature trees by leaf-feeding insects.

THE ENGELMANN SPRUCE BEETLE (Dendroctonus engelmanni Hopk.) - For the third successive year, the Engelmann spruce beetle occurred in epidemic proportions over large areas in northwestern Montana and northern Idaho. Efforts to control the widespread and scattered outbreak, chiefly through logging, were begun in 1952 and continued

on a massive scale through 1954. As a result of the control operation and a decline of beetle population resulting from natural control factors, there was a general downward trend in the spruce beetle infestation during the year. Several relatively small outbreak areas of epidemic infestations in southwest Idaho and southern Utah are being controlled by logging infested trees.

THE MOUNTAIN PINE BEETLE (Dendroctonus monticolae Hopk.) - An abnormal amount of ponderosa pine mortality resulting from attacks by the mountain pine beetle occurred in the vicinity of Ovando and Lincoln, Montana. The infestations were not materially above those which occurred in the area during 1953 and there was no grouping of infested trees to signal epidemic conditions. Infestations in ponderosa pine are at a low ebb in all other areas for which reports are available. Several new outbreaks of this insect were reported in lodgepole pine in Montana and infestations on the north side of the Wasatch National Forest in Utah increased to epidemic size in several drainages. Broods in the infested trees indicate that heavier conditions of loss can be expected during 1955.

THE SPRUCE BUDWORM (Choristoneura fumiferana (Clem.)) - During the past few years the spruce budworm has increased to alarming proportions in Idaho and western Montana. Individual areas of infestation in Montana have increased in acreage to an extent that a solid block of infestation now covers most of the several national forests in that area. Spruce budworm populations were very large during the year and a majority of the trees are now heavily defoliated. Some loss of timber as a result of defoliation has occurred in areas of heavy budworm populations including the death of understory trees as well as top-killing and death of saw-log timber. Infestations of most severe proportions occur on approximately 600,000 acres in southwest Idaho and on nearly 2 million acres in North Idaho and Montana, including Yellowstone National Park. Plans are being made for direct control during 1955.

THE DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae Hopk.) - The Douglas-fir beetle continues to take a heavy toll of merchantable Douglas-fir from the forests of the Intermountain States. In some areas there has been a temporary cessation in the severity of infestations while in others the loss of timber continues. Infestations in Montana and northern Idaho are much reduced from conditions reported during 1952 and 1953. However, heavy losses were reported from the Boise and Payette National Forests in southwestern Idaho. Foresters regard the Douglas-fir beetle as one of the chief obstacles to the successful management of the forest resources of the region.

THE BLACK HILLS BEETLE (Dendroctonus ponderosae Hopk.) - There has been a persistent infestation of the Black Hills beetle in the ponderosa pine stands of the Dixie National Forest and Bryce Canyon National Park in southern Utah for a number of years. Several seasons of direct control operations have reduced the infestation on most of the area to below-normal status. However, a concentration of infestation occurs on approximately 52,000 acres and plans are being developed for continued control on this acreage.

THE DOUGLAS-FIR NEEDLE MIDGE, Cecidomyia sp. - The current status of the Douglas-fir needle midge outbreak in portions of Montana and Idaho has not been reported. However, damage to Christmas tree harvest areas was severe in many areas and since no efforts were made in direct measures for control, it is probable that populations have remained unchanged from prior years.

THE PINE WHITE BUTTERFLY (Neophasia menapia (F. & F.)) - The pine white butterfly reached epidemic proportions in the pine stands of southern Idaho during 1953. Due to the threat of heavy timber loss, prompt action was initiated for control and during 1954 aerial spraying was carried out on 255,000 acres. The outbreak was successfully controlled and the infestation is no longer active.

THE WESTERN PINE BEETLE (Dendroctonus brevicornis (Lec.)) - There was an increase in activity by the western pine beetle in southwestern Idaho and to some extent in the northern portion of the State. The concentration of loss caused by this major pest occurs primarily in portions of the Boise and Payette National Forests, with several areas showing above normal status in the general area where continued direct control measures are planned during 1955.

THE SOUTHWESTERN PINE BEETLE (Dendroctonus barberi(Hopk.))- A rather serious infestation of the southwestern pine beetle occurs in the Charleston Mountain area of southern Nevada. This infestation is isolated from other susceptible host material and plans are being developed for control during 1955.

#### CONDITIONS IN THE ROCKY MOUNTAINS

Forest insects showed a noticeable upward trend throughout most of the forested areas in the Rocky Mountains during 1954. Of paramount importance was the new large-scale outbreak of Engelmann spruce beetle in southern Colorado and an intensification of damage caused by the spruce budworm in New Mexico.

THE ENGELMANN SPRUCE BEETLE (Dendroctonus engelmanni Hopk.) - The Engelmann spruce beetle returned to the status it held from 1939 to 1952 as the most destructive forest insect pest in the Rocky Mountains. The current outbreak on the Uncompahgre-San Juan National Forests in southern Colorado is attributed to a June 1950 windstorm which uprooted spruce trees over large areas. The spruce beetle population increased to epidemic proportions in this wind-damaged spruce and attacked and killed some 70 million board feet of timber on 24,000 acres in 1952 and 1953. A program of direct control was initiated during 1953 and continued this year. The intensity of the infestation has increased due to an unprecedented build-up of populations since 1952; however, very little spread in the outbreak occurred during 1954.

THE BLACK HILLS BEETLE (Dendroctonus ponderosae Hopk.) - Tree mortality caused by the Black Hills beetle continues at epidemic levels in parts of the Rocky Mountain region. Outbreaks of most serious proportions occurred in southern Colorado and in northern New Mexico although local centers of heavy loss also were reported from Wyoming and the Black Hills of South Dakota.

PINE ENGRAVER BEETLES, Ips spp. - Several species of pine engraver beetles reached epidemic status in many drought-stricken areas during the year, particularly in portions of New Mexico. Heavy Ips-caused losses were sustained in all age classes of trees where stand conditions have been degenerated as a result of prolonged drought. Salvage operations have been accelerated in these areas but logging thus far has not been able to keep pace with the rate at which timber is dying.

PINE BARK BEETLES, Dendroctonus spp. - The southwestern pine beetle (Dendroctonus barberi Hopk.) and associated species (D. convexifrons, D. approximatus, and D. arizonicus) were responsible for a majority of the loss in ponderosa pine in New Mexico and Arizona. The tree-killing caused by these bark beetles was concentrated in virgin stands and in the lower elevational zones of the ponderosa pine timber type. Operations to salvage the loss were initiated in most of the areas suffering severe tree-killing but no other direct action has been taken for possible control.

THE FIR ENGRAVER BEETLE (Scolytus ventralis Lec.) - The fir engraver beetle continued in epidemic status in the white fir stands of the Sandia Mountains in central New Mexico. Tree-killing in amounts ranging from 20 to 50 percent of the stand was common throughout the area; as much as 80 percent of the stand has been killed in canyons on the west side of the mountain range. In this epidemic, the engraver beetle has been able to build up large populations in trees that have been weakened from prior defoliation by spruce budworm, and prolonged drought.

THE DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae Hopk.) - Tree-killing as a result of attacks by the Douglas-fir beetle was widespread throughout the Rocky Mountains. A majority of the damage to Douglas-fir occurs in inaccessible areas where timber values are low. Losses have not been excessive on the better sites supporting Douglas-fir timber.

THE WESTERN BALSAM BARK BEETLE (Dryocoetes confusus Sn.) - Severe mortality of corkbark fir throughout the Alpine timber type in New Mexico and Arizona was caused by the western balsam bark beetle. Increasingly heavy damage to corkbark fir occurred in many areas, and groups of dead and dying firs in excess of 100 trees were common throughout the spruce-fir timber type.

THE SPRUCE BUDWORM (Choristoneura fumiferana (Clem.)) - Spruce budworm populations reached epidemic status on 870,000 acres of mixed conifer and spruce-fir forests in New Mexico and Arizona. Surveys showed that defoliation was severe on 65,000 acres in northern New Mexico with light to moderate defoliation occurring elsewhere. Tree-killing to date has been restricted largely to the understory but general mortality of saw-log timber is expected over much of the epidemic area if present infestation conditions continue. Plans are being made for direct control of the outbreak by aerial application of formulated DDT spray.

THE GREAT BASIN TENT CATERPILLAR (Malacosoma fragilis Stretch) - An outbreak of the Great Basin tent caterpillar that has occurred over extensive stands of aspen in northern New Mexico and to some extent in southern Colorado, since the late 1940's continued through 1954. Tree-killing as a result of defoliation has not been severe, but the pollution of streams and the nuisance created by multitudes of the caterpillar, continued to hamper the use of the infested areas for recreation.

THE PINE WHITE BUTTERFLY (Neophasia menapia (F. & F.)) - A heavy flight of the pine white butterfly was reported from the Coconino Plateau in Arizona during the year. This is the first report of abnormal activity of this insect in the southwestern states, although it has occurred in small numbers annually throughout most of the pine stands in the area. Neither abnormal defoliation or butterfly eggs were found in any area where the heavy flight was reported.

#### CONDITIONS IN THE CENTRAL STATES AND LAKE STATES

The reappearance of heavy infestations of the spruce budworm in northern Michigan and the discovery of a gypsy moth infestation in an area near Lansing, Michigan, were events of major importance during the year.

Prompt action was taken for control of the gypsy moth and surveys are being planned to determine the needs for control of the budworm. A vast reduction occurred in populations of the forest tent caterpillar in the Lake States but several other tree defoliators increased in numbers and caused severe damage in many areas.

THE SPRUCE BUDWORM (Choristoneura fumiferana (Clem.)) - A heavy infestation of the spruce budworm, covering approximately 2,500 acres, was discovered on a portion of the Keweenaw Peninsula in northern Michigan during 1954. This is the first reported presence of this major forest pest in the Lake States in many years. Light populations were also found in susceptible timber types at many locations in the Superior and Chippewa National Forests. It is probable that the species is present throughout a majority of the fir stands from western Shawano County in Wisconsin to the Keweenaw Peninsula in Michigan.

THE JACK-PINE BUDWORM (Choristoneura pinus Free.) - The jack-pine budworm has been an important forest pest in the Lake States for the past 30 years. During 1954, populations of this insect were at a low ebb in lower Michigan, whereas increased infestations were reported from the Upper Peninsula and in northeastern Minnesota. An increase in infestation also occurred in northeastern Wisconsin. While there has been little or no tree mortality in any of the areas of infestation to date, measures for control to prevent loss may become necessary in some places during 1955.

THE FOREST TENT CATERPILLAR (Malacosoma disstria Hbn.) - The forest tent caterpillar remained active in many areas throughout the Lake States. However, a vast reduction in populations occurred throughout Minnesota and Michigan and visible defoliation was not noticed appreciably in any area of the two states during the year. Tree defoliation was severe in northwestern Wisconsin, although a high degree of parasitism was noted in the larval brood. Reduced populations are expected in 1955.

PINE SAWFLIES, Neodiprion and Diprion spp. - In general, there has been a slight reduction in pine sawfly populations in the Lake States in recent years. Generally speaking, the European pine sawfly (N. sertifer (Geoff)) continued to fit this pattern in Michigan having caused less injury than it did in 1953; however, populations were at high levels in some susceptible stands. A first report of this insect in southern Wisconsin and southeastern Iowa was received and heavy defoliation was reported in pine plantations in Ohio, Indiana and Missouri. Diprion simile (Htg.) increased in numbers in many of the white pine stands in Minnesota and caused an appreciable amount of defoliation in some areas.

THE LARCH SAWFLY (Pristiphora erichsonii (Htg.)) - The infestation of larch sawfly which has occurred in northern Minnesota since the late 1940's declined in intensity during 1954. Although severe defoliation was noted in many areas of the State during the year, complete defoliation occurred primarily northwest and northeast of Red Lake and in the north central part of St. Louis County. Tree mortality was not observed during the year. In Wisconsin, infestations of most severe proportions occurred in the western portion of the State. The sawfly increased in abundance in Michigan but there was no heavy defoliation reported.

THE SARATOGA SPITTLEBUG (Aphrophora saratogensis (Fitch))- Although the range of the Saratoga spittlebug includes the eastern and southeastern United States, excessive damage caused by this forest pest is known only from portions of Wisconsin and Michigan. Infestations in both states were somewhat reduced during 1954 except in local areas in northern Michigan and on approximately 15,000 acres in Wisconsin.

THE PINE TORTOISE SCALE (Toumeyella numismaticum (P. & M.)) - The pine tortoise scale often is a serious pest of jack pine throughout the Lake States. During 1954, infestations of this insect developed to epidemic proportions in Wisconsin and Michigan and heavy tree mortality occurred in many areas. Prompt action on the part of state and private agencies in initiating control, coupled with a high degree of natural control in the scale population, resulted in a substantial reduction of infestations in Wisconsin. However, epidemic conditions existed in portions of Schoolcraft County in Michigan; also moderate to heavy infestations were reported from five counties in Minnesota.

THE WALKINGSTICK (Diaperomera femorata (Say)) - Heavy feeding by the even-year brood of the walkingstick was reported from northeastern and western Wisconsin and defoliation was noticeable in a number of localities in Michigan. Infestations were light in Minnesota.

THE EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana (Schiff)) - Populations of the European pine shoot moth have increased in many areas in the Lake States during the past few years and infestations of serious proportions were reported in parts of Michigan and Wisconsin during 1954. Direct measures for control are planned in some areas to reduce infestations and loss.

THE WHITE PINE WEEVIL (Pissodes strobi (Peck)) - The white pine weevil was reported to be well distributed on a variety of pine hosts in the Lake States. As much as 60 percent of the terminals of four pine species were damaged in local areas in Wisconsin. Heavy infestations were also reported from Michigan, whereas damage was scattered and generally of light intensity in all areas in Minnesota.

**THE YELLOW-HEADED SPRUCE SAWFLY (Fikonema alaskensis (Roh.))** - This sawfly was abundant in many of the spruce-fir stands throughout northern Minnesota. A moderate infestation was reported from one area in Wisconsin and from the Keweenaw Peninsula in upper Michigan.

**THE VARIABLE OAK LEAF CATERPILLAR (Heterocampa mantee (Dblidy.))** - High populations of this insect developed over large areas in northwestern Minnesota. However, inasmuch as a majority of defoliations occurred late in the season, no serious damage was caused to the affected trees.

**THE BIRCH LEAF SKELETONIZER (Bucculatrix canadensisella Chamb.)** - A general epidemic of this insect occurred on birch throughout the northern part of the Lake States. Tree damage that resulted from the outbreak was not serious due to the lateness of the season when defoliation occurred.

**THE SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus (Marsh))** - This insect pest, a vector of the Dutch elm disease, has increased in numbers in many parts of the Lake States during past years and during 1954 was very abundant in several areas in southern Wisconsin. Results of special surveys to determine incidence of attack in other areas were not received, except from southwest Missouri. In that region from 4 to 10 percent of the American elms were attacked in local areas.

**THE GYPSY MOTH (Porthetria dispar (L.))** - The gypsy moth was discovered in Lansing, Michigan, in May, 1954. Prior to this time, this insect had not been established in any area outside of the northeastern states since its introduction into the United States in 1869. Immediate action on the part of Federal, State, and private agencies resulted in highly successful control of this major pest on nearly 100,000 acres. Moth collections were made at four points within a radius of 25 miles west of the control area, indicating possible spread of the insect from the initial outbreak center. Survey results are as yet incomplete and the status of infestations in adjacent areas is not now known.

**THE LARCH CASEBEARER (Coleophora laricella (Hbn.))** - Populations of the larch casebearer declined throughout most of the Lake States; however, heavy defoliation was reported from the northeast and central portions of Wisconsin. The insect was lightly distributed in Minnesota.

CONDITIONS IN THE SOUTHERN AND SOUTHEASTERN STATES

The severe drought that has continued throughout the southern and southeastern states for the past few years undoubtedly was a major factor in favoring increased bark beetle activity during 1954. Prompt action on the part of forest land-owners and managers in control prevented what otherwise might have developed into catastrophic outbreaks of the southern pine beetle and the black turpentine beetle. Present infestations are such as to require a continuation of control efforts in 1955 to avert serious losses.

THE SOUTHERN PINE BEETLE (Dendroctonus frontalis Zirm.) - Populations of the southern pine beetle continued at an epidemic level in the mountains of western North Carolina and in eastern Tennessee. Beetle activity, resulting in severe tree-killing, also occurred in eastern and central North Carolina, in Virginia, in southwest Mississippi, and in central and northern Alabama. Unless infestations are reduced by natural control factors, timber losses are expected to continue into 1955. It is expected that an additional build-up of beetle populations will occur in blow-down trees resulting from Hurricane Hazel in the southeastern states.

PINE ENGRAVER BEETLES, Ips spp.- The widespread drought that has prevailed over the southern and southeastern states during the past few years has also resulted in a large-scale build-up of Ips beetle populations in all areas. Losses resulting from engraver beetles during the year were most severe in eastern Texas, southern Georgia and northern Florida.

THE BLACK TURPENTINE BEETLE (Dendroctonus terebrans (Oliv.)) - The black turpentine beetle has for several years been a major pest of pines in Mississippi, Alabama, Louisiana, eastern Texas, and to some extent, in northern Florida. Current losses caused by this pest were much less than those sustained during 1952 and 1953 due to active work by State and private agencies in control.

PINE SAWFLIES, Neodiprion spp. - Damage to southern pines by several species of pine sawflies was not serious in the southern and southeastern states during 1954. Light infestations were recorded in portions of South Carolina, Virginia, Alabama, Arkansas, and Louisiana. The heavy infestation of Neodiprion exitans which caused severe defoliation over some 70,000 acres in southern Alabama during 1952 was reduced to endemic status through natural control factors in 1954.

THE FALL CANKERWORM (Alsophila pometaria (Harr.)) - Severe defoliation of Appalachian hardwoods by the fall cankerworm occurred in portions of North Carolina. Infestations of this insect have been persistent for three years and artificial measures for control may be necessary in heavily used recreational areas during 1955.

PINE TIP MOTHS - The pine tip moths (Rhyacionia frustrana (Comst.)) and (R. rigidana (Fern.)) were reported as causing severe injury to loblolly pine throughout the Piedmont Plateau area and in seed tree orchards elsewhere in the southeastern states.

THE PALES WEEVIL (Hylobius pales (Hbst.)) - The pales weevil caused severe damage to seedling pines in areas where clear cutting practices have been followed by immediate planting. Damage caused by this insect increased over that reported in previous years.

THE FOREST TENT CATERPILLAR (Malacosoma disstria Hbn.) - Approximately 60,000 acres of bottomland gum were defoliated by the forest tent caterpillar in the vicinity of Mobile, Alabama, during the spring months of 1954. Trees in the affected area refoliated during the summer and no tree mortality occurred as a result of the infestation.

#### CONDITIONS IN THE NORTHEASTERN STATES

A large-scale outbreak of the gypsy moth in New England and New York was brought under control during the year by the combined action of an extensive aerial spray program, a high degree of parasitism, and a virus disease which affected the larval population. A severe infestation of the forest tent caterpillar occurred in New York, Vermont, New Hampshire, and Maine.

THE SPRUCE BUDWORM (Choristoneura fumiferana (Clem.)) - Defoliation caused by the spruce budworm showed a marked reduction in Maine and northern Vermont. Surveys of budworm egg masses in both states indicate that a light infestation can be expected in all areas during 1955. Cooperative control efforts during the year were highly successful in suppressing a local outbreak in the vicinity of Madawaska Lake, Aroostook County, Maine.

THE FOREST TENT CATERPILLAR (Malacosoma disstria Hbn.) - Severe outbreaks of the forest tent caterpillar were recorded in New York, Vermont, New Hampshire, and Maine. The defoliated area in New York covered about 15 million acres whereas that in Vermont was limited to some 200,000 acres. A majority of all areas were lightly infested. Direct control measures were successfully applied on approximately 20,000 acres of sugar maple orchards in Vermont and in areas devoted to heavy recreational use in New York.

THE GYPSY MOTH (Porthetria dispar (L.)) - The combined forces of natural and artificial control resulted in a large scale reduction of the gypsy moth in New England and New York. Aerial application of formulated DDT sprays by state organizations successfully controlled

the insect on nearly 1-1/2 million acres. This control effort, plus a high degree of parasitism and a virus disease affecting the larval population, resulted in a drastic reduction of infestations in all areas.

THE RED PINE SCALE (Matsucoccus resinocae) - This scale insect continued as a major pest on red pine in portions of Connecticut and New York. Natural factors reduced scale populations in some areas but infestations remained at relatively high levels in other localities. No new centers of infestations were discovered in 1954.

THE WHITE PINE WEEVIL (Pissodes strobi (Peck))- General observations indicate that heavy attacks of white pine weevil occurred throughout New York. Less severe infestations were recorded in all of the other northeastern states.

THE BALSAM WOOLLY APHID (Chermes piceae Ratz) - An appreciable increase in damage caused by the balsam woolly aphid occurred in the balsam fir stands in Maine, New Hampshire, and Vermont. Trees of larger diameter were most vulnerable to attack by this insect. Single trees, as well as trees in small groups, were killed over wide areas.

THE BEECH SCALE (Cryptococcus fagi (Baer))- The combined attack of the beech scale and a nectria fungus caused an alarming amount of beech mortality in western Maine, northern New Hampshire and in the Catskill Mountains of New York. Heavy attacks of the scale and the fungus were found for the first time in Vermont.

SHOOT AND TIP MOTHS - The European pine shoot moth (Rhyacionia buoliana (Schiff)) and the Nantucket pine tip moth (R. frustrana (Comst.)) continued to cause severe damage to young pine stands in all northeastern states. Infestations were so severe in some areas that the planting of red pine was abandoned.

SAWFLIES - Outbreaks of several species of Neodiprion sawflies occurred in pine stands in portions of Maryland, New York, New Jersey and Connecticut. Application of formulated insecticides on most species and the liberation of a virus disease affecting one species of sawfly larvae gave excellent results in control.

#### CONDITIONS IN ALASKA

Forest insect activity throughout the Territory of Alaska was less extensive than during 1953. With the exception of the black-headed budworm epidemic on the Tongass National Forest, no serious infestations were reported.

THE BLACK-HEADED BUDWORM (Acleris variana Fern.) - The outbreak of black-headed budworm covered approximately 6,340,000 acres of the Tongass National Forest, a reduction of about 10 million gross acres from that reported in 1953. This outbreak was situated within the northern portion of the Tongass. Throughout the southern portion, and in the Yakutat area, budworm activity died out during the year. Defoliation of Sitka spruce and western hemlock occurred on 400,000 acres in the Glacier Bay National Monument, but infestations were not heavy and little tree damage occurred.

THE HEMLOCK SAWFLY (Neodiprion tsugae Midd.) - The outbreak of hemlock sawfly which has extended over much of the southern half of the Tongass National Forest in past years died out during 1954. The sawfly infestation continued in the northern portion of the Tongass but populations were light in most areas.

THE WESTERN RUSTY TUSSOCK MOTH (Notolophus antiqua L.) - The western rusty tussock moth was very prevalent in the vicinity of Anan Creek and Neets Bay. Damage to hemlock was not severe.

CEDAR BARK BEETLES (Phloeosinus spp.) - Cedar bark beetles were much in evidence in attacks on western red and Alaska yellow cedars. Infestations appeared to be most common where cedar was growing on muskegs and on the poorer sites.

GEOMETRID DEFOLIATOR - An outbreak of an unidentified Geometrid (subfamily Larentiinae) occurred on Sitka alder in the vicinity of Valdez. Defoliation was almost complete over several thousand acres. However, in mid-summer, symptoms of disease were noted in the larval population and it may be that the outbreak will be greatly reduced next year.

THE LARCH BARK BEETLE (Dendroctonus simplex Lec.) - Vast areas of larch in the upper Kuskokwim River drainage died during 1953 from unknown causes. Examination of some of these larch stands revealed that the larch bark beetle was distributed lightly in most of the trees. It was not determined whether or not the insect was directly responsible for the death of the trees.

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**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL BRANCH**

**AGRICULTURAL RESEARCH SERVICE**

**UNITED STATES DEPARTMENT OF AGRICULTURE**

# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Economic Insect Survey Section  
Plant Pest Control Branch  
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## COOPERATIVE ECONOMIC INSECT REPORT

## Highlights of Insect Conditions

GREENBUG light to heavy in several Texas Panhandle counties. Also widely scattered heavy infestations in north central area of this State, but populations very low in western half of Oklahoma and only one colony found in Kansas. (page 221 ).

WINTER GRAIN MITE heavy widespread on small grains in some areas of Texas, but low in western Oklahoma, (page 221 ).

YELLOW CLOVER APHID increasing in southern Arizona. (page 223 ). Earlier report from Nevada indicated possible problem later in southern area of that State.

Severe damage from SIX-SPOTTED MITE to citrus expected in Florida. (page 223 ).

Heavy increase of VEGETABLE WEEVIL in tobacco beds at Quincy, Florida. Slight damage to tobacco beds in South Carolina. Adults taken in Maryland. (page 224).

BOLL WEEVIL survival counts from Florence County, South Carolina and Washington County, Mississippi. (page 225 ).

LIGHT TRAP COLLECTIONS in Florida, Arkansas and Tennessee. (page 227 ).

Summary of INSECT CONDITIONS - 1954 - in Missouri. (page 230 ).

SURVEY METHOD for European red mite. (page 241 ).

GREEN PEACH APHID abundant at Charleston, South Carolina. (page 224 ).

Map of MORMON CRICKET infestation expected in 1955. (after page 222). See CEIR 5(8) 158 for writeup.

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Reports in this issue are for the week ending March 11, 1955, unless otherwise designated.

WEATHER FOR THE WEEK ENDING MARCH 14, 1955

Duststorms in the Great Plains, tornadoes in the Indiana-Ohio-Pennsylvania area, forest fires in the Southeast, the Ohio River flood, and unseasonably early spring warmth featured the week's weather.

An intense instability line, that formed in the area from Wyoming to New Mexico on the 10th with a depression centered over southeastern Montana moved rapidly eastward attended by strong dust blowing wind of 40 to 60 m. p. h. over the Great Plains. Gusts up to 95 m. p. h. were recorded near Boulder, Wyo. and great clouds of dust were reported extending to a height of 19,000 feet in some areas. The winds caused considerable loss of topsoil and much damage to wheat, in the droughty sections of eastern Colorado, southwestern Kansas, northeastern New Mexico and the Panhandles of Oklahoma and Texas

Severe thunderstorms and a number of tornadoes occurred in the low Lake region and Ohio Valley as the active squall line moved over that area early on the 11th. Tornadoes were reported from east-central Indiana, portions of eastern Ohio, and western Pennsylvania early the 11th, with preliminary newspaper reports of a million dollars damage in each of the three States and two deaths in Pennsylvania.

Numerous forest fires during the week affected thousands of acres in the southern portions of Alabama and Georgia and adjacent areas. Winds and continued warm, dry, sunny weather increased the fire hazard in this critically dry area.

The Ohio River, experiencing the highest flood stages since 1948 during the past 2 weeks, is now receding at all points. Flood peaks ranged from 3 to more than 10 feet above flood stage along portions of the Ohio River and overflows occurred also in tributary streams in Ohio, West Virginia, Kentucky and Indiana.

At the beginning of the week cold weather covered nearly all of the Country, with the lowest temperatures ranging from  $-31^{\circ}$  at International Falls, Minn., on the 7th and  $-3^{\circ}$  at Caribou, Maine, on the 9th to freezing and frosts as far south as the interior of northern Florida, nearly to the Gulf Coast, and along the North Pacific Coast. This was followed by a rapid change to unseasonably early warmth east of the Rockies, establishing new records of the highest temperature for so early in the spring. Among these were  $85^{\circ}$  at Wichita, Kans.,  $86^{\circ}$  at St. Louis, Mo.,  $61^{\circ}$  at (Weather continued on page 229 ).

## CEREAL AND FORAGE INSECTS

GREENBUG (Toxoptera graminum) - TEXAS - Infestations on wheat vary from light to heavy in Swisher, Hale, Castro, Deaf Smith, Lipscomb, Hansford, Moore, Hutchinson, Ochiltree and Hemphill Counties. Infestations heaviest in Swisher County with as high as 2,000 greenbugs per foot in spots in one field. Less than one per foot on small grains in Wichita, Childress, Wilbarger, Foard and Hardeman Counties. Widely scattered fields have heavy infestations in spots in north central area, especially in Denton, Wise, Tarrant, Dallas, Rockwall, Hunt, Collin, Cooke, Grayson and Fannin Counties. (Davis, Chada, Daniels, Simonds). OKLAHOMA - Populations very low in the 23 counties in the western half of the State surveyed February 23 - March 6. Found in only 13 of the 143 fields inspected and averaged only 0.3 per linear foot in all fields. (Henderson). KANSAS - None found in areas surveyed in 14 counties in southeastern area, western 3 tiers of counties and in the 16 counties just east of latter area. (Matthew, DePew, Harvey). Wheat and barley examined in 67 counties during past two weeks showed greenbugs only in one field in northern part of Harper County. (Matthew).

BROWN WHEAT MITE (Petrobia latens) - TEXAS - Light local infestation on wheat in Denton, Cooke, Collin, Dallas and Tarrant Counties; medium to heavy in Swisher, Potter, Hutchinson, Hansford, Ochiltree, Lipscomb, Hemphill, Childress, Hardeman and Foard Counties. (Chada, Davis). KANSAS - Populations very low in western area. Highest counts between 6 and 24 mites per 5 feet of row. (DePew). OKLAHOMA - Found in 69 of 143 fields inspected in 23 counties in the western half of the State during February 23 - March 6. Highest populations found in Beaver County with an average of 36 per linear foot in 10 fields inspected. Five fields in the most heavily infested portion averaged 225 mites per linear foot. Fairly high populations in Woodward County (30 per linear foot) and Dewey County (25 per linear foot). As in previous surveys, the only high populations were found in fields planted continuously to wheat. (Henderson).

WINTER GRAIN MITE (Penthaleus major) - TEXAS - Attacking wheat, oats, barley. Heavy widespread infestations in continuously cropped fields, especially in Denton, Cooke, Grayson, Collin, Wise, Tarrant, Dallas, Johnson, Rockwall, Hill, McLennan and Bell Counties in north central and central part of State, and in Kendall, Kerr and Gillespie Counties in the southern area. Control necessary to save grain crops in north central area. (Chada). OKLAHOMA - Found in following counties in western half of State,

February 23 - March 6 (figure is number of fields infested):  
Kingfisher 2, Washita 1, Tillman 4, Kay 1 and Grant 1.  
Populations were quite low except for 2 fields in Tillman  
County. (Henderson).

ARMY CUTWORM (Chorizagrotis auxiliaris) - KANSAS - Counts  
low in wheat fields of most of northwestern and southwestern  
counties surveyed. Highest count, 8 larvae per 5 linear feet  
of row. (DePew). OKLAHOMA - Found in 20 of 143 fields  
inspected in western part of State February 23 - March 6.  
Highest population in any field was 0.4 per linear foot. Higher  
populations, up to 5 per linear foot, found on border of wheat  
land adjoining pasture areas, but even here populations usually  
quite low. (Henderson).

ENGLISH GRAIN APHID (Macrosiphum granarium) - KANSAS -  
Of 14 southeastern counties surveyed, this species found only in  
one wheat field in Montgomery and Elk Counties. Counts average  
1-3 wingless adults per 25 sweeps of a 15-inch net. (Matthew).  
A colony found at one location in each of Finney and Logan Counties.  
(DePew). ARKANSAS - Spotty infestations of small grains  
averaging up to 75 per foot of tiller row in east-central area,  
(Warren).

CHINCH BUG (Blissus leucopterus) - KANSAS - Actively moving  
about in clumps of bunch grass in the southeast. Active bugs  
found also in wheat and barley fields in Montgomery and Elk  
Counties, but counts averaged only 1-3 bugs per 25 sweeps of a  
15-inch net. (Matthew).

CONCHUELA (Chlorochroa ligata) - TEXAS - Medium local  
infestation on small grains in Dimmit County. Infestation was  
on wheat and barley but now declining. (Richardson).

A SPIDER MITE (Tetranychina apicalis) - FLORIDA - Spotted  
infestations on white clover at Gainesville. Five to 25 per  
leaf. All stages present. (Kuitert).

CORN FLEA BEETLES - ILLINOIS - Active and feeding in grasses  
in Champaign County. (Petty, March 2-3).

AN ARMYWORM - TEXAS - Light local infestation on oats in  
Kaufman County. (Davis, Garner, Randolph).

AN ERIOPHYID MITE (prob. Aceria tulipae) - KANSAS - Abundant  
in a field of volunteer wheat in southern Osage County. (Matthew).









RICE WATER WEEVIL (Lissorhoptrus simplex) - ARKANSAS - In trash samples processed for hibernation studies the average number of weevils found per acre was 7,913. All of the stubble fields and most of the roadside sites produced no weevils but trash from one roadside site yielded weevils at rate of 12,100 per acre. In trash from woods weevils ranged from 4840 to 72,600 per acre an average of 21,296 per acre from this type of situation. (Warren).

YELLOW CLOVER APHID (Myzocallis trifolii) - ARIZONA - Increased sharply in all areas of southern Arizona, though still not at economic level in some parts. Where no controls used in Yuma area approximately 700 acres, about 50-50 old and new stands, have been lost and about 12,000 acres, mostly old stands, partly lost. No stands lost where controls used in time. (Ariz. Coop. Rept.).

APHIDS - TEXAS - Medium to heavy local infestations on alfalfa in Falls and McLennan Counties. (Parencia).

CLOVER LEAF WEEVIL (Hypera punctata) - ILLINOIS - Four small larvae per square foot in 1 field in Iroquois County, 16.5 in 1 field in Will County and 14.5 in 1 field in DeKalb County, March 2-3. (Petty). PENNSYLVANIA - Larvae abundant on legume hay, March 4, Washington County. (Udine).

A CUTWORM (Agrotis gladiaria) - PENNSYLVANIA - Numbers active on legume hay, March 4, Washington County. (Udine).

#### FRUIT INSECTS

SIX-SPOTTED MITE (Tetranychus sexmaculatus) - FLORIDA - Infestations continue to increase. In some groves defoliation is occurring and mites being found on new leaves. The outlook is for severe damage. (Pratt, Thompson, Johnson).

PLUM CURCULIO (Conotrachelus nenuphar) - GEORGIA - First adult of season taken on peach tree in Fort Valley area March 1. Hiley peach trees 1 to 5 percent in bloom at this date. (Snapp).

ORCHARD MITES - UTAH - Brown mite eggs extremely numerous on apple and peach trees in some Moab orchards. (Tibbetts, Knowlton).

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - SOUTH CAROLINA - On peach in Saluda and Eutawville. Adults damaging peach leaves on about 7 acres. (Sanders).

### TRUCK CROP INSECTS

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - SOUTH CAROLINA - Larvae slightly damaging turnips and some young cabbage as well as tobacco in plant beds in some area (Cuthbert, Nettles). MARYLAND - Adults collected on chickweed in St. Marys City, St. Marys County. Det. R. E. Warner. (U. Md., Ent. Dept.). FLORIDA - Averaging 1 to 3 larvae per plant in tobacco plant beds at Quincy. Heavy increase causing all growers to apply control measures. (May).

CABBAGE APHID (Brevicoryne brassicae) - SOUTH CAROLINA - Infestation light to heavy on cabbage with many plantings requiring control in the Charleston area. (Cuthbert). CALIFORNIA - Infestations light in most young cabbage fields, but heavy on some roadside mustard. (Campbell, Mar. 4).

CUTWORMS - CALIFORNIA - A cutworm, probably Peridroma margaritosa, causing considerable injury in cabbage fields in Orange County. Good control obtained. (Campbell, Mar. 4).

APHIDS - GEORGIA - Heavy infestation on 50 acres of cabbage in Brooks County. (Jordan). SOUTH CAROLINA - A root aphid abundant in many turnip fields of the Charleston area. (Cuthbert).

GREEN PEACH APHID (Myzus persicae) - SOUTH CAROLINA - Abundant on spinach in Charleston area. Control required in nearly all plantings. (Cuthbert).

SEED-CORN MAGGOT (Hylemya cilicrura) - SOUTH CAROLINA - Injuring buds of an occasional plant in many spinach plantings in the Charleston area. (Cuthbert).

TURNIP APHID (Rhopalosiphum pseudobrassicae) - SOUTH CAROLINA - Infestations generally heavy on crucifers in Charleston area. (Cuthbert).

SERPENTINE LEAF MINER (Liriomyza sp.) - FLORIDA - Averaging 2 to 3 adults per plant on tomato plants in Dade County Feb. 25. Three (all stages) per bean leaf, 2-3 per potato leaf and 3-4 per tomato plant in this county, March 1. More abundant than at any time during winter. Controls being applied. (Wolfenbarger).

ONION MAGGOT (Hylemya antiqua) - TEXAS - In one field on onions in Dallas County. Apparently in one particular purchase of onions as not found in others in adjoining fields. (Milikien).

POTATO TUBERWORM (Gnorimoschema operculella) - UTAH - Known distribution in Utah confined to Enterprise, Beryl, Parowan, Paragonah, Cedar Valley, Santa Clara, Modina areas of Washington and Iron Counties. (Hutchings, Knowlton).

STRAWBERRY APHID (Capitophorus fragaefolii) - CALIFORNIA - Building up to damaging numbers, both old and new in strawberry fields of Orange and Los Angeles Counties. Most growers applying insecticides. (Campbell).

THRIPS - ARIZONA - Warrant control in one 50-acre field of onions at Phoenix March 3. (Ariz. Coop. Rept.).

TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus) - CALIFORNIA - Building up in old strawberry plantings. Numerous enough to require treatment. (Campbell, March 4).

### COTTON INSECTS

#### Boll Weevil Survival Counts:

SOUTH CAROLINA - Surface woods trash examinations for surviving boll weevils were made from Feb. 24 to March 4 in Florence County. The examinations showed live boll weevils at various rates per farm ranging from zero to 15,488 per acre with an average of 2,178 per acre. Although the number of weevils found per acre in the fall examinations in 1954 (2,299) was low compared to the fall of 1953 when 3,533 were found per acre and to a 12-year average of 4,355, the number found in the spring examinations for 1955 (2,178) was more than the number found in the spring of 1954 (1,936). This was due to a winter survival of 94.7 percent for the winter of 1954-55, compared with a survival of 54.7 percent for the winter of 1953-54. Only in three other years (1949, 1950, and 1953) for the period 1942-1955 has a higher percent survival been found.

Following records are on other insects found in these examinations. Fuller rose beetle (Pantomorus godmani) survival was only 14.3 percent compared with survival of 94.7 percent for boll weevil. The numbers of bean leaf beetle (Cerotoma trifurcata), lady beetles, and spotted cucumber beetles (Diabrotica undecimpunctata howardi) found in the spring examinations were low and approximately the same as the number found in the fall examinations. (Walker).

MISSISSIPPI - Ground trash samples for hibernating boll weevils were collected at 5 points in Washington County March 7-8. Examination of these samples showed that the average number of live weevils per acre surviving the winter was 1,646. (Dunnam, Merkl et al). Records of ground trash examinations for Washington County for previous years are not available.

#### INSECTS AFFECTING MAN AND ANIMALS

MOSQUITOES - FLORIDA - At Gainesville Culex restuans averaged over 50 larvae per dip and C. salinarius adults have been a biting pest out-of-doors and inside for several days. (Mead). Aedes spp. and Psorophora ferox were collected by insect net in Alachua County. Of these A. infirmatus was the most abundant (80 percent). (Weems, Morse).

HOG LOUSE (Haematopinus adventicius) - PENNSYLVANIA - Moderate infestation of hogs in Butler County, March 4. (Adams).

CATTLE LICE - UTAH - Common in San Juan County. Controls underway. (Knowlton, Rudd). Have been quite a problem in Utah County. Total of 35,000 head of cattle will be treated one or more times. (James, Knowlton).

COMMON CATTLE GRUB (Hypoderma lineatum) - GEORGIA - Infestation in scalp of human in Atlanta. Larvae apparently migrated from chest area to scalp before emerging. (Blasingame).

BLACK WIDOW SPIDER (Latrodectus mactans) - MARYLAND - Four found under a stone in a yard in Silver Spring. (Sherman).

POULTRY BUG (Haematosiphon inodorus) - ARIZONA - Reported invading schoolhouse 30 miles east of Kingman and biting the children. (Ariz. Coop. Rept.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

NANTUCKET PINE MOTH (Rhyacionia frustrana) - MARYLAND - Heavily infesting 109 red pines in Baltimore County. Pupae present. (U. Md., Ent. Dept.).

BENEFICIAL INSECTS

MITES - KANSAS - Numerous grasshopper mites, probably Eutrombidium trigonum. in an alfalfa field in Labette County. Found under and in grass clumps along a hedge row. (Matthew).

MISCELLANEOUS INSECTS

AN ANT (Tapinoma melanocephalum) - FLORIDA - Adults extremely active (some established colonies) in building at Gainesville. This species usually confined to southern section, and is a new record for this area. (Hetrick).

CLOVER MITE (Bryobia praetiosa) - TENNESSEE - Infesting homes in scattered areas across State. (Mullett ).

A BARK BEETLE (Hylastes sp.) - PENNSYLVANIA - Pine flooring laid over cement floor severely damaged, in house in Westmoreland County. (Udine).

Light Trap Collections:

FLORIDA - Some of the more important insects collected in light trap at Homestead between January 31 - February 7 include the following: Nezara viridula 3, Agrotis ypsilon 7, Estigmene acrea 1, Etiella zinckenella 3, Feltia subterranea 3, Laphygma frugiperda 1, Mocis latipes 14, Peridroma margaritosa 1, Prodenia eridania 2, P. dolichos 6, P. ornithogalli 2, Pseudaletia unipuncta 3. (Wolfenbarger). Collections at Gainesville February 3-7 contained 1 Prodenia ornithogalli. (Denmark).

TENNESSEE - The 1955 light trap program was started during week ending March 9 with the placement of traps at 7 substations in following counties: Shelby, Madison, Lawrence, Maury, Robertson, Cumberland, Knox and Greene. Insects caught during the week are as follows: Caenurgina erectea in small numbers from all reporting stations, Hylemya cilicrura and Agonoderus sp. in small numbers at most stations, one Agrotis ypsilon in Madison County, 1 each of Peridroma margaritosa in Shelby and Maury Counties. (Dozier, Stanley).

ARKANSAS - At Stuttgart, 7 Pseudaletia unipuncta and 4 Agrotis ypsilon adults taken March 5-10. At Fayetteville, 7 P. unipuncta taken March 10. (Warren).

#### RECENT IMPORTANT INTERCEPTIONS AT PORTS OF ENTRY

Living larvae, identified as Epicaerus sp. prob. cognatus Sharp, the so-called "picudo de la papa" (potato weevil) were intercepted recently in potato tubers from Mexico in baggage at Nogales, Arizona (Wilson) and in ships' stores at Houston, Texas (Ward). This insect has been reported a serious pest of potatoes in parts of Mexico. Potato plantings particularly in the mountainous districts are said to suffer considerable annual injury from its attack. Injury to the potato is caused by the larvae tunnelling in the tubers in all directions. Extensive galleries are hollowed out that are partially filled with frass as the larvae develop to a size of approximately 15 mm. in length.

Observations on the biology of Epicaerus cognatus in Mexico indicate that the adults emerge from the soil in May. Eggs are deposited on the potato foliage between May and October. Eggs hatch in about 18-20 days and the newly hatched larvae drop to the soil, seek out and bore into potato tubers. The larvae feed in the tubers for 3-5 months, then leave the tubers to form earthen cells in soil where they overwinter. Pupation occurs in March. In experimental tests, adult weevils were found to oviposit during the third summer after 2 winters of hibernation in cracks in the soil or under leaves, or other debris. Adults feed on potato foliage.

Living larvae of this potato weevil have been intercepted on numerous occasions during recent years in potato tubers from Mexico at various ports. It is not known to occur in the United States. (Compiled by Plant Quarantine Branch)

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### Weather Continued

Muskegon, Mich., and 68° at Hartford, Conn. On the 10th; 94° at Dallas, Tex., 89° at Meridian, Miss., and 88° at Montgomery, Ala. on the 11th; and 89° at Jacksonville, Fla. and 88° at Charleston, S. C. on the 12th and 13th. Temperatures for the week averaged much above normal in nearly all areas, except a few degrees cooler than usual in the Pacific Northwest. The plus anomalies exceeded 12° over most of the western and middle sections of the Great Plains.

Precipitation was light over the greater portion of the country, with no measureable amounts reported from the lower portion of the western Plains, the middle Great Plains, much of Missouri and southern Illinois, the middle Gulf coastal area, southern Georgia and most of Florida. Heavy amounts were generally limited to local areas near the Northeastern Border, northern sections of Indiana and Ohio, and along the north Pacific coast.

The warm weather generally caused considerable reduction in the snow cover, except in the Pacific Northwest. East of the Rockies snow still covers the ground in northeastern North Dakota, northern portions Wisconsin and Michigan, northeastern New York, and northern and central New England. The increases in Washington and Oregon amounted to as much as 2 feet in the Cascades. There is 164 inches of snow on the ground at White Pass, Wash., 157 inches at Government Camp, Oregon, and 102 inches at Soda Springs, Calif. (Summary Supplied by U. S. Weather Bureau).

## SUMMARY OF INSECT CONDITIONS - 1954

### MISSOURI

Reported by G. W. Thomas  
and Stirling Kyd

The second and third year of drought and semi-drought conditions in Missouri severely reduced all crops to such a degree that it was impossible to get an accurate picture of the total insect damage to any given crop over the entire growing season. Several insects occurred in outbreak proportions over the State including grasshoppers, armyworms (2 broods), variegated cutworm, pea aphid, and garden webworm. Many other localized insect outbreaks occurred in many areas and on many crops.

#### Field Crop Insects (Corn Insects) -

SEED-CORN MAGGOT (Hylemya cilicrura) appeared in very light infestations in late April in southeast area and gradually increased to peak during latter half of May. Heavily damaged fields were widely scattered over southern two-thirds of the State with heaviest damage in Saline County. One factor that tended to keep injury to a minimum was the large percentage of insecticidally-treated seed. SEED-CORN BEETLES (Agonoderus lecontei) were light to moderate causing considerable damage to corn, especially in river bottom fields in many areas; counts ranged from 0.01 to 4 beetles per linear foot of row. WIRE-WORMS (primarily Melanotus) were moderate to very severe locally in many areas. Damage from light to total destruction, necessitating replanting. CLAY-BACKED CUTWORM (Agrotis gladiaria) injury became evident early in May when high populations built up in southeast area resulting in moderate damage to total destruction of early-seeded corn. Scattered infestations were numerous over the State. Approximately 15,000 acres replanted as result of damage. BLACK CUTWORM (Agrotis ypsilon) infestations were generally light and scattered in southern half, but heavy damage occurred in areas of north Missouri. Counties suffering heaviest loss were Carroll and Atchison. Approximately 45,000 acres replanted at least once due to damage. CORN ROOT WEBWORM (Crambus caliginosellus) damage was less than previous two years; 3-7 percent reduction in stands in a few scattered fields.

CORN FLEA BEETLE (Chaetocnema pulicaria) counts averaged only 1 per plant. Lower populations aided by drought conditions reduced Stewart's disease to lowest point in last several years. ARMYWORM (Pseudaletia unipuncta), although not considered a primary pest of corn, caused heavy damage to many fields over the southern two-thirds of State. Probably 1500 to 2000 acres lost, although drought reduced value of lost acres to small amount. SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) root feeding injury was much heavier than past years over southern two-thirds, although the drought-stricken corn fields failed to show characteristic lodging. During July and August very heavy populations of adults appeared on tassels and silks; averaged 5-7 beetles per stalk in many fields central area. The primary area having trouble with NORTHERN CORN ROOTWORM (Diabrotica longicornis) is the northwest quarter, although light numbers occur over northern half of State. Heavy root feeding damage was confined to scattered, individual fields. During August, heavy numbers of adults, 3 to 30 per plant in many northwest fields caused considerable damage to silks.

Heavy migration of CHINCH BUGS (Blissus leucopterus) from small grains to corn occurred in late June and early July. Moderate to heavy injury resulted from high populations and drought conditions. Fall abundance survey showed practically all counties north of Missouri River with severe overwintering populations and 10 northeast counties with very severe populations. High numbers also in extreme southeast cotton growing area. Most of northern counties averaged 2,000 to 5,000 chinch bugs per square foot of bunch grass. Heavy CORN EARWORM (Heliothis armigera) infestations and damage in whorls occurred over the southern two-thirds of the State by late June. Succeeding generations damaged ears, 60-97 percent some areas, wherever drought allowed the formation of shoots. Average of 7.5 percent of the grain ruined by secondary  $\alpha$  fungi as a result of feeding. CORN SAP BEETLE (Carpophilus dimidiatus) damage was greatly reduced over past two years, probably due to the drought. There was again considerable evidence that this pest could and does damage ears without aid of corn earworm. GRASSHOPPERS (mainly Melanoplus differentialis, M. bivittatus and M. femur-rubrum) - General, heavy populations probably caused more damage to corn than all of the other corn insects combined. Severe damage occurred from June through September over practically entire State. Heaviest injury confined to western half of State and along Missouri River. Due to the effects of drought on grain

in heavily infested areas, the loss of corn by grasshoppers must be figured on forage and silage production. Adults varied from 4 to 30 per square yard in many fields resulting in loss from 5 percent to total destruction. EUROPEAN CORN BORER (Pyrausta nubilalis) first generation was lighter than usual except in extreme northwest counties where higher infestations occurred. The second generation was held in check by high temperatures except in the northern two tiers of counties and along the Missouri River bottoms where populations built rapidly. Late planted corn was very heavily attacked. Fall abundance survey showed average of 174 borers per 100 stalks in the northern two tiers of counties, average of 94 borers in the central area; average of 225 borers in extreme southeast area. The state mean for 18 comparable counties was 169 borers per 100 stalks, or a 112 percent increase over 1953. Drought held SOUTHWESTERN CORN BORER (Diatraea grandiosella) damage to minimum although girdled stalks ranged from 0.01 to 44 percent in field corn. First generation was relatively low but second spread rapidly northward and slightly eastward. From 10 counties infested in 1953, 15 additional counties were found infested in fall of 1954 and for the first time this important pest was discovered in the corn belt of Missouri. New counties infested in 1954 included Taney, Greene, Dallas, Polk, Cedar, Hickory, St. Clair, Benton, Henry, Bates, Johnson, Cass, Jackson, Clay and Platte. FALL ARMYWORM (Laphygma frugiperda) was light to moderate on corn. Damage to ear shanks resulted in 1 to 10 percent dropped ears in northern half of State. GARDEN WEBWORM (Loxostege similalis), during the last week of June, caused moderate to heavy damage to corn, especially along the Missouri River bottoms.

#### Legume Insects:

PEA APHID (Macrosiphum pisi) was very heavy on alfalfa during April in central, southwest, and northern areas. At peak of infestations counts ranged from 100-150 aphids per sweep. Parasites and predators failed to increase substantially until late April. Statewide, first cutting of alfalfa was reduced 25-40 percent. From 10-25 aphids per sweep in red clover in northern third in May. CLOVER LEAF WEEVIL (Hypera punctata) was light to heavy generally on red clover and to a lesser degree on alfalfa. Up to 7 larvae per crown in northern half of State. A fungus disease reduced populations during first half of April. VARIEGATED CUTWORM (Peridroma margaritosa) was moderate to heavy statewide on alfalfa, red clover and other legumes. From 1 to 12 larvae per square foot in alfalfa while red clover averaged 4-5 larvae per square foot. Damage to first cutting

and new growth of alfalfa and red clover ranged from 20 to 35 percent. Parasites remained generally low until early in June. DINGY CUTWORM (Feltia subgothica) was lighter than usual in some red clover fields, central area but still ranged from 2-5 larvae per square foot. CLOVER ROOT CURCULIO (Sitona hispidula) and SWEETCLOVER WEEVIL (Sitona cylindricollis) apparently now occur statewide and usually in conjunction at an estimated ratio of 10 S. hispidula to 1 S. cylindricollis. Peak population appeared June 8, however, damage to alfalfa and red clover was light. Soybeans near clover fields heavily damaged along margins by adults of S. hispidula, especially in St. Charles and Lafayette Counties. CLOVER APHID (Anuraphis bakeri) was light to moderate on red clover in May and November. POTATO LEAFHOPPER (Empoasca fabae) migrating adults were first discovered on alfalfa in extreme southeast Missouri April 20. Populations remained generally low throughout the season with the highest counts averaging 3-4 per sweep in alfalfa June 15. LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) was light to heavy generally on red clover over the northern half of State. Many fields had 90-98 percent of blossom and 45-60 percent bud and terminal injury. TARNISHED PLANT BUG (Lygus lineolaris) populations remained generally low over State until late fall when increased on alfalfa and red clover. Average of 4-6 per 10 sweeps during the fall. GREEN CLOVERWORM (Plathypena scabra) third generation built to high numbers on soybeans especially in the east central area where larval counts averaged 4-7 per linear foot of row. Foliage injury to soybeans was moderate to heavy. GRASSHOPPERS caused heavy damage to alfalfa, red clover and soybeans over State except extreme southeast and northeast. Counts ranged from 5 to 55 per square yard and damage from 10 percent to total destruction. GARDEN WEBWORM damage to soybeans ranged from 10 to 50 percent defoliation and on alfalfa from 10 percent to total destruction of two midseason cuttings. From 1 to 45 larvae per linear foot of soybean row and from 1 to 28 per square foot of alfalfa. Parasites remained generally low.

CORN EARWORM on alfalfa and soybeans reached peak in late September. Counts on alfalfa ranged from 1-10 larvae per 10 sweeps and from 0.1 to 1 larva per linear foot of soybean row. Damage to soybeans was largely confined to the pods and ranged from 1 to 20 percent. Heavy overwintering populations of BEAN LEAF BEETLE (Cerotoma trifurcata) damaged germinating soybeans in southeast. Second and third generation adults continued to cause damage through September.

Considerable injury to blossoms, small pods and beans occurred in extreme southeast area. Counts at peaks of all generations would range from 1-7 per linear foot of row. During September, scattered heavy infestations of TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus) appeared on soybeans in southeast and central areas.

Grain Sorghum Insects:

CORN LEAF APHID (Rhopalosiphum maidis) was heavy over State but damage apparently very light. CHINCH BUGS were moderate to heavy in all areas except southwest during the fall, averaged 10-15 per plant in southeast and north Missouri. FALSE CHINCH BUGS (Nysius spp.) were light to heavy, 100-200 per head some fields, during early September in southern half of State. Extent of injury not known. SOUTHERN CORN ROOTWORM caused light damage to heads in September and October. GRASSHOPPERS (Melanoplus crop spp.) caused light to moderate damage to both foliage and heads generally over western half of State. Loss of 7-10 percent of grain in heavily infested fields. Near the middle of September, CORN EAR-WORM heavily attacked heads. In the central area, many fields averaged 2 to 4 larvae per head. Approximate 7 percent grain loss.

Pasture Insects:

From 1 to over 100 CLAY-BACKED CUTWORMS in May in Howell County, lighter numbers scattered over southern area. Light to total destruction of pastures observed. VARIEGATED CUTWORM was moderate to heavy, 1 to 9 per square foot, in bluegrass and other pastures. Pastures in extreme southeast, central and northwest areas had light to heavy damage by the first brood ARMYWORMS. Third generation in late August caused heavy damage to fescue in central and northwest areas, counts from 3 to 33 per square foot. Bluegrass pastures in northwest and to a lesser degree in the central area were damaged by BRONZED CUTWORM (Nephelodes emmedonia). BLUEGRASS WEBWORM (Crambus teterrellus) was light to heavy generally over northern two-thirds of State. Heaviest damage in extreme northwest area where average counts were 6-10 larvae per square foot. LEAFHOPPERS became very abundant in the ranker pastures during late April and May. Damage light to moderate. GRASSHOPPERS, for the third consecutive year, caused more damage to pastures than all other insects combined and damage would nearly equal that of drought. From June to October, populations varied from 3 to 30 or more per square yard over State except in extreme southeast and northeast corners. Carrying capacity of pastures was reduced at least 30 to 40 percent.

### Small Grain Insects:

The 1954 ARMYWORM outbreak was more general and heavier than in 1953. Migrating moths first appeared in extreme southeast area during the first week of April, heavy flights in central area by April 8-10. Moderate to heavy damage was general over southern two-thirds of the State and in scattered areas in north-east and northwest corners. Average field counts from 5 to 30 larvae per square foot. Barley was more heavily damaged followed by rye, wheat and oats. An estimated 50,000 acres of small grains with a value of \$2,132,000 were lost to the first generation. An estimated 500,000 acres were sprayed resulting in a saving of \$6,500,000. Temperatures kept parasites in check until outbreak reached northern third of State and then they built rapidly. Early in August, heavy populations were present in all vegetation that had escaped the drought with counts ranging from 3 to over 100 larvae per square foot. Parasites were heavy and generally kept infestations under control although many fields of volunteer oats were completely destroyed. This third brood outbreak marked the first time that true armyworms have been a fall problem in Missouri. Sporadic moth flights continued until near middle of November and small, overwintering larvae found in very limited numbers in volunteer grains and bunch grass.

FALL ARMYWORM, for some unexplained reason, was very light in small grains over State. HESSIAN FLY (Phytophaga destructor) infestations and damage lowest in past several years. Stubble survey in July showed Pettis and St. Charles Counties to be the only counties with more than a 2 percent infestation while State average was just under 1 percent. WHEAT JOINTWORM (Harmolita tritici) stubble survey made in July revealed average of just under 1 percent for 22 counties surveyed, with St. Charles County having 5.5 percent infestation. ENGLISH GRAIN APHID (Macrosiphum granarium) damage was slight to rye and wheat. LEAFHOPPERS (especially Macrosteles fascifrons) built up in heavy numbers on small grains over the southern two-thirds of the State. Feeding caused extensive yellowing of the blades. GRASSHOPPERS damaged heads of small grains in western areas. In southwest and west central areas from 5 to 10 percent of the ripening oat heads were cut.

### Cotton Insects :

THRIPS were somewhat more numerous over the area than in 1953 although damage was not significant. TWO-SPOTTED SPIDER MITE was light to moderate in July in scattered fields.

COTTON FLEAHOPPER (Psallus seriatus) more common over area than during past years, although very few fields had sufficient populations during early season square formation to warrant spray applications. Counts averaged 8 to 11 nymphs and adults per 100 terminals. BOLL WEEVIL (Anthonomus grandis) - Survival of overwintering population was very low although areas in Ripley, Butler and Dunklin Counties had June infestations of 2 to 10 percent. Drought and high temperatures generally held second generation in check. Late season migration was mostly light to moderate. Late in August, as corn dried out, BOLLWORMS built up considerably on rank cotton, especially in New Madrid and Stoddard Counties. In most fields maturity of bolls prevented heavy damage although low spots lost from 5 to 10 percent. At the peak of infestation, counts in rank fields would average from 7 to 17 eggs and 3 to 5 small larvae per 100 terminals. Parasites and predators were numerous in all fields. Forty thousand to fifty thousand acres were sprayed of which probably not more than ten thousand was justified. Light infestations of COTTON LEAFWORM (Alabama argillacea) were discovered in a small area of Stoddard County September 1. The following insects were also of some importance on cotton in 1954: black cutworm, yellow-striped armyworm, variegated cutworm, seed-corn maggot, cotton aphid and rapid plant bug.

#### Fruit Insects:

CODLING MOTH (Carpocarsa pomonella) situation was about normal; however, good commercial control was obtained. FLATHEADED APPLE TREE BORER (Chrysobothris femorata) - In plantings of young apple trees, infestations and damage was very severe in several areas. GRASSHOPPERS caused severe damage to planting of young apple trees, especially in the southern two-thirds of State. During July and August, grapes in the south central area had moderate to heavy damage by the insects cutting off bunches of grapes. TWO-SPOTTED SPIDER MITE infestations were scattered, moderate to severe in all areas. RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) was not a problem except in southwest corner where irrigated orchards had 6 percent of total crop injured by the third brood. PLUM CURCULIO (Conotrachelus nenuphar) infestations and damage spotted. In south and central areas considerable feeding injury by adults of second brood on apples and peaches. PEACH TREE BORER (Sanninoidea exitiosa) - Several orchardists ran into borer problems due to use of mist blowers which resulted in severe buildup because they failed to get enough insecticide on trunks and bases of peach trees. STINK BUGS caused moderate

to heavy damage to peaches, principally in the northeast area during middle of drought period. GREEN JUNE BEETLE (Cotinis nitida) adults were a problem on ripening early peaches and grapes in scattered areas. GRAPE FLEA BEETLE (Altica chalybea) caused moderate to heavy damage in a few vineyards in south central area. Scattered vineyards over the southern half of the State had moderate to severe damage during late April from CLIMBING CUTWORMS destroying the swelling buds.

#### Stored Product Insects:

Hot, dry weather of summer and fall kept both primary and secondary stored grain insects at a minimum over much of the State. RICE WEEVIL (Sitophilus oryza) - Light to moderate fall infestations common in the west central area in wheat, barley, oats and corn. BRAN BEETLES (Tribolium confusum and T. castaneum) were generally moderate to heavy in all farm-stored grains. FLAT GRAIN BEETLE (Laemophloeus pusillus) occurred in moderate numbers in farm-stored grains of St. Charles County. SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis) was light to heavy in farm-stored grains in most areas. ANGOUMOIS GRAIN MOTH (Sitotroga cerealella) - Populations lowest in past several years although light infestations were common in stored corn. Fall field infestation of corn was extremely light. CADELLE (Tenebroides mauritanicus) infestations were lighter than normal. INDIAN-MEAL MOTHS (Plodia interpunctella) were light to moderate, but much less than in 1953. GRAIN MITES were common in farm-stored grains. PSOCIDS were moderate to heavy on all farm-stored grains during late summer and early fall. VINEGAR GNATS (Drosophila spp.) - Ripening fruits and vegetables became heavily infested over State during early fall. Adults became a nuisance in many farm homes. SILAGE MAGGOTS, Chrysomya demandata, occurred generally and in heavy numbers in the rotting marginal areas of trench silos. A soldier fly maggot (probably Hermetia illucens) occurred in heavy numbers over scattered areas of the southern half of State in trench and upright silos.

#### Forest, Shade and Wood Product Insects:

OAK TIMBERWORM (Arrhenodes minutus) - 78 percent of 164 oaks blazed in May in the Ozark region were attacked by this species. Lumber sawed from pinworm injured trees is either rejected as cull or degraded. LESSER CARPENTERWORM (Prionoxystus macmurtrei) was found to attack, via blazes, a number of oak trees in the Ozark region.

Various BORING INSECTS and decay make it necessary to discard roughly 50 percent of the oak felled each year in logging operations in Missouri, and in addition there is considerable loss due to degrading of borer injured lumber. Many of the hardwood shade and forest trees over southern two-thirds of State moderately to heavily damaged by FLATHEADED APPLE TREE BORER. Pecan groves in extreme southeast area more heavily infested than ever. POWDER POST BEETLES (Lyctus spp.) - Handle mills throughout Ozark region report increasing and heavy damage to natural and finished products. Oak subflooring and flooring, especially in southern areas, becoming more commonly infested than in recent years. NANTUCKET PINE MOTH (Rhyacionia frustrana) infestation lighter than in 1953 in the central area, however, heavier in the southeast quarter of State. Several pine plantings for Christmas trees were 90 to 99 percent tip infested by first-generation larvae, although second generation was very light in same plantings. RED-HEADED PINE SAWFLY (Neodiprion lecontei) caused heavy, localized damage to several pine plantings in Washington, Franklin and Crawford Counties. SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - Three consecutive years of drought have severely injured elms allowing tremendous buildup and damage to all native elms over much of the western half of State. Estimates of elm tree losses in the southwest quarter of the State made in early fall indicate 50-60 percent of red elm and 25-35 percent of white elms killed. During late May and June, tremendous populations of APHIDS were present on oaks, hickory, elm, maple and other forest trees over the southern half of the State. Extremely high populations of lady beetles built up in June and greatly reduced aphid numbers. During high temperatures in July, concentrations of lady beetles 6 to 12 inches deep were present under trees on points of high elevation in the Ozark region. OAK KERMES SCALES (Kermes spp.) - Several species of oaks lightly to heavily infested in southern area with extreme southeast being heaviest. Trees in latter area had from 10 to 80 percent of the new terminal growth killed.

TWIG PRUNERS (especially Hypermallus villosus) - Rather heavy increase in girdled or fallen twigs noted during the season on many species of forest and shade trees. GRASS-HOPPERS (largely Melanoplus differentialis) damaged shrubs, shade and forest trees heavier than in 1953 over much of southwest and central Missouri. Defoliation from 5 to 100 percent with small trees, shrubs and especially multiflora rose fences being most heavily damaged. ELM LEAF BEETLE

(Galerucella xanthomelana) was heavy and caused more widespread injury to Chinese, and to a lesser extent, native elms over much of extreme southeast Missouri. Infestation has spread northward along the Mississippi River to St. Louis. GREEN-STRIPED MAPLE WORM (Anisota rubicunda) damage much less than in 1953, although localities in central and northwest Missouri had total defoliation of soft maples. WALNUT CATERPILLAR (Datana integerrima) damage much less than in 1953, although scattered areas in southwest and west central Missouri were from 30 to 95 percent defoliated. FALL WEBWORM (Hyphantria cunea) infestations were scarce. MIMOSA WEBWORM (Homadaula albizziae) - A single infestation was discovered at Caruthersville in Pemiscot County marking the first record of this pest for Missouri.



## SURVEY METHODS

### A Technique for a Rapid Determination of European Red Mite Populations on Foliage

By O. H. Hammer

The time required for determining European red mite (Metatetranychus ulmi) populations is one of the most important limiting factors in carrying out field tests for the control of this pest. Since populations are subject to rapid fluctuations due to tremendous reproductive capacity, weather conditions, and intermingling of late broods, it is desirable to make population determinations for any given series of tests during as short a period of time as possible.

This report is a discussion of a technique used at the Dow Agricultural Chemical Research Field Station at South Haven, Michigan, since 1942. This discussion deals with studies made on mite populations on apple, cherry, prune, plum, peach and other foliage.

#### Determination of Mite Populations

Sampling: A more accurate appraisal of the effectiveness of mite treatments may be made if the mite population of each plot immediately preceding application is known. Such information is important for the checks as well as for those that are to be treated. This is desirable since large differences often exist between populations in the various plots within a planting.

The pre-treatment and post-treatment population determinations are made from samples of 50 leaves from 2 to 5 trees in each plot. The number of leaves taken from each tree is determined by the number of count trees in the plot. For example, if 5 trees are used, they are marked and ten leaves are taken from each tree at each collection. If 3 trees are used 16 leaves are taken from one tree and 17 from each of the other two. The leaves are all taken by the collector circling the tree and picking the samples at regular intervals so that a complete circle is made while sampling each tree. Leaves are taken from wood with a diameter of 3/4 to 1 inch and usually at arm's length from the periphery of the trees. In the case of heavily infested trees it is necessary to make leaf collections near the tips of branches as the mites move out. These leaves are dropped immediately into

small containers in a "lethal chamber" shown in Figure 1. All leaves from a plot are put into one receptacle. This receptacle may be of any suitable size. One quart cylindrical paper ice cream containers have proved satisfactory, although slightly larger containers may be more suitable when the leaves are very large such as are sometimes encountered on Duchess, Baldwin, Greening, and other varieties. An identifying card is placed on the leaves in the receptacle.

Killing the Mites : Difficulty is sometimes encountered while making population counts of live mites. When the leaves are heavily populated and when counts are made at high temperature, the active forms move about rapidly, many running off the leaves or shifting from one side of the leaf to the other. These difficulties have been overcome by placing the leaf samples immediately into the small containers which are carried in the "lethal chamber" mentioned above. The chamber is simply a tight container of a size suitable for carrying about the orchard. (Figure 1). It is constructed of a wooden frame covered with pressed wood. A 2-3/4" opening is cut in the cover over each container. These holes are snugly fitted with plugs which are merely lifted and replaced each time a leaf is dropped into the receptacle. An interior view of the lethal chamber is shown in Figure 2. On the lower surface of the chamber lid, provision is made for use of the lethal chemical. In the case illustrated, this consists of fastening to the lid strips of absorbent cotton wrapped with cloth to prevent fraying. Excellent results for quick kill of the active mites have been obtained by the use of propylene or ethylene dichloride. One application of a few ml. of the liquid toxicant per cubic foot of space is sufficient to give quick killing during the time required to collect fifty leaves from each of six plots. Ethylene and propylene dichloride serve very well for this purpose since they are relatively safe to the collector when used out of doors, and also indoors by observing reasonable precautions. The liquid should be charged into the cotton often enough to cause discoloration of the leaves within 20 minutes. To further insure kill of the mites the sample filled receptacles may be stored in larger lethal chambers. (Figure 3). A large number of plots may be sampled in this way within a few hours. The samples may be stored in the receptacles in a cool moderately humid place (60-80 % relative humidity) or the mites may be removed from the leaves and stored on the glass plates in a similar place until counts are made. Counts should be made as soon as possible, however.

Preparing for and Making Actual Counts: After the leaf samples have been collected, the mites killed and taken to a central station, the next step is to remove the mites from the leaves. This is done with a machine developed by C. F. Henderson of the U. S. Department of Agriculture working with the citrus mite (Metatetranychus citri) in California. The details of this machine and its operation are discussed in U. S. D. A. Circular 671, 1943. The method of operation was very similar to that described by Henderson. For the purpose of this report pertinent items and slight alterations in procedure are briefly discussed. The machine (Figure 4) consists essentially of two three-quarter inch rotary brushes, four inches long, mounted close together in a horizontal position and above a metal turn table. The brushes found most satisfactory for use on mites are of goat's hair. The brushes and turn table are operated by a small electric motor. The motor in this case is described as follows: H. P. 1/175, volts 115, cycles 60, amps 38 and rpm 1500. A 6-volt motor may be used if it is desired to use the equipment in the field where the motor can be powered from a storage battery. The turn table on the brushing machine is a metal plate which holds a glass disc of the proper size. During the brushing process the leaf samples are inserted between the rotating brushes and the mites and the eggs are dislodged. Two metal shields extend from slightly above the top of the brushes, downward to the glass disc on the turn table. These shields serve to confine the falling mites to the disc below. For maximum removal of mites, it has been found advisable to insert one end of the leaf between the brushes, withdraw it, and then insert the other end. If removal of all the eggs is desired, further brushing may be necessary after the leaf has been folded to fully expose the midrib. The glass disc placed on the turn table during the brushing process should have a diameter  $1/4 - 1/2$  in. greater than that of the area within the shields. This will permit handling the glass without crushing the forms collected thereon. Immediately before placing the glass disc on the turn table the upper surface should be lightly coated with thin varnish or some other suitable adhesive. The falling mites and eggs will lodge and remain on this film during subsequent handling. The rotation of the disc during the brushing process insures a fairly uniform distribution of the mites and eggs over the coated surface.

The regular laboratory equipment plus a few easily made accessories are all that is needed to make the counts. (Figures 5 and 6). The glass disc containing the mites and/or eggs is placed on a holding board which facilitates manipulations of the disc when put into position for examination with a binocular microscope. In making the counts, one of two means of guiding the observer during the

counting is used, depending upon the abundance of specimens on the disc. If only a few are encountered, the holding board with parallel fields as shown on the left in Figure 6 is used and all specimens are counted. If there are many mites, the holding board with the black and white cardboard disc as shown on the right in Figure 6 is used and only those which lie over the white areas are counted. The narrow white stripes are for guides only and mites lying over them are not counted. The total white area is 25 percent of the total specimen bearing area. (Henderson 1). Thus the number of forms counted in this way, multiplied by 4 gives a figure approximately the same as if the entire area is counted. When making the counts one light source, namely a microscope lamp with the light beam directed to the field of observation has proved adequate. This is different and somewhat simpler than the illumination described by Henderson. It may be that certain conditions, not yet encountered in this work, will require the setup described by him.

Enough time is allowed between the application of control treatment and leaf sampling to cause the treatment-killed mites to dry and shrivel. The first sampling after treatment is usually 3 to 5 days. If heavy rains occur during this interval many of the dead mites will be washed from the leaves. If properly handled, as described earlier, the mites which escaped the treatment, but which were killed in the lethal chamber will remain plump and may be easily identified as "live mites." Only live mites are counted.

After the counts are made the glass discs may be cleaned by immersing in a strong solution of trisodium phosphate, after which they may be rinsed in water, dried and used again.

#### LITERATURE CITED:

- (1) Henderson, C.F. and McBurnie, H.V. 1943. Sampling Technique for determining populations of the Citrus Red Mite and its Predators. U.S. Dept. Agr. Circ. 671.

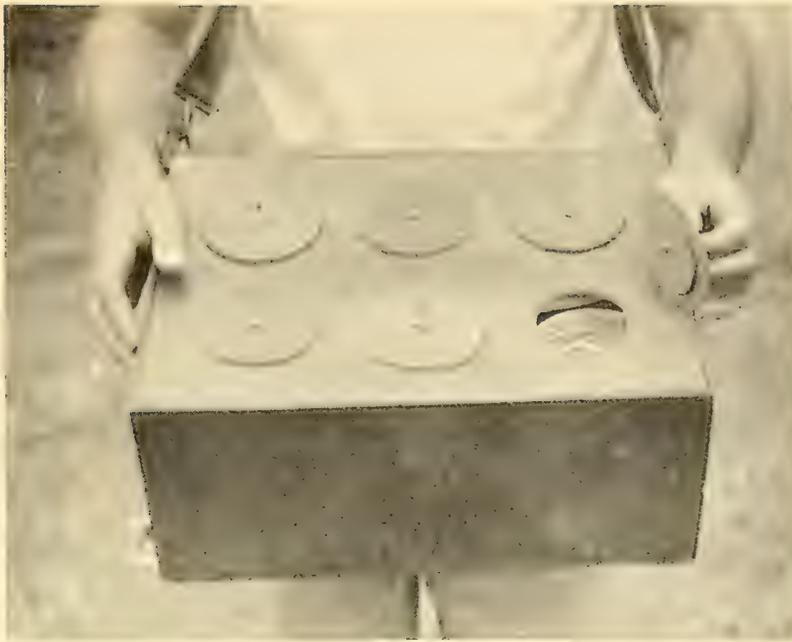


Figure 1. Details of collection chamber lid with one plug removed.



Figure 2. View of interior of collection chamber with samples from six plots in the six cardboard receptacles. Strips of absorbent material for fumigation may be enclosed in window screening to avoid fraying.





Figure 3. Chamber for transporting samples and for further fumigation and storage if necessary.

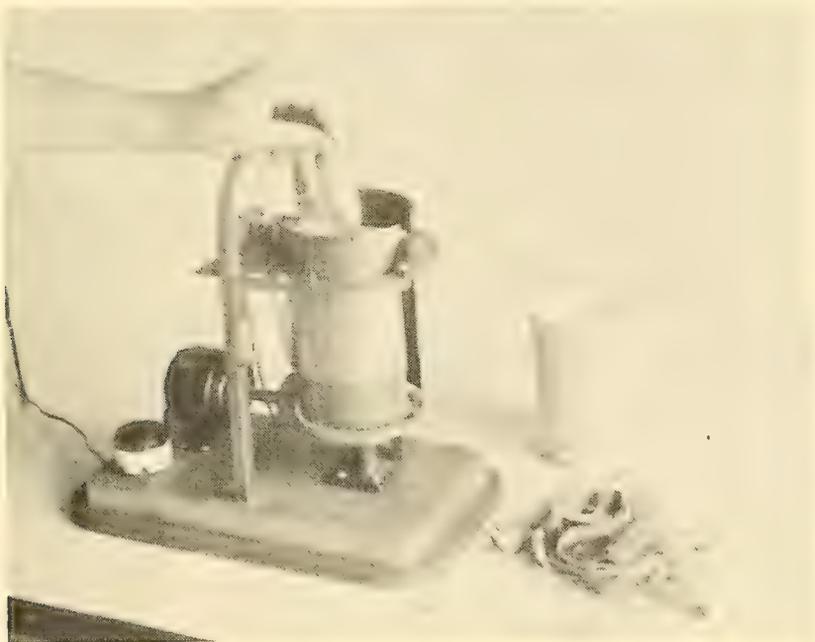


Figure 4. Brushing machine with leaf being inserted between brushes.





Figure 5. Equipment used for making counts. The tallies are mounted on the table top and manipulated by pressing, with the knees, levers under the table which are connected to the tally levers by strings.

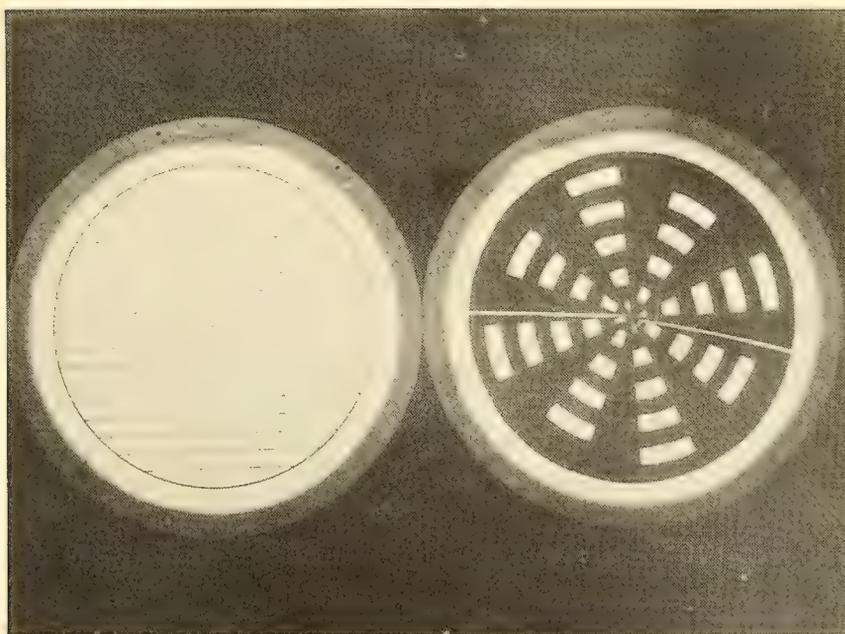


Figure 6. Holding board for easy manipulation of glass discs containing specimens. Left, parallel areas for inspection in case of light infestation. Right, white areas for inspection in case of heavy infestation.







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*Cooperative*

**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL BRANCH**

**AGRICULTURAL RESEARCH SERVICE**

**UNITED STATES DEPARTMENT OF AGRICULTURE**

# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Economic Insect Survey Section  
Plant Pest Control Branch  
Agricultural Research Service  
United States Department of Agriculture  
Washington 25, D. C.

## COOPERATIVE ECONOMIC INSECT REPORT

## Highlights of Insect Conditions

CORN LEAF APHID heavy and widespread on small grain in north central Texas and southern Oklahoma. (page 247 ).

YELLOW CLOVER APHID very abundant on alfalfa in south central Oklahoma. Heavy widespread infestations in north central and other areas of Texas. Continues to increase in some sections of Arizona. (page 250 ).

ARMYWORM moths active in Mississippi, Louisiana, Arkansas, and Tennessee. Also other light trap collections. (pages 256, 258 ).

EUROPEAN CORN BORER damage estimates for 1954. (page 248 ).

Outlook for some APPLE PESTS in Virginia. (page 251 ).

Overwintering CODLING MOTH larvae more plentiful at Vincennes, Indiana, than since 1944. (page 251 ).

SEED-CORN MAGGOT adults active on spinach in Arkansas Valley of Oklahoma. Heavy locally in Mississippi. (page 253 ).

BOLL WEEVIL survival counts in Madison Parish, Louisiana, higher than normal. (page 254 ).

Unusually large numbers of LONG-NOSED CATTLE LOUSE on untreated cattle in central and western areas of Oklahoma. (page 254 ).

Summary of INSECT CONDITIONS - 1954 - in Montana. (page 259 ).

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Reports in this issue are for the week ending March 18, 1955, unless otherwise designated.

WEATHER BUREAU'S 30-DAY OUTLOOK  
Mid-March to Mid-April 1955

The Weather Bureau's 30-day outlook for the period from mid-March to mid-April calls for temperatures to average below seasonal normals over the northern third of the nation, with greatest departures over the Northern Plains. Above normal temperatures are expected over the southern third with greatest departures in the Gulf States. Large fluctuations between wintry and spring-like conditions are expected in the central third, where temperatures averaging near normal are anticipated.

Precipitation is expected to exceed normal over the southwestern and northeastern quarters of the nation. Sub-normal amounts are predicted in the Gulf States, the Southeast, and the Pacific Northwest. Elsewhere near normal amounts are in prospect.

This report released by the Weather Bureau on March 15, 1955.

Weather forecast given here is based on the official 30-day "Resume and Outlook," published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington, D. C. Price: \$4.80 a year, \$2.40 for six months.

WEATHER FOR THE WEEK ENDING MARCH 21, 1955

As if taking advantage of its last week of existence on the calendar, winter weather reasserted itself the past week in the form of an outbreak of Polar air during the early part of the period and an outbreak of even colder Arctic air over the weekend. These outbreaks penetrated almost to the Gulf Coast, bringing snow back to the Western Plains States and causing some damage to crops that had been left susceptible by the early season warming of the previous week.

The return of cold air during the week brought below normal temperatures back to New England and the northern and western parts of the Country. This was the first time in 5 weeks that the temperature had been below normal in the area from Pennsylvania through New England. Temperatures dipped to record lows for this late in the season at Medford, Oreg. ( $20^{\circ}$ ), and International Falls, Minn. ( $-19^{\circ}$ ) on the 20th. A low of  $11^{\circ}$  at Burns, Oreg., equaled the record for that station on the 20th. Ahead of the outbreak, records were also established for highest temperatures (Weather continued on page 257).

CEREAL AND FORAGE INSECTS

GREENBUG (Toxoptera graminum) - TEXAS - Medium to heavy widespread infestation on wheat in Swisher, Hale and Floyd Counties. The heaviest infestation continued in Swisher County where thousands of greenbugs found per foot in spotted areas, and a few fields showed damage spots. (Simonds, Daniels). Light local infestation of oat, wheat and barley fields widely distributed through north central area, north of Dallas and Fort Worth. Infestation not spreading. (Chada). Small areas of greenbugs showing up on small grains in Denton County. (Petty). MISSISSIPPI - Heavy infestation on barley in 100-acre field in Lowndes County. (Hunsucker). ARIZONA - Below economic numbers in barley at Marana. (Ariz. Coop. Rept.).

CORN LEAF APHID (Rhopalosiphum maidis) - OKLAHOMA - Large numbers in oats and barley along southern border of Oklahoma. No heavy infestation farther north. (Bierberdorf, Bryan, Chada). TEXAS - Heavy widespread infestation in barley and oats. Heavy damaging infestation throughout all of north central area, north of Dallas and Fort Worth. Control measures necessary in barley. (Chada). Heavy widespread infestation in Kaufman County, killing barley. (Porter). Medium local infestation on barley in Madison County. (Garrett).

WINTER GRAIN MITE (Penthaleus major) - TEXAS - Heavy widespread infestation on oats throughout north central area, but decreasing following recent hot weather. Extensive control measures. (Chada). Small grains heavily infested in Denton County, some severe damage. Considerable spraying. (Petty).

WHEAT CURL MITE (Aceria tulipae) - NEBRASKA - Found in a field containing volunteer wheat in Lancaster County. (Andersen, March 12).

BROWN WHEAT MITE (Petrobia latens) - TEXAS - Medium local infestation on wheat in Denton and Cooke Counties. Average several hundred per linear foot of row. Damage apparent. (Chada).

APPLE GRAIN APHID (Rhopalosiphum fitchii\*) - TEXAS - Heavy local infestation on rye in Grayson County. (Chada).

\*Palmer, M. A. 1952. Aphids of the Rocky Mountain Region, p. 215.

ESTIMATES OF DAMAGE BY THE EUROPEAN CORN BORER  
TO GRAIN CORN IN THE UNITED STATES IN 1954

Compiled by Leo G. K. Iverson  
Economic Insect Survey Section, Plant Pest Control Branch  
United States Department of Agriculture

The loss of grain corn resulting from damage caused by the European corn borer (*Pyrausta nubilalis*) is estimated to be almost 192 million bushels. This is approximately 7 percent of the national crop of grain corn estimated at 2,652,426,000 bushels. The value of the crop lost when computed on the basis of prices 1/ received by farmers as of December 15, 1954 is \$261,415,000. The estimates were made for 958 counties in 25 States which produce 90 percent of the corn grown for grain and include 60 percent of all the counties known to be infested in the United States.

The estimated production, value of production and crop losses for counties included in the estimate are summarized and reported by States in Table 1. These estimates were compiled using production data 2/ except as noted, applied to individual counties or districts within each State. Since county and district data were not available for 1954, it was necessary to compute production for each unit. This was accomplished by using the percentage of total State production for each unit as established from production reports of recent years.

The estimated crop losses are based on fall surveys of borer populations made by State Agencies in 608 counties in 25 States 3/. They were computed for 350 more counties

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1/U. S. Agricultural Marketing Service. Agricultural Prices Report, Crop Reporting Board, December 31, 1954.

2/Crop Production, Crop Reporting Board, Agricultural Marketing Service, U.S. Department of Agriculture, Annual Summary, December 1954.

3/Iverson, Leo G. K. Status of the European Corn Borer in 1954. Cooperative Economic Insect Report, Vol. 5, No. 4, pp. 67-85, January 28, 1955, Plant Pest Control Branch, Agricultural Research Service, U. S. Department of Agriculture.

Table 1. Estimates of damage by the European corn borer to corn grown for grain in the United States in 1954

State	Counties		Total State Production	Value per bushel	Value of production	Estimated data	
	Known to be infested 1/	Included in estimate				1,000 Bu.	1,000 Dol.
Connecticut	8	8	188	1.75	329	Trace	1
Delaware	3	3	5,115	1.48	7,570	108	160
Illinois	102	102	429,116	1.31	562,141	38,242	53,922
Indiana	92	92	247,652	1.36	336,806	3,123	4,247 3/
Iowa	99	99	521,640	1.36	709,430	93,950	127,772
Kansas	88	25	31,388	1.45	45,512	164	238
Kentucky	98	98	63,860	1.40	89,404	1,012	1,416
Maryland	23	23	16,400	1.51	24,764	167	1,252
Massachusetts	14	1	184	1.75	322	Trace	1
Michigan	51	17	69,476	1.36	94,487	552	750
Minnesota	87	69	242,476	1.24	300,670	5,697	7,064
Missouri	112	47	59,560	1.47	87,553	1,053	1,548 4/
Nebraska 2/	83	33	188,160	1.40	263,424	22,000	30,800
New Hampshire	9	7	86	1.75	150	Trace	1
New Jersey	21	12	6,864	1.58	10,845	51	81
New York	60	17	9,636	1.56	15,032	8	13
North Dakota	44	18	10,633	1.19	12,653	167	199
Ohio 2/	88	88	212,976	1.40	298,166	6,517	9,124
Pennsylvania	67	67	49,680	1.56	77,500	268	419
Rhode Island	5	5	33	1.75	58	Trace	1
South Dakota	63	41	102,388	1.25	127,985	17,650	22,063
Vermont	14	5	84	1.75	147	Trace	1
Virginia	92	7	26,004	1.64	42,646	112	183
West Virginia	51	3	8,055	1.49	12,001	2	3
Wisconsin	71	71	96,360	1.50 2/	144,540	771 2/	1,156 2/
Total	1,445	958	2,398,014	-	3,264,135	191,614	261,415

1/ Does not include 151 counties in 12 other States for which estimates were not made.

2/ Estimates prepared by States; production and crop values differ slightly from December 15 AMS reports.

3/ State estimate of damage used in computing loss.

4/ Adjusted loss prepared by State.



than surveyed by applying population averages within a district and averages of adjoining or nearby counties to counties not surveyed. The index of 3 percent loss per borer per plant was used generally in computing estimates of loss. In some instances the estimated losses were adjusted downward where significant numbers of immature larvae were recorded in the surveys.

The loss of corn due to damage by the European corn borer for 5 years prior to 1954 is estimated in bushels and crop loss value as follows: in 1953 about 90 million bushels valued at \$125,466,000; in 1952, 53,270,000 bushels, \$77,205,000; in 1951, 35,812,000 bushels, \$57,438,000; in 1950, 58,765,000 bushels, \$84,912,000; and in 1949, 313,819,000 bushels, \$349,635,000.

ARMY CUTWORM (Chorizagrotis auxiliaris) - NEBRASKA - Found in wheat stubble fields and alfalfa-bromegrass. Counts low, highest being 4 in wheat stubble field in Red Willow County and one in alfalfa-bromegrass field in Lincoln County. (Andersen, March 12).

CHINCH BUG (Blissus leucopterus) - NORTH CAROLINA - An infestation of oats in Union County. Population heavy in spots along margin of a field. (Morgan).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - OKLAHOMA - Ten percent of overwintering larvae observed March 17 were dead. (Arbuthnot, Walton).

YELLOW CLOVER APHID (Myzocallis trifolii) - OKLAHOMA - Very abundant in alfalfa in south central area. Some fields severely damaged. North of Oklahoma City only isolated alfalfa fields have heavy populations. Large numbers of predators in many fields. (Bieberdorf, Bryon, Bower, Chada). TEXAS - Building up rapidly in many alfalfa and clover growing areas. Heavy on alfalfa in Hamilton County. (Lawrence). Heavy in Denton County, controls underway. (Petty). Medium to heavy infestations in McLennon and Falls Counties, all fields apparently infested. Some fields treated, others warrant treatment. (Cowan, Parencia). Medium to heavy damage in Brazos River Bottom of Brazos and Burleson Counties. Considerable migration during past two weeks. Most fields of alfalfa and clovers have heavy deposits of honeydew. Effectiveness of treatment reduced because of reinfestation during migration. (Randolph, Davis). Heavy widespread infestation on alfalfa throughout all of north central Texas. Numerous alfalfa fields killed out; infestation generally very heavy. Treatment underway. (Chada). ARIZONA - Still increasing on alfalfa at Yuma, Gila Bend, Mesa, Eloy and Marana. At Yuma fields treated more than five weeks ago have heaviest buildup. (Ariz. Coop. Rept.).

PEA APHID (Macrosiphum pisi) - MARYLAND - Small numbers in alfalfa fields in Worcester County. (U. Md., Ent. Dept.).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - ILLINOIS - Average of one per square foot in 2 red clover fields in central area, .63 per square foot in 4 fields in western area. (Petty).

CLOVER LEAF WEEVIL (Hypera punctata) - MARYLAND - Light numbers of larvae in alfalfa fields in Worcester County. (U. Md., Ent. Dept. ). ILLINOIS - Average of 12 larvae per square foot found in 4 red clover fields in western area and 11 per square foot in 2 in central area. (Petty).

ALFALFA WEEVIL (Hypera postica) - MARYLAND - Adults active in alfalfa fields in Worcester County. Mating underway. (U. Md., Ent. Dept.).

EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - ARIZONA - Second and third instars numerous on alfalfa in Maricopa County. No noticeable damage. (Ariz. Coop. Rept.).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - NEBRASKA - A few overwintering adults active in a second-year clover field in Lancaster County. (Connin, March 12).

CLOVER ROOT CURCULIO (Sitona hispidula) - VIRGINIA - Damage to alfalfa in Augusta County field where heaving has occurred. (Woodside).

TARNISHED PLANT BUG (Lygus lineolaris) - NEBRASKA - A few overwintering adults found in alfalfa fields in Lincoln and Dawson Counties. (Andersen, March 12).

A MAGGOT (presumably Hylemya lupini) - GEORGIA - Forty acres of blue lupine in Dodge County 50 percent infested, 2 percent dead. Larvae boring in roots, March 11. (Bennett).

## FRUIT INSECTS

### Outlook for Apple Pests in Virginia:

The winter has been favorable for RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) survival and potential for damage is good this spring. A high percentage of UNSPOTTED TENTIFORM LEAF MINER (Callisto geminatella) survived and potential for outbreaks during coming season is high. This leaf miner is not expected to become a permanent pest in apple orchards of the upper Shenandoah Valley. SPIDER MITE eggs are quite common in apple orchards in Frederick County. ROSY APPLE APHID (Anuraphis roseus) egg populations are very low in orchards in this county, and the pest is not expected to be serious. Winter was also favorable for survival of CODLING MOTH (Carpocapsa pomonella) in Frederick County and there is a potential for light to moderate damage; however, spring infestations are not expected to be severe. SCALE INSECTS are low in this county and not much difficulty from these pests is anticipated. (Hough).

CODLING MOTH (Carpocapsa pomonella) - INDIANA - Overwintering larvae more plentiful than since 1944 at Vincennes. (Hamilton).

APHIDS - INDIANA - Apple aphids hatched March 13 at Orleans, week earlier than in 1954. Population extremely light. (Marshall). An occasional newly hatched aphid, species undetermined, at Vincennes March 14. (Hamilton). DELAWARE - Apple grain aphid (Rhopalosiphum fitchii\*) eggs hatching March 16. (Late News).

PEACH TREE BORER (Sanninoidea exitiosa) - NORTH CAROLINA - A two-acre field of 8-year old peach trees in Currituck County 90 percent infested. (Scott).

PLUM CURCULIO (Conotrachelus nenuphar) - ARKANSAS - Non-existent to few in Clarksville area. Infestations light, averaging 1 per tree in outside rows in Nashville area. (Warren).

TEXAS - First of season jarred from wild plum in Smith County March 14, and in Brazos County March 15. (King, Morris).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - ARKANSAS - Active in southern area. Larvae in first and second instars. (Warren). MISSISSIPPI - Observed on native cherry trees in Oktibbeha and Webster Counties and on one property in Forrest County where 2 cherry trees were defoliated. (Hester, Address).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - INDIANA - No adults found to date. Winter carryover extremely light in southern area. (Hamilton).

SPRING CANKERWORM (Paleacrita vernata) - ILLINOIS - Fairly heavy flight of moths in Urbana area March 11. (Petty).

CATFACING INSECTS - ILLINOIS - First tarnished plant bugs jarred at Mounds, March 14--10 from 5 unsprayed fruit trees and 12 from same trees on March 16. (Chandler). INDIANA - One tarnished plant bug and one stink bug found in 5 peach trees jarred March 11 in Vincennes area. None found in 5 trees in another orchard jarred March 14. (Hamilton).

LEAF-FOOTED BUG (Leptoglossus sp.) - TEXAS - Heavy local infestation on tangelos in Dimmit County. (Richardson).

CONCHUELA (Chlorochroa ligata) - TEXAS - Heavy local infestation on young orange trees (blossoms) in Dimmit County. (Richardson).

\*Palmer, M. A. 1952. Aphids of the Rocky Mountain Region, p. 215.

TRUCK CROP INSECTS

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - GEORGIA - Heavy defoliation of turnips in commercial planting in Seminole County, March 10. (Geiger).

CABBAGE APHID (Brevicoryne brassicae) - NORTH CAROLINA - A 20-percent infestation of a 4-acre field of young cabbage in Currituck County. (Scott).

TOMATO RUSSET MITE (Vasates lycopersici) - NORTH CAROLINA - Infesting petunia plants in greenhouse at Morganton. Tomato plants in same house not infested. Det. E.W. Baker (Jones, Farrier).

SEED-CORN MAGGOT (Hylemya cilicrura) - MISSISSIPPI - Destroyed all the seed pieces of Irish potatoes planted February 15 and now working on second planting on one farm in Grenada County. (Douglass). OKLAHOMA - Adults widespread and active in spinach fields in the Arkansas Valley from Boxby to Fort Smith. Maggots found only around roots and in leaf petioles. (Arbutnot, Walton).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - NORTH CAROLINA - A rather severe infestation of young tobacco in a plant bed in Wilson County. Some plants severely damaged. Also observed in Columbus County, infestations ranging from 1 to 80 percent of plants damaged. (Rabb, Guthrie).

MIDGES - NORTH CAROLINA - Infesting tobacco plant beds in Columbus County. Severe around margins of many beds, with most plants killed, but remaining areas relatively unaffected. (Rabb, Guthrie).

ONION THRIPS (Thrips tabaci) - TEXAS - Heavy local infestation on onions in Brazos County. (King).

ARMY CUTWORM (Chorizagrotis auxiliaris) - TEXAS - Medium local infestation on onions in Madison County. (Garrett).

A MAGGOT - ARIZONA - Reported from bulbs of garlic on 80 acres at Mesa. (Ariz. Coop. Rept.).

CUTWORMS - ARKANSAS - Damaging gardens in southwest area. (Warren). OKLAHOMA - Garden cutworms very numerous in Oklahoma County. (Bower).

STRAWBERRY CROWN BORER (Tyloclerma fragariae) -  
ARKANSAS - Infestations present in southwest area, but not heavy  
enough to cause concern. (Warren).

STRAWBERRY WEEVIL (Anthonomus signatus) - ARKANSAS -  
Present in the southwest area, but not heavy enough to cause  
concern. (Warren).

### COTTON INSECTS

#### Boll Weevil Survival Counts in Louisiana:

Ground trash examinations in Madison Parish, completed on  
March 7, showed an average of 2,021 live weevils per acre.  
This number is about 2.5 times the average found in this parish  
during the past 19 years. Based on fall and spring examinations  
the percentage of survival was 75, which has been exceeded in  
only three years - 1953, 1949, and 1941. In Ouachita Parish  
there was 11 percent survival, in St. Landry Parish 29 percent,  
in Avoyelles Parish 18 percent, in Red River Parish 100 percent  
and in Bossier Parish 86 percent. Survival figures for previous  
years for parishes other than Madison are not available. Two-  
hundred samples were examined in Madison Parish and 20 in  
each of the remaining parishes. (Gaines).

### FOREST, ORNAMENTAL AND SHADE TREE INSECTS

JUNIPER WEBWORM (Dichomeris marginella) - NORTH CAROLINA -  
Attacking juniper in Wake County. (Scott).

BARK BEETLES (Ips spp.) - NORTH CAROLINA - Killing many  
pines in Union County. (Marsh). A concentrated flight of hordes  
of adults observed in Wayne County, the source appearing to be  
windfalls resulting from 1954 hurricane. (Lewis, Mitchell).

ARBORVITAE APHID - TEXAS - Medium to heavy widespread  
infestation on arborvitate in Llano, Mason and McLennon Counties.  
Heavy infestations in city of Waco. (Cowan, King).

### INSECTS AFFECTING MAN AND ANIMALS

LONG-NOSED CATTLE LICE (Linognathus vituli) - OKLAHOMA -  
Unusually large numbers on untreated cattle in central and western  
areas. (Bower, Howell).

DOG SUCKING LOUSE (Linognathus setosus) - PENNSYLVANIA - Moderate infestation on a dog in Centre County. (Udine).

A MANGE MITE - PENNSYLVANIA - Light to moderate in one herd of cattle in Clearfield County. (Adams).

FLIES - UTAH - House flies and blow flies have become unusually abundant for the early season at Milford, St. George, Santa Clara and Hurricane. (Knowlton). VIRGINIA - House fly becoming active in Richmond and Blacksburg March 8. (Morris).

SHEEP SCABIES - VIRGINIA - During February 268 cases on two premises in Smyth County, 250 cases on one premise in Rockingham County and 47 cases on one premise in Tazewell County. (Livestock Health).

ORIENTAL COCKROACH (Blatta orientalis) - UTAH - Infesting kitchen of one large establishment at Logan. Unusual for this species to be so abundant in northern Utah. (Davis, Knowlton). PENNSYLVANIA - Large numbers in honeycombs in Huntingdon County, March 12. (Udine).

#### STORED-PRODUCT INSECTS

POTATO TUBERWORM (Gnorimoschema operculella) - UTAH - Apparently a high mortality in stored potatoes, but some have survived in culls. An intensive control program is planned for infested areas in Washington and Iron Counties this season. (Knowlton).

FLAT GRAIN BEETLES (Laemophloeus spp.) - WASHINGTON - Recovered in greater numbers this month in Palouse region. High populations found in bins which had not been previously fumigated. (Walker, Bishop).

#### MISCELLANEOUS INSECTS

BOXELDER BUG AND CLOVER MITE - TENNESSEE - Heavy scattered infestations being found all across the State. (Mullett).

CASEMAKING CLOTHES MOTH (Tinea pellionella) - NORTH CAROLINA - Infesting hotel rooms in Whiteville, Columbus County and Elizabeth City, Pasquotank County. (Scott).

TERMITES - UTAH - Caused serious damage to one auto court at St. George. (Knowlton). WASHINGTON - Reticulitermes nesperus infesting one fourth to one third of sub-floor of a farm house near Almota. Considerable damage and treatment required. (Quist, Davis).

OLD HOUSE BORER (Hylotrupes bajulus) - VIRGINIA - Damaged floors so badly in an Augusta County home that boards gave way under foot. (Woodside).

Light Trap Collections:

ARKANSAS - At Fayetteville 73 Pseudaletia unipuncta and 28 Peridroma margaritosa adults taken during week ending March 18. At Stuttgart 8 P. unipuncta and 15 Agrotis ypsilon adults collected. The heaviest catch per any night was 41 P. unipuncta adults on March 12. (Warren).

TENNESSEE - The first armyworm (Pseudaletia unipuncta) moths of the season taken in small numbers from each of the 8 reporting stations except Knox County during week ending March 20. Caenurgia erechthea, taken at 4 stations, showed a very sharp rise in numbers over last week. Seed corn beetles taken in Madison County totaled 3,584, in Maury County 16, Cumberland County 2, and Knox County 5. Other moths collected are as follows: Agrotis ypsilon 10, Peridroma margaritosa 14, Prodenia eridania 54, Plathypena scabra 3. (Dozier).

MISSISSIPPI - Moths collected March 13-18 in 4 counties (Coahoma, Humphreys, Oktibbeha and Pearl River) are as follows: Agrotis ypsilon 40, Feltia subterranea 7, Heliothis armigera 2, Hyphantria cunea 1, Prodenia ornithogalli 13, Pseudaletia unipuncta 92 and Trichoplusia ni 1. (Hutchins). (See page 258 for additional collections).

RECENT IMPORTANT INTERCEPTIONS AT PORTS OF ENTRY

Chestnuts from foreign countries have been found infested on a number of occasions recently with living larvae of a chestnut weevil, Curculio elephas Gyll. and the nut fruit tortrix, Laspeyresia splendana Hbn. C. elephas was intercepted in chestnuts in baggage 18 times from Italy, 2 times from Yugoslavia and 2 times from Portugal at New York, N. Y. and Philadelphia, Pa. (various inspectors). L. splendana was intercepted in chestnuts in baggage 45 times from Italy, Portugal, Spain and Yugoslavia at Philadelphia (various inspectors) and in chestnuts in the mails once from England at St. Paul, Minn. (Hecker) and once from Japan at San Pedro, Cal. (Lindsay). These two insects are considered important pests of chestnuts in parts of Europe and Asia. Serious damage is caused by the larvae of both feeding in the nuts often completely destroying them. Additional injury is caused by the adults of the chestnut weevil puncturing the bases of the young nuts to feed, causing a premature nut fall as high as 20 percent of the crop in some instances.

Observations on the biology of this chestnut weevil indicate the adults may be found from July to September. Adult females deposit eggs in clusters in the young nuts. Each female lays about 20 eggs. They hatch in 3-4 weeks. The larvae feed in the nuts until full grown then pupate in the soil. At times pupation and adult emergence occurs in the nuts. In the nut fruit tortrix, adults appear in June and July. Eggs are deposited on the young nuts. They hatch in about 10 days. The young larvae bore into the nuts and feed until completely developed in the fall, then leave the nuts to hibernate in whitish felty cocoons which they spin on the twigs or branches. Occasionally larvae hibernate in the nuts. Pupation and adult emergence occur the following spring.

These two pests of chestnuts are said to be widely distributed throughout Europe and parts of Asia. In addition to chestnuts, C. elephas attacks acorns and L. splendana, acorns and walnuts. Both insects have been intercepted frequently in past years in chesnuts from Europe. They are not known to be present in the United States. (Compiled Plant Quarantine Branch).

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Weather Continued:

for this early in the season at Macon, Ga. (88°), Charleston, S. C. (88°), Augusta, Ga. (88°), Jacksonville, Fla. (89°), and Savannah, Ga. (90°) on the 16th; and at Mobile, Ala. (85°) and New Orleans, La. (87°) on the 17th. The record was equaled at Jackson, Miss. (85°) on the 16th. Temperatures for the week ranged from a high of 95° at Laredo, Texas to a low of -19° at International Falls, Minn. Precipitation was widespread throughout the week with only Florida, California, parts of Washington and Oregon and the lower section of the Western Plains receiving none. Amounts were generally light except in the area from northeastern Texas through Kentucky to the North Carolina coast where amounts were in excess of 1 inch. Greatest amounts were accumulated in the area of eastern Oklahoma, southern Missouri, and northern Arkansas. Locally heavy amounts up to 8 inches were reported in eastern Oklahoma.

Generally light snowfall on the 20th and 21st, associated with the penetration of Arctic air, brought snow cover back to all parts of the Dakotas and Minnesota, most of Nebraska, and the northern section of Iowa. Snowfall was statewide in Kansas on 21st, but only a trace was accumulated on the ground.

High winds and duststorms continued to sap the scant soil moisture in the lower western Plains region.

Tornadoes were active on the 20th in southeastern Missouri. One cut a path 1 1/2 miles long near East Prairie, Mo., destroying six farm houses and injuring at least one man. Another struck on the Arkansas State line near Hornersville, Mo., destroying some farm buildings, but causing no injuries. A small tornado was also reported near Tupelo, Miss., on the 21st, no damage reports were received, however. Showers and thunderstorms, with some reports of hail, were associated with the unstable conditions in eastern Texas on the 20th and 21st. (Summary Supplied by U. S. Weather Bureau).

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Light Trap Collections (Continued):

LOUISIANA - The more important insects collected at Tallulah, for week ending March 18 are as follows: Agrotis ypsilon 45, Feltia subterranea 37, Heliothis armigera 2, Laphygma exigua 56, Loxostege similalis 57, Peridroma margaritosa 24, Prodenia ornithogallia 29, Pseudaletia unipuncta 120, and Empoasca spp. 23. (Gaines et al).

## SUMMARY OF INSECT CONDITIONS - 1954

### MONTANA

Reported by State Entomologist Office

#### General Feeders:

GRASSHOPPERS occurred in high populations on cropland in the north-central area. Other scattered spots throughout the State showed light to moderate damage. The most damaging species was Melanoplus bivittatus but Aulocara elliotti, which did severe damage in some areas, was probably the species which showed the greatest increase in numbers. Rangeland grasshoppers also appeared in large numbers. The general area of infestation was in the western part of the State and extended east to about the Bear Paw Mountains and south to Stillwater County. This area, although not continuously infested, contained most of the heavy populations in the State. Camnula pellucida caused much damage in localized areas while M. occidentalis and M. mexicanus were present in greater than usual numbers over scattered western areas. MORMON CRICKET (Anabrus simplex) - Gregarious bands reported in at least eight different spots; at higher elevations, heaviest in south-central part. Other infestations occurred in the upper Blackfoot River Valley and in Blaine, Judith Basin, and Golden Valley Counties. Scattered crickets were reported over a good many counties in the western part. Approximately 19,000 acres were baited in 1954 to combat these pests. ARMY CUTWORM (Chorizagrotis auxiliaris) - Scattered light to moderate damage occurred in Wibaux, Fallon, Carter, Big Horn, Carbon, Gallatin, Jefferson, Madison, and Broadwater Counties. Spotted, severe damage occurred in Cascade, Chouteau, Fergus, Musselshell, Golden Valley, Stillwater, and Yellowstone Counties. In addition to these early spring infestations, damage was noted in the fall to winter wheat in Chouteau and Yellowstone Counties.

WIREWORMS and FALSE WIREWORMS -The damage from false wireworms during 1954 was probably higher than it has been for a number of years. In general the northeastern, north-central and central part suffered damage. Localized infestations and damage occurred in the south-central and southwestern part of the State. For the first time since 1937 an ARMYWORM (Pseudaletia unipuncta) outbreak occurred in Montana. Generally this infestation followed the Yellowstone River Valley from Billings east to the North Dakota border. Infestation occurred mostly in small grains although sugar beets and corn were attacked in a few cases. Damage was slight since the crops attacked were very near maturity. NUTTALL BLISTER BEETLE (Lytta nuttallii)

Present in large numbers in Dawson, Wibaux, and Richland Counties in small grains, gardens, and in alfalfa. Economic populations of FLEA BEETLES were present in a number of sugar beet fields in Richland County and in surrounding counties during the year.

#### Small Grain Pests:

WHEAT CURL MITE (Aceria tulipae) - An outbreak of wheat streak mosaic, spread by this mite, occurred in north-central and eastern Montana. Although the disease has been present in the State for a number of years, this is the first year when large losses have resulted. ENGLISH GRAIN APHID (Macrosiphum granarium) was present in light, non-economic infestations in western mountain valleys and in the northeastern section. SAY STINK BUG (Chlorochora sayi) - One local severe infestation in McCone County. WHEAT JOINTWORM (Harmolita tritici) has never been a serious enemy of wheat in Montana. Light infestations occurred in Stillwater and Fergus Counties. A SPIDER MITE (Paratetranychus pratensis) - Winter wheat fields in Chouteau County showed some local, marginal damage in the spring. WHEAT STEM SAWFLY (Cephus cinctus) - Economic damage was more widespread than ever before. The insect has previously been reported from all counties east of the Continental Divide. Whether the upsurge in damage in 1954 is the result of local optimum conditions or is of a more permanent nature has not been determined. A WESTERN WHEAT APHID (Brachycolus tritici) is perennially present in the central area where care is not taken to eliminate volunteer plants from fallow ground.

#### Corn Pests:

CORN EARWORM (Heliothis armigera) was not as prevalent during 1954 as in the last two or three years. Infestations were confined to the southeastern and western mountain valleys. EUROPEAN CORN BORER (Pyrausta nubilalis) was first reported in Montana in 1951. No new economic infestation has been observed during the last two years. EUROPEAN EARWIG (Forficula auricularia) is common in the western and southwestern areas. It is being reported from new areas every year.

#### Alfalfa and Clover Pests:

ALFALFA WEEVIL (Hypera postica) is occurring over an ever-widening range. The entire State except those counties north of Deer Lodge and Silver Bow in the western area have infestations. The pest has reached the northern border of Montana. LYGUS BUGS (Lygus spp.) although abundant, apparently are of economic importance only in seed-producing areas.

Garden and Truck Crop Pests:

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) in the past has not been too important in the State. However, during the year, Gallatin and Madison had higher than usual populations. Control measures effective. POTATO PSYLLID (Paratrioza cockerelli) - Little activity and no heavy infestations on potatoes were reported during the year. BEET WEBWORM (Loxostege sticticalis) - In addition to infestations in sugar beets in the northeast, alfalfa was infested along the Yellowstone River. CABBAGE MAGGOT (Hylemya brassicae) is present in most areas. IMPORTED CABBAGEWORM (Pieris rapae) - Some light to moderate infestations observed in the western part. ONION MAGGOT (Hylemya antiqua) continues to occur in gardens generally throughout State.

Orchard Insects:

BLACK CHERRY FRUIT FLY (Rhagoletis fausta) - Surveys during 1954 indicate this pest to be in most of the cherry-growing region in the northwestern area. MITES (Vasates fockeui and Diptacus gigantorhynchus) - A general outbreak of these two mites occurred simultaneously on the east shore of the Flathead Lake in cherry orchards. PEAR-SLUG (Caliroa cerasi) - Economic infestations of this pest occurred more frequently. Broadwater, Gallatin, Lake, and Ravalli Counties all experienced damage. BLACK CHERRY APHID (Myzus cerasi) increased in numbers; however, in most cases control timely and little damage resulted. PEAR LEAF BLISTER MITE (Eriophyes pyri) was reported in Lake, Ravalli, Missoula, and Flathead Counties. CURRANT FRUIT FLY (Epochra canadensis) was present over much of State. No heavy economic infestations were reported. RASPBERRY CANE BORER (Oberea bimaculata) - This pest and the raspberry root borer occur generally and cause moderate damage throughout many areas of western Montana each year. STRAWBERRY LEAF ROLLER (Ancylis comptana fragariae) is most important in the south-central area. In some cases severe damage to plants resulted.

Insects of Ornamentals:

ASH PLANT BUG (Neoborus amoenus) - Entire southwestern part of State had light to moderate damage on green ash. Heavy damage to ash occurred in localized areas and in one county in the central area. POPLAR BORER (Saperda calcarata) - Severe infestations in Big Horn and Deer Lodge Counties and moderate damage in scattered areas over State. WOOLLY ELM APHID (Eriosoma americanum) was quite abundant and some towns initiated control programs. SPIDER MITES were very

abundant on many coniferous and deciduous trees during the last part of the summer and early fall. VIRGINIA CREEPER LEAFHOPPER (Erythroneura ziczac) was particularly abundant in the central area. In some cases, where control measures were not initiated in time, ornamental plants killed. COOLEY SPRUCE GALL APHID (Chermes cooleyi) was present in most of State.

Household Pests:

CLOVER MITES (Bryobia praetiosa) presented the major household pest problem during the year. Almost all counties reported at least some occurrence. TERMITES infested houses in Dawson and Phillips Counties. STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) - Numerous requests for information received.

Man and Animal Pests:

MOSQUITOES were present throughout most of the irrigated areas in economic numbers. CATTLE GRUBS (Hypoderma lineatum and H. bovis) are perennial pests. CATTLE LICE appeared comparatively early during fall. Haematopinus eurytarnus, Linognathus vituli, Bovicoia bovis and Solenopotes capillatus found to occur in the State during the year. HORN FLY (Siphona irritans) was about normal in abundance.





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**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL BRANCH**

**AGRICULTURAL RESEARCH SERVICE**

**UNITED STATES DEPARTMENT OF AGRICULTURE**



# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

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United States Department of Agriculture  
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## COOPERATIVE ECONOMIC INSECT REPORT

## Highlights of Insect Conditions

GREENBUG infestations continue in the Texas Panhandle but mostly light. Light infestations reported from Louisiana and Florida but none found in several Kansas counties. (pages 265 ).

ARMYWORM larvae appearing in Louisiana and South Carolina. (page 265 ). Moths active in several states. (page 277 ).

YELLOW CLOVER APHID infestations continue in areas of Arizona, Texas and Oklahoma. Economic populations almost to Kansas border in Oklahoma. (pages 267, 279).

VEGETABLE WEEVIL active in Florida, Mississippi, Georgia and South Carolina. (page 270 ).

PEA MOTH recorded from Oregon. (page 271 ).

Status of SWEETPOTATO WEEVIL in the United States. (page 272 ).

Summary of FOREST PEST problems in New York-1954-55. (page 274 ).

BOLL WEEVIL survival counts in North Carolina low. (page 273 ).

LIGHT TRAP collections. (pages 277, 278).

Some of the more IMPORTANT INSECT PESTS of 1954. (after p. 279).

Summary of INSECT CONDITIONS-1954-in Kansas. (page 281 ).

First REPORTED RECORDS for the season. (page 273 ).

ADDITIONAL NOTES. (page 278).

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Reports in this issue are for the week ending March 25, 1955, unless otherwise designated.

WEATHER FOR THE WEEK ENDING MARCH 28, 1955

Icy Arctic air surged southward into the Gulf of Mexico at the beginning and again at the end of the week, bringing record low temperatures for this late in the season to most stations in the South and Mid-West. The onrush of cold air was accompanied by blizzards, tornadoes, floods, ice jammed rivers, dust storms and gale force winds. The push of cold air at the beginning of the period was continuation of the one reported at the end of the previous week. This was accompanied by high winds throughout the country east of the Rockies. The high winds brought blizzard conditions to the Plains States as far south as Eastern Oklahoma on the 22nd. Although the snowfall was not extremely heavy, many roads were blocked due to drifting. In the dry region of the lower Western Plains, the winds caused further loss of soil. The storm reached the East Coast on the 22nd bringing gale force winds to the Northeast from eastern Indiana and Wisconsin, through southern Michigan, Ohio, and Pennsylvania to New York and New Jersey. Further South heavy rains associated with this system brought floods to Western Kentucky, Tennessee and northern Mississippi and northern Alabama where streams were already swollen from the previous week's heavy rains. Freezing temperatures were reported as far south as Austin, Texas on the 22nd and light frost occurred in northern Florida on the 23rd.

Moderation following this outbreak was short lived, as another frigid blast was unleashed through the Northern Rocky Mountain States on the 24th. By the 27th, the cold air mass had reached the Gulf Coast and the Eastern Seaboard leaving a wake of broken temperature records in its path. New Orleans's temperature of 30° on the 27th was the coldest experienced in that city since February 1951. It was also the latest spring freeze there since 1894 and lowest temperature so late in the season for 82 years of record. Helena, Mont. recorded a temperature of -30° on the 25th, which was not only a record for so late in the season, but was also the coldest of record for the entire month of March. Other broken records included 0 at Omaha, Nebr., and 10° at Indianapolis, Ind. on the 26th; -15° at International Falls, Minn. and 20° at Raleigh, N. C. on the 27th; and 35° at Laredo, Texas on the 28th. Cold air spilling over the mountains into the Great Basin also established a new record of 19° for Salt Lake City, Utah on the 26th. Blizzard conditions returned to the Plains States as far south as central Kansas and northwestern Missouri on the 25th. Snowfall continued eastward on the 26th and 27th through the Lake Regions and as far south as the Ohio River Valley. Again the total snowfall was not heavy, but it served as a protective cover for crops during the low temperatures that followed. (Weather continued on page 279 ).

## CEREAL AND FORAGE INSECTS

GREENBUG (Toxoptera graminum) - TEXAS - Twenty-seven counties surveyed from Anson and Vernon northwest through the panhandle March 11 to 19. Greenbugs found in only 17 panhandle counties, but populations were light except in 5 counties. Extremely heavily infested spots in Briscoe, Swisher, Deaf Smith, Castro and Parmer Counties. One irrigated field in Swisher County had as high as 2 to 3 thousand greenbugs per linear foot of row. Several fields in Deaf Smith and Castro Counties had populations of 100-300 per foot of row. High populations mostly in irrigated fields since dryland wheat suffering from lack of moisture. Highest populations in non-grazed fields. (Daniels, Davis, Ashdown, Cleveland). KANSAS - None found in any of wheat and barley fields examined in following counties: Riley, Clay, Washington, Republic, Cloud, Mitchell, Lincoln, Ottawa, Dickinson and Geary, March 18. (Matthew). LOUISIANA - Light infestation in 7 fields of oats in Tangipahoa, St. Landry, Avoyelles and East Baton Rouge Parishes. (Oliver, March 18).

CORN LEAF APHID (Rhopalosiphum maidis) - TEXAS - Medium to heavy widespread infestation on barley in Smith County. Stunting plants. (Browning). Medium to heavy widespread infestation on barley in Kaufman County. (Randolph).

ARMY CUTWORM (Chorizagrotis auxiliaris) - KANSAS - Few in the wheat, barley and alfalfa fields examined in north central counties. Highest infestations gave counts of only one larva per 6 feet of drill row, March 18. (Matthew).

ARMYWORM (Pseudaletia unipuncta) - LOUISIANA - Occasional larvae found in oat fields in Tangipahoa, Avoyelles, St. Landry and Rapides Parishes. (Oliver, March 18). SOUTH CAROLINA - Light infestation on oats in Beaufort County. First report of damage this season. (Nettles).

BROWN WHEAT MITE (Petrobia latens) - TEXAS - Medium to heavy widespread infestation on wheat in Swisher, Castro, Hansford, and Sherman Counties. (Davis, Daniels).

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - TEXAS - Light local infestation on oats and vetch in Kaufman County. (Randolph).

YELLOW SUGARCANE APHID and GREENBUG - FLORIDA - Increasing on Pangola grass pastures at Belle Glade, but not yet in injurious proportions. (Genung).

Small Grain Pest 1 / Conditions in Texas, Oklahoma, and Kansas  
January 7 to March 18, 1955

Summary of Conditions: Light infestations of GREENBUG were found throughout most of the central and southern Great Plains area during January 7 to March 18, 1955. Populations were extremely low in Kansas, western Oklahoma, and central and south Texas. A few spotted infestations occurred in north central Texas, especially in counties north of Dallas and Fort Worth. Populations were also extremely low in most counties of the Texas Panhandle, except for areas in Swisher, Deaf Smith, Donley, Moore, Randall, Briscoe, Castro, and Parmer. The highest populations were in Swisher, Deaf Smith, Castro, and Randall Counties where several fields with populations of 100 to 300 greenbugs per linear foot were observed. Infestations were particularly heavy in a few irrigated fields in Swisher County, and some control measures by airplane have been taken. Natural enemies have not been plentiful except in north-central Texas where the parasite Aphidius testaceipes was quite abundant. No widespread outbreak of the greenbug is indicated with control being limited to rather localized areas.

BROWN WHEAT MITE populations were quite low in most of the area with heaviest concentrations occurring in continuously planted fields. The highest populations were found in Beaver County, Oklahoma, where five fields averaged 225 mites per linear foot. Other areas having moderately heavy populations were Texas, Woodward, and Dewey Counties, Oklahoma; Hansford, Sherman, Swisher, and Castro Counties, Texas Panhandle; and several counties in north-central Texas. The heaviest populations of mites were in fields suffering badly by drought where control measures would probably not be justified. Some locally damaging infestations of this mite may develop during the next few weeks in the Oklahoma and Texas Panhandles and in north-central Texas. Because of the small size of the wheat, populations in the southwestern corner of Oklahoma might cause some damage.

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1 / Except hessian fly and eriophyid mites.

The WINTER GRAIN MITE was the most serious pest of small grains in the Texas areas lying south of the panhandle. The most seriously affected fields were in the Dallas-Fort Worth, Waco, and Kendall-Kerr areas. Damage by this mite was apparently the worst observed since 1951. A large area was sprayed and good results achieved.

CUTWORM populations were distributed over the area, but were very low in most instances. Rarely was more than one cutworm per square foot found, except in border areas adjacent to grass pastures. In Lubbock County, Texas, populations up to 5 cutworms per foot were observed. CORN LEAF APHIDS were not found overwintering in Kansas or western Oklahoma. Heavy populations occurred in some barley fields in Bryan County, Oklahoma, and in north-central Texas. Very few ENGLISH GRAIN or APPLE GRAIN APHIDS have been found or reported during the period covered in this report. (Small Gr. Ins. Reg. Cooperators).

LESSER MIGRATORY GRASSHOPPER (Melanoplus mexicanus) - ARIZONA - Nymphs found at less than 0.1 per square yard at Tempe March 15-17. Beginning of hatching (March 10-15) latest in 20 years-2 weeks later than normal and 3 weeks later than 1954. (Ariz. Coop. Rept.).

A SPIDER MITE (Tetranychina apicalis) - LOUISIANA - Light on clover in two fields in Tangipahoa Parish. On lawns in several locations. Heavy infestation of white clover in St. Landry Parish. (Oliver, March 18). FLORIDA - Averaging 1,000 to 5,000 eggs and 100 to 500 adults per plant on lupine at one location in Alachua County. (Robinson).

CLOVER MITE (Bryobia praetiosa) - MISSISSIPPI - Damage to wild vetch in Adams County, crimson clover in Jackson County and white clover in Jones County. (Hutchins, Pepper). ARIZONA - Severe on 20 acres of wheat on Yuma Mesa March 17. Fields previously in alfalfa. First time this damage seen. (Ariz. Coop. Rept.).

YELLOW CLOVER APHID (Myzocallis trifolii) - TEXAS - Medium to heavy widespread infestation on alfalfa and clovers in Denton, Grayson, Collin and Fannin Counties. Killing clover and alfalfa in some places. (Garner, Chada, Spence). ARIZONA - Light to very heavy on 1,000 acres of alfalfa in Yuma area March 22, winged forms increasing. Predators not keeping up with increase. General and increasing in all fields not treated in Graham County, several fields destroyed. (Ariz. Coop. Rept.).

TARNISHED PLANT BUG (Lygus lineolaris) - LOUISIANA - Average about 22 per 200 sweeps of 12-inch net on white clover and California burclover in East Baton Rouge Parish. (Oliver, March 18).

POTATO LEAFHOPPER (Empoasca fabae) - LOUISIANA - Two E. fabae males taken in 200 sweeps of 12-inch net in white clover and California burclover at Baton Rouge February 23. Two E. fabae (males) also taken in 200 sweeps in sweetclover at Morganza February 24 and one male in 200 sweeps in this area March 2. Sweepings at Baton Rouge March 1, 7 and 16 yielded no E. fabae males. (Oliver).

PEA LEAF WEEVIL (Sitona lineata) - OREGON - Adults active week of March 13 in Hillsboro area. Some ragging of leaves noted in red clover fields. (Prescott).

CLOVER ROOT CURCULIO (Sitona hispidula) - DELAWARE - Adults observed at most locations. (Late News). MARYLAND - Light numbers adults in alfalfa in Montgomery County. (U. Md., Ent. Dept.).

ALFALFA WEEVIL (Hypera postica) - MARYLAND - Adults showing some activity in alfalfa in Montgomery County. Mating observed. (U. Md., Ent. Dept.). DELAWARE - Very active in alfalfa and clovers. (Late News). PENNSYLVANIA - Small larvae, 1/8 inch, in buds of alfalfa in Lancaster County. (Pepper).

CLOVER LEAF WEEVIL (Hypera punctata) - LOUISIANA - Light infestation on clovers in Tangipahoa Parish. Heavy infestation averaging 70 per square foot in Webster Parish and 72 per square foot in East Baton Rouge Parish. (Oliver). DELAWARE - All larval stages present generally on red clover. (Late News). MARYLAND - Light numbers larvae in alfalfa in Montgomery County. (U. Md., Ent. Dept.). PENNSYLVANIA - Larvae abundant, 1/4 to 1/2 inch, in clover in Lancaster County. (Pepper).

PEA APHID (Macrosiphum pisi) - DELAWARE - Scarce in alfalfa. (Late News). MARYLAND - Light numbers in alfalfa in Montgomery County. (U. Md., Ent. Dept.).

LEATHER JACKETS - MISSISSIPPI - Specimens of Tipula sp. from Pontotoc County where they reportedly destroyed lespedeza last year. (Hutchins). TENNESSEE - Unidentified species damaging two pasture fields in Greene County. (Cunningham).

GREEN CLOVERWORM (Plathypena scabra) - LOUISIANA - Light, about 22 per 100 sweeps of 12-inch net in five fields of clover in Tangipahoa Parish. (Oliver, March 18).

VARIEGATED CUTWORM (Peridroma margaritosa) - TEXAS - Heavy local infestation on oats and alfalfa in Bastrop County. (Cook). Medium local infestation on oats and vetch in Kaufman County. (Randolph).

CLAYBACKED CUTWORM (Agrotis gladiaria) - LOUISIANA - Seven per square foot in white clover in Webster Parish. (Oliver, March 18).

BRISTLY CUTWORM (Lacinipolia renigera) - DELAWARE - Prevalent in alfalfa from Newark to Smyrna. (Late News).

BEAN LEAF BEETLE (Cerotoma trifurcata) - ARKANSAS - Examination of ground trash samples in Crittenden County showed average of 10,948 adults per acre of ground trash. (Warren).

JUNE BEETLES (Phyllophaga spp.) - LOUISIANA - Heavy flights at Baton Rouge; 438 caught night of March 16 in black light trap. Mainly P. calceata and P. micans. (Oliver, Mar. 18).

GREEN JUNE BEETLE (Cotinis nitida) - VIRGINIA - Larvae very active in re-seeded pasture in Greensville County. (Rogers). Very active in lawns in Princess Anne and Norfolk Counties. (Hofmaster). Also damaging pastures in Surry County. (Rawl). Indications are that green June beetle larvae will cause severe damage to pastures this year in Virginia. (Morris, March 18).

#### FRUIT INSECTS

APPLE APHID (Aphis pomi) - PENNSYLVANIA - Hatching on apple, March 22, Lancaster County. (Pepper).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - PENNSYLVANIA - Hatching on apple, March 22, in Lancaster County. (Pepper).

BLACK CHERRY APHID (Myzus cerasi) - OREGON - Newly-hatched nymphs noted in Willamette Valley since March 7 although cherry buds have not opened yet. (Jones).

CATFACING INSECTS - INDIANA - One tarnished plant bug found in five trees jarred March 21 at Vincennes. (Lamansky).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - PENNSYLVANIA - Egg masses quite numerous on peach twigs in Carbon County. (Menusan).

EUROPEAN RED MITE (Metatetranychus ulmi) - MARYLAND - Eggs numerous on apple twigs, Montgomery County. (U. Md., Ent. Dept.).

PEACH SILVER MITE (Vasates cornutus) - OREGON - Active and present in large numbers on peach at Hood River. (Ritcher).

PEAR LEAF BLISTER MITE (Eriophyes pyri) - OREGON - Actively laying eggs under bark scales on pear at Hood River. (Ritcher).

PEAR THRIPS (Taeniothrips inconsequens) - OREGON - First of the season noted March 21 in Linn County. (Jones).

PLUM CURCULIO (Conotrachelus nenuphar) - ARKANSAS - Dry weather and control efforts combined have reduced curculio numbers to a very low level. (Warren). GEORGIA - Four fully developed eggs found in a female curculio taken from a peach tree in a commercial orchard at Fort Valley March 15. Adults had reached center of orchards by March 14. (Snapp).

ORANGE DOG (Papilio cressphontes) - FLORIDA - Eggs and larvae on new growth of citrus at Gainesville. (Hetrick).

MEXICAN FRUIT FLY (Anastrepha ludens) - TEXAS - Total of 13 A. ludens trapped over entire Rio Grande Valley area this season. This is considerably less than for the same period last year. (Mex. Fruit Fly Cont. Proj., March 1-15).

CITRUS WHITEFLY (Dialeurodes citri) - FLORIDA - Adults very heavy on new growth of citrus and ornamentals at Gainesville. (Hetrick).

#### TRUCK CROP INSECTS

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - SOUTH CAROLINA - Larvae abundant and causing light to moderate injury in many plantings of turnips, mustard and spinach, in the Charleston area. (Cuthbert). GEORGIA - Nearly all tobacco beds in southern area showing damage from larval feeding, March 14. (Morgan). FLORIDA - Averaging

3 to 8 adults per Irish potato plant in a one-acre garden in Gadsden County. Control used. (May). Averaged 40 larvae per square foot of turnips and also found in soil in northwest part of Walton County. (Dickinson). First adult from tobacco in the Hastings area, March 4. (Dobrovsky). MISSISSIPPI - Much damage to truck crops in Jones County. (Pepper).

APHIDS - SOUTH CAROLINA - Cabbage infested in Barnwell County. Foliage moderately infested on about 8 acres, March 13. (Watts).

CABBAGE APHID (Brevicoryne brassicae) - VIRGINIA - Heavy on cole crops in southeastern truck area. (Hofmaster, March 18). SOUTH CAROLINA - Heavy to light infestations on cabbage in the Charleston area, control used on most plantings. Natural controls increasing and by March 23, apparently checking populations. (Cuthbert).

CABBAGE CATERPILLARS - SOUTH CAROLINA - Light but increasing infestations of imported cabbageworms and diamondback moth larvae in many untreated cabbage plantings, in Charleston area, March 23. (Cuthbert).

TARNISHED PLANT BUG (Lygus lineolaris) - VIRGINIA - One adult on kale in a field of southeastern truck crop area. (Hofmaster).

SEED-CORN MAGGOT (Hylemya cilicrura) - VIRGINIA - Adults on kale and spinach in southeastern truck crop area. (Morris).

TURNIP APHID (Rhopalosiphum pseudobrassicae) - SOUTH CAROLINA - Populations continue high on mustard and turnips and light to moderate on young cabbage in the Charleston area. One 10-acre planting of rape seriously damaged, parasites very active in this planting. (Cuthbert).

PEA MOTH (Laspeyresia nigricana) - OREGON - First record for Oregon. Apparently this species will not become a pest in the State since the record is based on larvae taken in Clatsop County in 1947 but was determined only recently. (Det. H. W. Capps). (Stephenson).

MEXICAN BEAN BEETLE (Epilachna varivestis) - FLORIDA - Adults on pole beans in Gadsden County. Collected March 17 for the first time this season. (May).

GREEN PEACH APHID (Myzus persicae) - VIRGINIA - Infestations range from light to heavy on spinach crops in the southeastern truck crop area, March 18. (Hofmaster). SOUTH CAROLINA - Continues problem on spinach in Charleston area, also infesting potatoes as soon as plants come up. Increasing on potatoes but still light by March 23. (Cuthbert). GEORGIA - Light but very general infestations in tobacco plant beds, March 14. (Morgan).

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - SOUTH CAROLINA - First adult observed on potatoes in the Charleston area, March 15. (Cuthbert). FLORIDA - Adult stage on potatoes in Gadsden County. Collected March 17 and was the first for the season. (May).

A WIREWORM (Conoderus vagus) - FLORIDA - Larvae, pupae and adults from Irish potatoes in St. Johns County. First adult of season collected March 21. (Dobrovsky).

ONION MAGGOT (Hylemya antiqua) - SOUTH CAROLINA - Sent in sample of multiplying onions with numerous maggots. (Nettles).

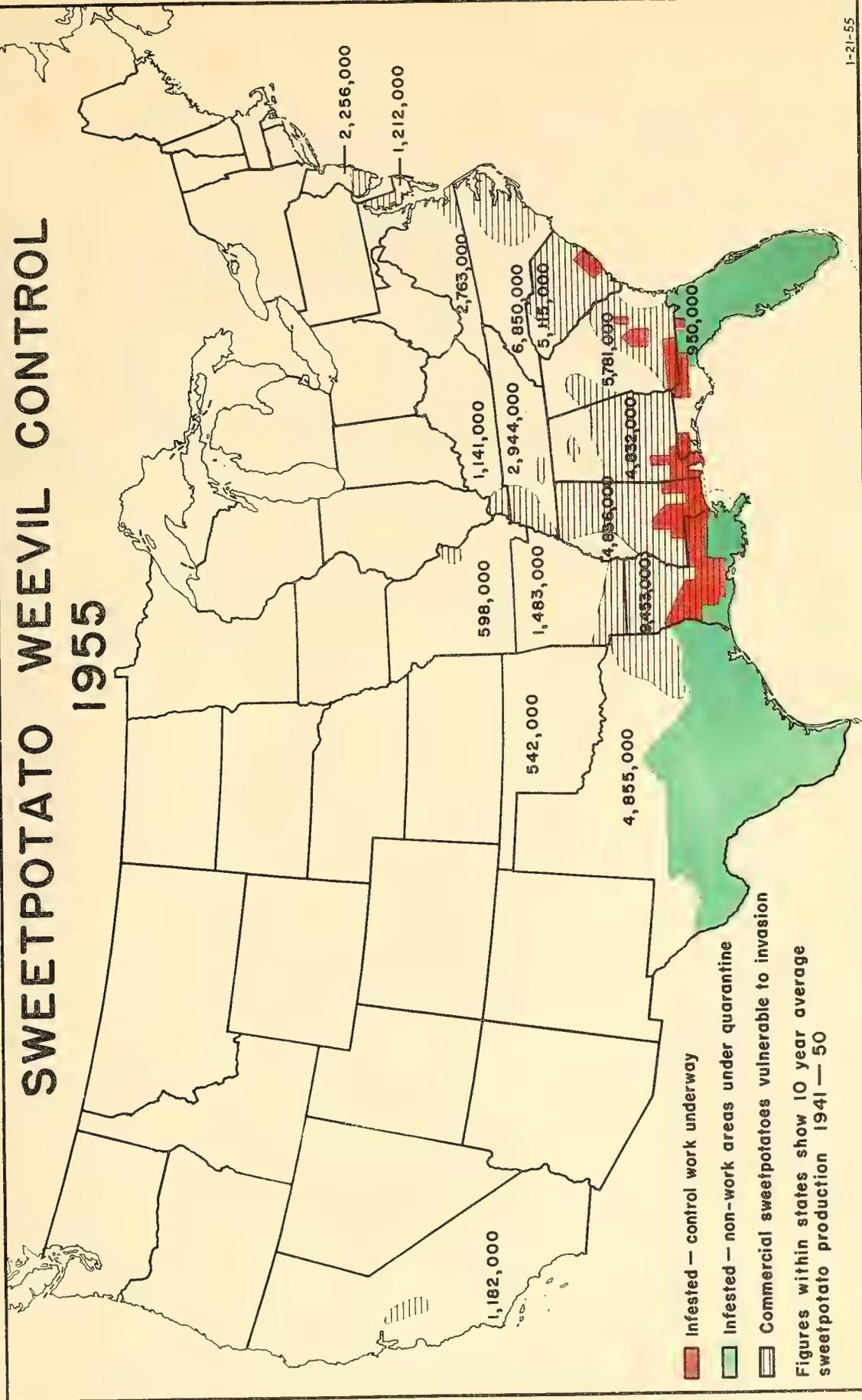
WINTER GRAIN MITE (Penthaleus major) - TEXAS - Medium to heavy local infestation on onions in Washington County. (Stufflebeme).

CUTWORMS - SOUTH CAROLINA - Slight injury to beets in Charleston area; some injury to older beets being harvested, March 30. (Cuthbert). MISSISSIPPI - Probably Agrotis gladiaria, damaged onions in a garden in Oktibbeha County. Other species of cutworms damaged young corn plants in Jones County. (Hutchins, Pepper).

AN APHID (Capitophorus sp.) - VIRGINIA - Very light on strawberry plants in southeastern truck crop area. Species of this genus capable of transmitting strawberry virus. Peak of abundance apparently passed as aphids hard to find, March 18. (Hofmaster).

SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) - Although the origin of this pest is unknown, it is assumed to be the Orient. It is thought that it was brought into the United States from the West Indies prior to 1875. Aside from sweetpotato, it feeds on such closely related plants as goat's-foot morning glory, wild moonvine and other plants of the morning-glory family. Adults feed on the leaves, vines and roots while larvae attack stems, roots and potatoes. The map on the opposite page shows the distribution of the insect and average number of bushels of sweetpotatoes produced by states.

# SWEETPOTATO WEEVIL CONTROL 1955





## COTTON INSECTS

### Boll Weevil Survival Counts in North Carolina:

Surface trash from 5 farms in each of 9 counties was examined March 8-24 for surviving boll weevils. The examinations showed live weevils to be present at rates ranging from 0-1453 per acre and averaging 236 per acre for all samples. The 1954 fall average for North Carolina was 1334 weevils per acre; therefore, the percent survival for the past winter was 17.6 percent. The samples were taken from the same sites as those used in the hibernation counts of the fall of 1954.

Although fall counts for this State prior to 1954 are not available, spring records have been taken. The 236 per acre average for 9 farms compares with an average of 1820 per acre on 5 farms for the spring of 1954 and an average of 3920 surviving weevils per acre on 6 farms in the spring of 1953. (Cotton Ins. Sect. and N. C. Dept. Ent.).

## INSECTS AFFECTING OTHER FIBER PLANTS

CORN EARWORM (*Heliothis armigera*) - TEXAS - Light local infestation on flax in Hidalgo County. Larvae from first instar to full-grown on seed pods. (Wene, Marsh).

### First Reported Records of Season (by areas):

Larvae of ARMYWORM in South Carolina, LESSER MIGRATORY GRASSHOPPER hatching March 10-15, in Arizona, ALFALFA WEEVIL larvae March 22 in Pennsylvania, APPLE APHID and APPLE GRAIN APHID hatching March 22 in Pennsylvania, PEAR THRIPS noted March 21 in Oregon, MEXICAN BEAN BEETLE adults March 17 in Florida, COLORADO POTATO BEETLE adults March 17 in Florida and March 15 in South Carolina. HORN FLY in Oklahoma, in South Carolina, March 14.

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

Summary of Current Forest Pest Problems for New York -1954-55

Compiled by Comm. on Ins. and Dis., Soc.  
of American Foresters, N. Y. Section.

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) in on increase. Causing extensive damage in southern area, especially in re-forestation areas. Large numbers of GYPSY MOTH (Porthetria dispar) egg masses found in parts of Rensselaer, Washington, Essex, Warren and Columbia Counties. FOREST TENT CATERPILLAR (Malacosoma disstria) situation easing in older infested areas since natural controls always bring pests to low ebb of cycle. MATSUCOCCLUS SCALE is serious pest of red pine and becoming worse in infested areas. At present in New York only in Long Island and Westchester County area. BEECH SCALE (Cryptococcus fagi) abundant in Catskill and southeast region and is spreading slowly. FIR BARK LOUSE or BALSAM WOOLLY APHID - Surveys show little spread into new areas, or increase in infested areas. SADDLED PROMINENT (Heterocampa guttivitta) has caused destruction in Rensselaer County and on Massachusetts border in birch, beech and maple woodlands. Infested areas have been sprayed. PINE SAWFLIES have increased during the past year in St. Lawrence County. Three-hundred acres have been sprayed. Neodiprion nanulus, N. sertifer, and N. lecontei principal species involved. SPITTLEBUG is still a problem on Scotch pine, but has not caused extensive damage in the past year. SPRUCE BUDWORM (Choristoneura fumiferana) has decreased considerably during the years and there is now little evidence of it in the State. SATIN MOTH (Stilpnotia salicis) has been building up in the eastern part of the State, especially near Saratoga, Little Falls and St. Johnsville. In most cases infestations have been treated with good results.

LINDEN LOOPER (Erannis tiliaris) caused heavy defoliation in hardwood growth in Chautauqua and Cattaraugus Counties. BIRCH LEAF MINER (Fenusa pusilla) heavily attacked gray and white birches in central areas. PINE NEEDLE APHIDS caused needle damage in the spring to white pine, especially where trees were close to the alternate host, red spruce. MOSQUITOES and BLACK FLIES were abundant throughout most of the rural areas and about 4500 acres of State-owned, special-use forest lands were treated. PARASITIC FLIES (especially sarcophagids) were unusually abundant in areas where tent caterpillar infestations were on decrease. The unusual abundance of the flies caused complaints from the public in those areas.

FOREST TENT CATERPILLAR (Malacosoma disstria) - MISSISSIPPI - Many appearing in Jones County. (Pepper).

A HOLLY LEAF MINER - MARYLAND - Larvae pupating in mines. Infestation quite general in central area. (U. Md., Ent. Dept.).

BOXELDER LEAF MINERS - TENNESSEE - Becoming active in eastern area. (Cunningham).

MAGNOLIA SCALE (Neolecanium cornuparvum) - PENNSYLVANIA - Heavy infestation on magnolia in Venango County, March 17. (Adams). FLORIDA - Increasing on magnolia at Gainesville. (Hetrick).

AZALEA LEAF MINER (Gracilaria azaleella) - PENNSYLVANIA - Pupal stage abundant in azalea in cold frame in Montgomery County, March 18. (Menusan).

A SCALE (Lecaniodiaspis sp.) - VIRGINIA - Heavy infestation found on Japanese barberry in Pulaski County. Det. H. Morrison. (Amos, Feb. 18).

BULB MITE (Rhizoglyphus echinopus) - VIRGINIA - Caused death of all jonquil bulbs in 100-square foot setting in Southampton County. (Miller, Davich).

A STRAWBERRY ROOT WEEVIL (Brachyrhinus rugosostriatus) - PENNSYLVANIA - Ruined roots of tuberous begonia in storage in Lackawanna County. Det. W. H. Anderson. (Gesell).

JAPANESE BEETLE (Popillia japonica) - VIRGINIA - Populations expected to be up in 1955. This is based on grub counts in small diggings in southeastern area. (Raine).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - KANSAS - Several large elms in northern Clay County heavily infested, March 18. (Matthew).

EUROPEAN ELM SCALE (Gossyparia spuria) - UTAH - Damagingly abundant on some elm trees at Fillmore and Salt Lake City. (Knowlton).

#### INSECTS AFFECTING MAN AND ANIMALS

HORN FLY (Siphona irritans) - SOUTH CAROLINA - Twenty to 25 per animal on beef cattle in Abbeville, March 14. First report for season. (Goodwin).

CATTLE GRUBS - UTAH - Numerous in some herds of cattle in Tooele, Weber, Utah and Juab Counties. Development of grubs slower in Weber County this year than in general. In Ogden Valley few appeared in backs of cattle until March 1. Often this has occurred 3 to 4 weeks earlier in this area. (Knowlton).

SHEEP SCAB MITE (Psoroptes equi v. ovis) - VIRGINIA - Severe on 18 head of sheep on one farm in Grayson County. (Simpson).

CATTLE LICE - MARYLAND - Heavily infesting 100 head of beef cattle in Baltimore County. (U. Md., Ent. Dept.).

POULTRY LICE - UTAH - Numerous in a number of farm flocks recently in northern area. (Knowlton).

#### RECENT IMPORTANT INTERCEPTIONS AT PORTS OF ENTRY

Living larvae of Sesamia cretica Led., the durra stem borer, were intercepted on several occasions recently in broomcorn in cargo from Greece at Baltimore, Maryland. (Stoops, Vinzant). This insect is considered an important pest of corn, broomcorn and sorghum in the Mediterranean area. It has been reported causing severe injury to these crops in Italy and Yugoslavia. Infestations as high as 90 percent have been reported in southern Italy. Attacked plants are weakened and the yield of seed and the sugar content are said to be reduced. Observations on the biology of the durra stem borer in Italy indicate it hibernates as a mature or nearly mature larva in the stalks of stored sorghum, broomcorn or corn. Adult emergence occurs in April and May. Eggs are deposited singly on the leaves or in small batches under the leaf sheaths. On hatching the larvae feed at first on the leaves then bore into the stalks or attack the ears. Pupation occurs usually in the stalks. Two generations a year have been reported in Italy. S. cretica is said to occur in Algeria, Anglo-Egyptian Sudan, Egypt, Ethiopia, France, Greece, Italy, Iraq, Morocco, Spain and Yugoslavia. It has been intercepted on numerous occasions in recent years in broomcorn from Europe. It is not known to occur in the United States. (Compiled-Plant Quarantine Branch).

LIGHT TRAP COLLECTIONS

	P. unipuncta	A. ypsilon	P. ornithog.	F. subterr.	P.mar-garitosa	H. armi-gera	A. malefida	Empoasca spp.
LOUISIANA								
St. Jos.	3/1-10	4	5	15	3	1	1	6 fabae
Bat. Ro.	3/1-15	56	29	11	131	15		14
Talulah	3/21-25	254	42	10	17	20	5	
FLORIDA								
Belle Glade	2/4-3/1		3		1	1	2*	
Sanford	2/4-3/4	8	17		45			
MISS. (Counties)								
Coahoma	3/18-25	55	46	5	7	7		
Humphreys	"	292	80	1	1	1		
Oktibbeha	"	34	10			2		
Pearl R.	"	3			8	1	1	
Washington	"	126		1		21	1	2 (spp.)
ARKANSAS								
Fayette	3/21-25	25	9			16		
TENN. (Counties)								
Shelby	3/16-23	10	5			8		
Madison	"	18	4	3		3		
Lawrence	"	5	4	3		5		
Mauriy	"	23	12			6		
Robertson	"	1	1	3				
Cumberland	"	24	7			2		
Knox	"	1		5				
Green	"	2	2	9				

MD. (County)  
 Montgomery 3/21-25  
 \*Also three H. virescens.

Other collections of importance include the following: FLORIDA - Belle Glade, Diacrisia virginica 9; Sanford, Anisota rubicunda 2, Anticarsia gemmatilis 1, Trichoplusia ni 56, D. virginica 6, Herse cingulata 2, Hyphantria cunea 3, Laphygma frugiperda 1, Prodenia spp. 20.

LOUISIANA - Baton Rouge, Mocis sp. 68, Phyllophaga spp. 40, Euetheola rugiceps 12; Tallulah, Estigmene acrea 3, Laphygma exigua 62, Loxostege similalis 11.

MISSISSIPPI - Humphreys and Pearl River Counties, T. ni 2; Washington County, Caenurgina erechtea 18.

TENNESSEE - Agonoderus lecontei 33, C. erechtea 77.

#### STORED-PRODUCT INSECTS

STORED-GRAIN INSECTS - VIRGINIA - Activity low through February on farms in southeastern counties. Expectations are that damage or activity will not be significant until about middle or last of May. (Davich).

#### BENEFICIAL INSECTS

A LADY BEETLE (Coleomegilla maculata) - ARIZONA - Increasing each time checked and giving good control of aphids on lettuce and alfalfa on 1200 acres at Hassayampa, (Ariz. Coop. Rept.).

#### MISCELLANEOUS INSECTS

CLUSTER FLY (Pollenia rudis) - PENNSYLVANIA - Very abundant in buildings in Elk, Warren and Venango Counties. (Adams).

OLD HOUSE BORER (Hylotrupes bajulus) - MARYLAND - Heavy infestation in rafters in home in Baltimore County. (U. Md., Ent. Dept.).

A RAT-TAILED MAGGOT - GEORGIA - Infesting red worm beds in Lumpkin, March 18. (Jordan).

#### ADDITIONAL NOTES

Citrus Pest Situation in Florida:

CITRUS RED MITE (Metatetranychus citri) activity increased in the second week of March to the highest level in the 5 years of record. During the third week of March 88 percent of the groves were infested.

There will probably be a reduction in activity on old leaves during the next 2 or 3 weeks as mites move to new foliage. Unless abundant rains occur, the situation will be severe through the post-bloom period. PURPLE SCALE (Lepidosaphes beckii) increased to a high level during second and third weeks of March. Leveling off of activity is anticipated, but infestations expected to be generally high in post-bloom period. FLORIDA RED SCALE (Chrysomphalus aonidum) increased to high level third week of March as peak of hatch was reached. SIX-SPOTTED MITE (Tetranychus sexmaculatus) infestations increased during second and third weeks of March and indications are that situation in April and May will be worse than in 1951. (Pratt, Thompson, Johnson).

OKLAHOMA - LICE abundant on cattle in western area particularly Kiowa County. YELLOW CLOVER APHID reported from southern area, particularly Pontotoc and Kiowa Counties. (Bower). Economic populations of latter species found in central area almost to Kansas border. HORN FLY present in small numbers in most parts of the State. (Howell).

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Weather Continued:

Temperatures for the week were below normal throughout the country. With the exception of the extreme southern tip of Florida and most of California where near normal temperatures persisted.

Precipitation was again widespread throughout the country, but the regions that were in greatest need received none or only very light amounts. The drought conditions in the lower Western Plains became worse, and California and the Gulf Coast regions reported that continued lack of precipitation in their areas was beginning to have an adverse effect on crops. Heaviest precipitation was centered again in Tennessee, but amounts of over 1 inch were reported in the Northeast, along the North Pacific Coast and in the Tampa region of central Florida.

Tornadoes were reported during the week in east central Ohio on the 22nd, and in northeastern Tennessee on the 26th. These storms caused only light damage. Estimates of damage from this week's storms have not been completed, but will run in the millions of dollars. Property damage in the Northeast due to the high winds on the 22nd, and freeze damage to fruit crops in the South and Southeast during the weekend accounts for the major portion of this amount. In addition, at least 65 deaths were attributed to the furies of the weather of the week. (Summary Supplied by U. S. Weather Bureau).



SOME OF THE MORE IMPORTANT INSECT PESTS FOR 1954

ARIZ.	Bollworm	Lygus bugs	Yellow clover aphid	Stink bugs	Thrips (on cotton)	Spider mites	Fall & Beet armyworm	Cutworms	Grass-hoppers	Salt-marsh caterpillar
ARK.	Bollworm	Boll weevil	Grasshoppers	Armyworm	Cutworms	Aphids	Bark beetles	Bean leaf beetle	Spider mites	Horn fly
DEL.	Corn ear-worm	Alfalfa weevil	Seed-corn maggot	Pea aphid	Corn sap beetle	Cabbage looper	European corn borer	Subterranean termite	Flower thrips	Strawberry spider mite
IND.	Termites	Cutworms	White grubs	Stored grain insects	Corn ear-worm	Aphids	Mites	Grasshoppers	Leaf-hoppers	Flies
MD.	Corn earworm	Alfalfa weevil	Pea aphid	Codling moth	Spittlebug	Mites	Cutworms	Cattle grubs	Ang. grain moth	Flea beetle
MASS.	Apple maggot	Aphids	Mites	Armyworm	Corn ear-worm	Spinach leaf miner	Gypsy moth	Japanese beetle	European earwig	Termites
MINN.	Armyworm	Grasshoppers	European corn borer	Mosquitoes	Potato leaf-hopper	Stable fly	House fly	Pea aphid	Granary weevil	Apple maggot
MONT.	Alfalfa weevil	Grasshoppers	Wheat stem sawfly	Wireworms	Cattle grubs	Cattle lice	Cutworms	Flea beetles	Lygus bugs	Mosquitoes
NEBR.	Grasshoppers	Corn earworm	Corn rootworm	European corn borer	Flies(house, stable & horn)	Cutworms & Armyworms	Garden web-worm	Potato leaf-hopper	Wheat curl mite	White grubs
NEV.	Grasshoppers & Mormon cricket	Alfalfa weevil	Cattle grubs	Cattle grubs	Harvester ant	Lice (cattle & hog)	Horn fly	Termites	Elm leaf beetle	Trips (onion & alfalfa)
N. J.	Two-spotted spider mite	Corn earworm	Potato leaf-hopper	Meadow spittle-bug	Pea aphid	Codling moth	Seed-corn maggot	Cabbage looper	Eastern field wireworms	Plum curculio
N. C.	Corn ear-worm	Boll weevil	Tobacco horn-worm	Termites	Rice weevil	House fly	Codling moth	Plum curculio	Southern corn rootworm	Mex. bean beetle
N. DAK.	Wireworms	Wheat stem sawfly	Colo. potato beetle	Armyworms	Mosquitoes & flies	European corn borer	Cattle lice	Sugar beet root maggot	Legume insects	Grass-hoppers
OHIO	European corn borer	Meadow spittle-bug	Corn earworm	Clover root borer	Potato leaf-hopper	Pea aphid	Codling moth	Cat-racing insects	Plant bugs	Orchard mites
OREG.	Irrigated-land wireworms	Root weevils	Grasshoppers	Codling moth	Cherry fruit fly	Pear psylla	Green peach aphid	Common cattle grub	Spruce budworm	Douglas-fir beetle
R. I.	Aphids	Japanese beetle	House flies	Flea beetles	Leaf-hoppers	Corn ear-worm	Birch leaf-miner	Mosquitoes	Earwigs	Ticks
TENN.	Armyworms	Cutworms	Corn earworm	Tobacco budworm	Stored-grain insects	Grass-hoppers	Fall army-worm	Horn flies	House flies	Elm leaf beetle
TEX.	Bollworms	Grasshoppers	Boll weevils	Aphids	Rice weevils	Cutworms	Spider mites	Thrips	Armyworms	Plant bugs & Pink bollworm
UTAH	Alfalfa weevil	Grasshoppers	Aphids	Lygus bugs	Codling moth	Cutworms	Beet leaf-hopper	Corn ear-worm	Peach twig borer	Mites
VA.	Corn earworm	Termites	House fly	Rice weevil	Lice of domes-tic animals	Southern corn rootworm	Meadow spittlebug	Hornworms	Aphids	Spider mites
WASH.	Spider mites	Aphids	Codling moth	Lygus bugs	Brachyrhinus spp.	Cherry fruit fly	Flea beetles	Cutworms	Wireworms	Symphylids
WISC.	Corn earworm	Grasshoppers	European corn borer	Armyworms	Livestock flies	Potato leaf-hoppers	Meadow spittle-bug	Apple maggot	White grubs	For. tent caterpillar
WYO.	Range grass-hoppers	Horn flies	Alfalfa weevil	Cattle grubs	Cattle lice	Sheep ked	Mormon cricket	Mexican bean beetle	Beet leaf-hopper	Tarnished plant bug

These lists were submitted by the State Clearing offices after discussion and consultation with various entomologists.



SUMMARY OF INSECT CONDITIONS - 1954

KANSAS

Reported by D. L. Matthew, Jr.

Forage and Field Crop Insects:

EUROPEAN CORN BORER (*Pyrausta nubilalis*) infestations were lower in Kansas in 1954 than in either 1952-53. Heaviest infestations continue to be located in the lower Kansas River Valley and in the northeastern counties where Douglas and Jefferson Counties have slightly higher populations of overwintering larvae (November, 1954) than last year. With the exception of some small acreages of sweet corn, damage was not considered serious in 1954. SOUTHWESTERN CORN BORER (*Diatraea grandiosella*) populations showed a continued increase over previous years, and infestations of second-brood larvae were found in nearly all counties. No infestations were found in Doniphan and Atchison Counties of northeast Kansas; however, Brown County was a new distribution record for the year. Heavy damage occurred to both dryland and irrigated corn in central Kansas where stalk infestations ranged from 20 to 95 percent. Further loss was caused by the high percent of lodged stalks (16 to 60 percent) at time of harvest. GRASSHOPPERS (*Melanoplus* spp.) began to appear in southeastern Kansas during the third week in April and previously predicted outbreak proportions were apparent by May 1. (Results of the late summer and fall surveys made in 1953 accurately predicted the areas and intensity of grasshopper attack that were experienced in Kansas during 1954.) Continuous warnings of the need for control measures were released during May, June, and July. In some areas of eastern Kansas where control measures appeared inadequate or were not properly applied, widespread loss of corn, alfalfa, soybean, home garden, and other crops occurred. Many cornfields, already drought-stricken, were reduced to stubble, large areas of alfalfa were stripped, and trees in many orchards were defoliated. Counts of adults ranged as high as 40 to 60 per square yard.

Destructive populations continued until late fall during which time margins of fields of fall-seeded wheat and alfalfa fields were stripped. Adult counts and the fall egg surveys indicate potential infestations of outbreak proportions again in 1955 unless spring weather conditions and biological factors prove unfavorable.

WESTERN CORN ROOTWORM (Diabrotica virgifera) did not appear as abundant during 1954 as the previous year. Injury to corn, however, was severe in some localized areas in north central and northwestern Kansas with highs of 50 to 75 percent of stalks on the ground in a number of fields. In some fields, damage to silks and subsequent losses from poor pollination were the result of beetle feeding activity. Many acres of corn received very satisfactory protection against rootworms by soil application of insecticides in the spring at planting time; however, little spraying was done to control adult beetle populations. This species continued to be the most destructive of the three corn rootworms in Kansas. There did not appear to be much of an eastward spread of the insect in Kansas during 1954. (Burkhardt). NORTHERN CORN ROOTWORM (D. longicornis) was generally less abundant and less destructive during 1954 than in 1953. Light infestations were observed in northeastern and eastern Kansas with some overlapping with the western species in north central counties where considerable injury was recorded in Washington County. SOUTHERN CORN ROOTWORM (D. undecimpunctata howardi) was present in eastern and southeastern counties but was not considered much of a problem as the extreme drought conditions greatly overshadowed much insect damage. This species caused considerable lodging of stalks in a few localized areas of central Kansas where corn was grown under irrigation. CORN EARWORM (Heliothis armigera) moths and eggs were observed during second week in June and the resulting infestation was recorded as one of the heaviest on record. Earworm larvae, while abundant on corn in all stages of growth, also damaged and caused partial loss of sorghum and alfalfa crops. Over \$2,000,000 loss of corn alone was recorded. Damage by this insect continued on late corn and sorghum crops, and moth flights were heavy until late fall when cold weather began.

FALL ARMYWORM (Laphygma frugiperda) appeared earlier than usual, by the last week in June, and was soon established throughout most of the State. Central Kansas cornfields suffered severe losses. Many young corn plants were destroyed by feeding in the whorl and by the later extensive stalk feeding. Control measures were required in several areas as population was higher than for several years. CORN BILLBUGS (Calendra spp.) were most destructive to corn planted in reclaimed river bottom land along the Missouri River in Doniphan and Wyandotte Counties in northeast Kansas. Several hundred acres required replanting, some three times before a satisfactory stand could be maintained. Another infestation, although minor, was observed in Cloud County.

CORN LEAF APHID (Rhopalosiphum maidis), while abundant in many corn and sorghum fields was particularly numerous in fields of north central counties. The most severe damage was to sorghums. Heavy populations in whorls prior to heading restricted proper head development and subsequent feeding caused a decreased number of properly filled kernels. Indirectly, a further loss was caused by the aphids as the honeydew apparently attracted many corn earworm moths. In general, greater numbers of corn earworm larvae were found on sorghum heads heavily infested with corn leaf aphids than on heads that were free of aphids. FALSE WIREWORM (Eleodes spp.) populations have gradually increased during the past three years and although numerous beetles were present in several areas of western Kansas during 1954, the only reported infestations of problem proportions occurred in some fields of Saline and Dickinson Counties. Several wheat fields in this area required seed treatment. WHITE GRUBS (Cyclocephala immaculata and Phyllophaga spp.) were not a state-wide problem; however, destructive infestations did occur in localized areas in Harvey, Ottawa, Saline, and Norton Counties. GREENBUG (Toxoptera graminum) infestations were very low in Kansas during the spring of 1954 and no infestations were observed or reported in the fall. Infestations that required control were found only in a few localized areas of Bourbon, Crawford, and Anderson Counties in southeast Kansas.

ENGLISH GRAIN APHID (Macrosiphum granarium) populations were light with only a slight build-up on wheat in a few fields of east central Kansas. No control measures were required as natural predators developed to control the infestations. CHINCH BUG (Blissus leucopterus) infestations were more prevalent during 1954 than in the two previous years. This general build-up of populations is probably the combined result of favorable weather conditions plus the increased acreages of sorghum and winter barley in the infested areas of eastern Kansas. A November survey of twenty-five counties in eastern Kansas showed high numbers of this insect in favorable overwintering habitats. Counts showed east central may expect light to severe populations in 1955. Elsewhere in State, counts were not generally considered of economic importance. ARMY CUTWORM (Chorizagrotis auxiliaris) feeding activity began in mid-February 1954 and continued to cause considerable damage to seedling alfalfa during March. Damage was extensive in fields of counties in central, northwest, north central, and northeast Kansas when no control measures were undertaken. Infestations in wheat and barley fields caused less over-all damage than those in alfalfa.

ARMYWORM (Pseudaletia unipuncta) developed into a serious outbreak beginning the third week of May in southeastern and east central Kansas, causing damage estimated in excess of \$2,000,000 to barley, wheat, corn, and improved pastures. In barley fields, a large percentage of heads were clipped from the plants by the feeding larvae and losses of 40 to 60 percent were common. Natural predators and parasites of the armyworm were slow to develop and destruction of crops continued, where uncontrolled, until the second week of June. Many thousands of acres of small grains in eastern Kansas had to be sprayed for control. GARDEN WEBWORM (Loxostege similalis) infestations were unusual by the fact that infestations that generally affect only one cutting of alfalfa continued throughout the summer. Repeated control measures were required throughout many areas of central and eastern Kansas. In addition to the thousands of tons of alfalfa hay destroyed, many acres of young corn were destroyed and had to be replanted. PEA APHIDS (Macrosiphum pisi) began to appear in great numbers during the first week of April in southeast area. Within two weeks, this insect was abundant in nearly every county in the eastern two-thirds of the State. Many thousands of acres of alfalfa in the eastern Kansas area received aerial applications of insecticides. HESSIAN FLY (Phytophaga destructor) populations continued low throughout Kansas in 1954. Summer surveys showed low tiller infestations averaging 1-4 percent in a few counties of southeast and northwest Kansas. Drought conditions in infested areas favored very little growth of volunteer wheat to carry over fly populations until drilled wheat came up in late fall. Although hessian fly populations are low at present, the disregard of fly-free planting dates and the planting of some nonresistant wheat varieties offer the possibility of an increase in fly populations in the future. BROWN WHEAT MITE (Petrobia latens) infestations were found in the spring in several counties of the southwestern area and later developed further east than usual in localized areas of Saline and Dickinson Counties. Although summer eggs of the mites were present in several fields, no mite populations of any significance were observed in the fall of 1954.

#### Stored Grain Insects:

Several species of DERMESTIDS, primarily Trogoderma versicolor, but not khapra beetle, were more abundant in stored products in 1954 than any previous year during which observations of stored grain pests have been made. Populations of saw-toothed grain beetle, flat grain beetle, and weevils were low and showed no appreciable increase above the 1953 level; however, lesser grain borers have gradually increased the last three years. Flour beetles were more numerous than in 1953 and populations of Indian-meal moth showed an increase over both 1952 and 1953.

Shade Tree Insects:

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) was found in greater abundance in \_\_\_\_\_ in eastern Kansas than in previous years. The distribution of this insect in Kansas now extends, in the southern half of the State, as far west as Rush County; while in the northern half of the State, the beetles have been found as far west as Saline County. TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus), GRASSHOPPERS (Melanoplus spp.), and BAGWORMS (Thyridopteryx ephemeraeformis) were the three major pests of nurseries.

Livestock Insects:

SCREW-WORMS (Callitroga hominivorax) were reported from nearly every county although infestations were not severe. CATTLE GRUBS (Hypoderma spp.) began to show up in the backs of cattle about the first week of November and infestation levels in some counties were reported to be the heaviest in several years. HORSE FLY populations remained comparatively low during 1954 and showed no increase over the previous year. CATTLE LICE were abundant in a few counties; however, populations in general showed no increase over 1953 reports. HORN FLY (Siphona irritans) and STABLE FLY (Stomoxys calcitrans) were less abundant than 1953. HOUSE FLY (Musca domestica) populations remained at a high level.

Fruit and Orchard Insects:

GRASSHOPPER (Melanoplus spp.) infestations defoliated all or parts of apple and peach trees in some home and commercial orchards in eastern Kansas. TWO-SPOTTED SPIDER MITE was the most common of all mites affecting orchards in Kansas during 1954. Infestations continued in threatening proportions in some central orchards until fall. CODLING MOTHS (Carpocapsa pomonella) were not as easily controlled in 1954 as in previous years, and a moderate carry-over of larvae will provide a source of probably infestations for 1955 (Eshbaugh).

Household Insects:

CRICKETS and BOX ELDER BUGS (Leptocoris trivittatus) and CLOVER MITES (Bryobia praetiosa) were the most commonly reported household pests.







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*Cooperative*  
**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL BRANCH**

**AGRICULTURAL RESEARCH SERVICE**

**UNITED STATES DEPARTMENT OF AGRICULTURE**



# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Economic Insect Survey Section  
Plant Pest Control Branch  
Agricultural Research Service  
United States Department of Agriculture  
Washington 25, D. C.

## COOPERATIVE ECONOMIC INSECT REPORT

## Highlights of Insect Conditions

GREENBUG infestations heavy in Hale, Swisher and Deaf Smith Counties, Texas. Louisiana and Arkansas also report on this pest, (page 289 ).

ARMYWORM larvae active in Texas, Louisiana and Arkansas. Overwintering larvae found in Missouri. (page 290 ). Moths recorded as far north as Kentucky. (page 299 ).

PEA APHID building up on alfalfa in Virginia and Maryland and increasing on vetch in Kaufman County, Texas. Light infestations in Arkansas, Oklahoma and North Carolina. (page 291 ).

ARMY CUTWORM infestation widespread in south central Kansas. (page 301 ). Also reported from Box Elder County, Utah. (page 290 ).

CODLING MOTH emergence expected heavier than usual in Virginia. (page 293 ).

FRUIT INJURY from cold weather in Indiana, Illinois and Georgia. (page 294 ).

VEGETABLE WEEVIL infestation general in southeastern area of Louisiana. Also active in some areas of Florida and North Carolina. (page 295 ).

LIGHT TRAP collections. (pages 299 ).

Summary of INSECT CONDITIONS - 1954 - in Florida (page 303 ) and Pennsylvania. (page 308 ). Also some of the more important insects of 1954 in Pennsylvania. (page 311 ).

First REPORTED RECORDS for the season. (page 298 ).

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Reports in this issue are for the week ending April 1, 1955, unless otherwise designated.

WEATHER BUREAU'S 30-DAY OUTLOOK  
April 1955

The Weather Bureau's 30-day outlook for April calls for temperatures to average below seasonal normals east of the Appalachians and over the southern half of the nation from Texas eastward. Above normal temperatures are predicted in a belt extending from the Great Lakes westward through the Northern Plains to the Northern Plateau. In areas not specified near normal temperatures are anticipated.

Precipitation is expected to be above normal over the southern third of the country, below normal in the northern third, and about normal in the central third, except for generally above normal amounts along the West Coast.

This report released by the Weather Bureau on April 1, 1955.

Weather forecast given here is based on the official 30-day "Resume and Outlook," published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington, D. C. Price: \$4.80 a year, \$2.40 for six months.

WEATHER FOR THE WEEK ENDING APRIL 4, 1955

Winter relaxed her icy grip on most of the Nation during the week, but record snow falls in the northern Rocky Mountain States and in southern New England during the weekend served notice that cold weather was still a threat to spring activities.

Extreme temperature contrasts characterized the weather east of the Rockies during the period. Arctic air, that had brought record low temperatures to the country as it pushed its way to the Atlantic and Gulf Coast at the beginning of the period, remained over the eastern portion of the country during the first part of the week. This cold air continued to set record low temperatures for this late in the season. Augusta, Ga., reported a temperature of 24° on the 29th, and 28° on the 30th. As the Arctic air moved eastward, the southerly winds behind it brought temperatures in the 70's back to the country as far north as North Dakota. The mild temperatures were very favorable for seasonal farm operations. Temperatures for the week remained below normal in the Southeast, with southern Florida (Weather continued on page 302).

CEREAL AND FORAGE INSECTS

GREENBUG (Toxoptera graminum) - TEXAS - Averages 25-50 per linear foot of row in Farmell area of Parmer County. Widespread infestation in Hale County of 180-200 per foot. Heavy widespread infestation in Swisher County, from 500-2000 greenbugs per foot. From 500-2000 per foot of row in Hereford area of Deaf Smith County. (Gaines). LOUISIANA - Severe infestation on approximately 75 acres of barley, heavily parasitized by Aphidius testaceipes in Tensas Parish. (Oliver).

GRASSHOPPERS - OKLAHOMA - Survey March 28-31 in western tier of counties indicated considerable mortality of grasshopper eggs from desiccation and parasitism. (Flora).

CHINCH BUG (Blissus leucopterus) - KANSAS - Beginning to move from winter quarters to nearby fields of wheat and barley in infested portions of Elk and Montgomery Counties. (Frazier).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - FLORIDA - Second and third instar larvae collected from corn in experimental planting at Gainesville. First report of season for this area. (Thames).

SALT-MARSH CATERPILLAR (Estigmene acrea) - CALIFORNIA - Heavy infestations earlier than normal in Los Angeles County. May need treatment on young grains. (Calif. Coop. Rept., Feb.).

CORN LEAF APHID (Rhopalosiphum maidis) - TEXAS - Widespread infestation on barley in Kaufman County. (Simmons). OKLAHOMA - Still restricted to counties along the Red River. (Bower, Henderson).

BROWN WHEAT MITE (Petrobia latens) - OKLAHOMA - Very numerous in localized areas in Harper and Beaver Counties where wheat is being killed. (Flora).

APHIDS ON GRAIN - ARKANSAS - Small grain fields in the southern half of the State generally infested with one or more species. English grain aphid, corn leaf aphid, greenbug and unidentified aphid in numbers up to 150-200 per foot of tiller row. No observable damage. Parasitism and predatism heavy, particularly in southwestern counties. (Warren).

ARMYWORM (Pseudaletia unipuncta) - TEXAS - Medium local infestation on vetch in Kaufman County. (Randolph). ARKANSAS - Light infestations on small grains in Union, Ashley and Chicot Counties. No damage. (Warren). LOUISIANA - From 1-5 larvae per 100 sweeps of 12 inch net in oats in Tensas, Rapides and Avoyelles Parishes. (Oliver). MISSISSIPPI - Low temperatures will probably cause delay in infestations. (Ins. Survey and Forecast). MISSOURI - A very few fourth instar larvae were found in west central area indicating the successful overwintering of this species in Missouri. (Kyd, Thomas).

VARIEGATED CUTWORM (Peridroma margaritosa) - TEXAS - Medium widespread infestation in vetch in Kaufman County. (Randolph). ARKANSAS - Light in grain fields in Chicot and Ashley Counties. (Warren).

ARMY CUTWORM (Chorizagrotis auxiliaris) - UTAH - From 1 per square foot to 1 per square yard on range at Promontory Point, Box Elder County. May have injury to range and possibly to farms. (Dorst).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - MISSOURI - overwintering survival in west central area ranges from 5 to 15 percent. Successful survival increases in southern part of infested area and ranges from 25 to 55 percent in extreme southwest corner. (Kyd, Thomas).

SUGARCANE BEETLE (Euetheola rugiceps) - LOUISIANA - Light general widespread infestation in the sugarcane belt in St. Mary Parish. (Oliver).

SUGARCANE BORER (Diatraea saccharalis) - LOUISIANA - Considerable activity in sugarcane. (Oliver).

CRANE FLY LARVAE - MISSOURI - Counts of 0.5 to 2 per square foot common in meadows, drought injured pastures and waste land areas in central Missouri. (Kyd, Thomas).

ALFALFA WEEVIL (Hypera postica) - NEVADA - Adults active; breeding and egg laying in western counties. Limited adult control in most valleys. (Galloway, Mar. 26). MARYLAND - Adults average 4 per 20 sweeps in alfalfa fields in Queen Annes and Talbot Counties. Egg laying underway. (U. Md., Ent. Dept.).

EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - ARIZONA - Ten to 12 larvae per 100 sweeps in 2 fields in Yuma area; generally light in region. Heavy on 80 acres at Phoenix and light to heavy on 80 acres at Litchfield Park. (Ariz. Coop. Rept.).

CLOVER LEAF WEEVIL (Hypera punctata) - NEVADA - Active in many alfalfa fields in western area, March 26. (Galloway). MISSOURI - Larvae, all stages, becoming prevalent in clover and alfalfa over State. Counts of 0.5 to 4 per crown of red and ladino clovers and 0.1 to 2 per crown of alfalfa. Five - 10 percent of larvae have fungus disease. (Kyd, Thomas). ILLINOIS - Eight per square foot in one clover field in Champaign County. (Petty).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - MARYLAND - Adults in small numbers in alfalfa in Talbot County. (U. Md., Ent. Dept.).

MEADOW SPITTLEBUG (Philaenus leucophthalmus) - MARYLAND - Hatching on weeds on sunny ditch bank near alfalfa fields, Queen Annes County, March 31. (U. Md., Ent. Dept.).

YELLOW CLOVER APHID (Myzocallis trifolii) - CALIFORNIA - Infested area in Los Angeles County increasing. Infestations light over much of Imperial County. (Calif. Coop. Rept., Feb.). NEVADA - Steady increase in population over areas in Clark County infested during 1954. Now appears that control will be required on first cutting. (Goff, Mar. 26). ARIZONA - General throughout Yuma area March 24. Also causing medium to severe damage to 1000 acres in the Marana area. (Ariz. Coop. Rept.). OKLAHOMA - Small numbers along northern border from Harper and Nowata Counties and in damaging numbers throughout rest of central and western areas. Temperatures as low as six degrees did not appreciably reduce populations. (Flora, Stiles, Rogers, Howell).

CLOVER MITE (Bryobia praetiosa) - ARIZONA - Causing damage in a few alfalfa fields at Yuma, March 24. More fields of wheat with noticeable damage in this area. (Ariz. Coop. Rept.). MISSISSIPPI - Feeding on clover in Covington County. (Hutchins).

PEA APHID (Macrosiphum pisi)- TEXAS - Medium widespread infestation on vetch in Kaufman County. Increasing. (Randolph). ARKANSAS - Very light on alfalfa and Austrian peas. (Warren). OKLAHOMA - Small numbers in alfalfa in north Oklahoma. Predators and parasites very common. (Flora, Bieberdorf, Bryan). VIRGINIA - Populations increasing in alfalfa over State and will be causing damage in one or two weeks if natural control factors do not develop. Population of 500 per 100 sweeps in alfalfa in a Brunswick County field. (Morris). Heavy on alfalfa in a Roanoke County field. (Keaton). NORTH CAROLINA - Light

infestation on alfalfa in Guilford County. (Jones). MARYLAND - Building up on alfalfa in Queen Annes and Talbot Counties. From 6 to 25 per sweep, (U. Md., Ent. Dept.),

CUTWORMS - OKLAHOMA - Active in isolated areas in alfalfa fields over much of State. Extensive damage in limited areas. (Stiles).

CLAY-BACKED CUTWORM (Agrotis gladiaria) - MISSOURI - Generally widespread over southern two-thirds of State with numbers reaching economic importance in red and ladino clovers and some pastures. Counts from 0.4 per square yard in pastures to 7 per square yard in clovers. Largely third and fourth instars. (Kyd, Thomas).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - LOUISIANA - Eight per 100 sweeps of 12 inch net in California burclover in Avoyelles Parish. Lighter in Tensas Parish. (Oliver).

ASPIDER MITE (Tetranychina apicalis) - LOUISIANA - Moderate to heavy on white clover in St. Landry Parish. (Oliver).

TOBACCO THRIPS (Frankliniella fusca) - LOUISIANA - Light to moderate in white clover in St. Landry and Livingston Parishes. (Oliver).

YELLOW STRIPED ARMYWORM (Prodenia ornithogalli) - TEXAS - Medium local infestation on vetch in Kaufman County. (Randolph).

GREEN CLOVERWORM (Plathypena scabra) - LOUISIANA - Twelve per 100 sweeps of 12-inch net on California burclover in Avoyelles Parish, 47 per 100 sweeps in alfalfa in Tensas Parish. (Oliver).

LYGUS BUGS - ARIZONA - Six to 10 lygus bugs per 100 sweeps at Yuma March 24, apparently becoming more abundant. (Ariz. Coop. Rept.). LOUISIANA - Eight nymphs and 4 adults per 100 sweeps in alfalfa in Tensas Parish; 44 adults, 41 nymphs per 200 sweeps in Rapides Parish. (Oliver).

POTATO LEAFHOPPER (Empoasca fabae) - LOUISIANA - One in 200 sweeps of alfalfa in Rapides. One specimen also taken in 200 sweeps in alfalfa in Lecompte, March 25, and two in burclover in Natchitoches, March 24. (Oliver).

## FRUIT INSECTS

CODLING MOTH (Carpocapsa pomonella) - VIRGINIA - Overwintering larvae in central and southern areas numerous under bark of trees. Spring brood moth emergence expected to be heavier than normal. (Morris).

TARNISHED PLANT BUG (Lygus lineolaris) - VIRGINIA - First of season jarred from peach trees on March 25. (Morris).

WALNUT SCALE (Aspidiotus juglans-regiae) - CALIFORNIA - Heavy on peach trees and reported in San Bernardino County. (Calif. Coop. Rept., Feb.).

APHIDS - NEW YORK - A fair number of grain aphids hatched by March 31. (Wkly. News Lett.). VIRGINIA - Populations of green peach aphid (Myzus persicae) and rosy apple aphid (Anuraphis roseus) extremely low in central area fruit orchards. Hatching complete. (Morris).

PEAR PSYLLA (Psylla pyricola) - OREGON - Adults active and laying eggs on pear in Benton County. (Jones).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - VIRGINIA - A few adults emerging. Damage by first brood likely in several orchards in Albemarle County. (Morris).

EUROPEAN FRUIT LECANIUM (Lecanium corni) - CALIFORNIA - Medium to heavy infestations in many apricot orchards in San Joaquin County. (Calif. Coop. Rept., Feb.).

CITRUS RED MITE (Metatetranychus citri) - CALIFORNIA - Light but troublesome infestation in citrus orchards in San Diego County, light to medium in San Bernardino County, light to heavy in coastal citrus orchards in Santa Barbara County. Control used. (Calif. Coop. Rept., Feb.).

SOFT SCALE (Coccus hesperidum) - CALIFORNIA - Some severe infestations in Tulare County citrus. (Calif. Coop. Rept., Feb.).

YELLOW SCALE (Aonidiella citrina) - CALIFORNIA - Light to severe infestations in Tulare County citrus, control used. Spot infestation of great numbers found in a Glenn County citrus planting. (Calif. Coop. Rept., Feb.).

CITRICOLA SCALE (Coccus pseudomagnolarium) - CALIFORNIA - Light to severe infestations in Tulare County citrus. (Calif. Coop. Rept., Feb.).

OLIVE SCALE (Parlatoria oleae) - CALIFORNIA - Medium to heavy infestations in olive orchards and ornamental plants in Tulare County. Control used. (Calif. Coop. Rept., Feb.).

GRAPE MEALYBUG (Pseudococcus maritimus) - CALIFORNIA - Severe infestations in Tulare County vineyards, control used. Light overwintering populations in Fresno County vineyards. (Calif. Coop. Rept., Feb.).

Fruit Injury from Cold Weather in Indiana, Illinois and Georgia:

In the Goshen area of Indiana total fruit bud kill ranged between 50 and 85 percent for peaches and 15 to 70 percent for cherries. Apple buds appeared to withstand the freeze except for Jonathan which had a kill of 30 to 65 percent. In the Vincennes area the percent of remaining live buds of various apple varieties ranged from 0 to 74. (Hamilton). In the Orleans area of the State 50 to 99 percent of the peach fruit buds and 84 to 100 percent of the apple buds of most varieties were killed. Cherries at present show that every bud has more injured blooms than uninjured. Accurate estimates of fruit damage cannot be determined at present time. (Marshall). In southern Illinois there are practically no live buds of peach south of Centralia and scarcely none of apple south of Carbondale. In the area south of Carbondale there is practically no fruit left to develop. (Chandler). The peach crop of Georgia apparently has been entirely wiped out for the first time since 1899. (Snapp).

TRUCK CROP INSECTS

VARIEGATED CUTWORM (Peridroma margaritosa) - CALIFORNIA - Considerable injury to cabbage in Orange County. Control used. (Calif. Coop. Rept.).

IMPORTED CABBAGEWORM (Pieris rapae) - MARYLAND - Few butterflies on the wing at Brinklow, April 3. (U. Md., Ent. Dept.).

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - SOUTH CAROLINA - First eggs noted on potatoes in the Charleston area on March 25. No larvae found to March 31. (Reid).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - VIRGINIA - Damage very light to plants in one of two plant beds in Mecklenburg County. Three adults in beds in Brunswick County but some seen in Mecklenburg County beds. (Morris, Osborne). NORTH CAROLINA - Moderate infestations of tobacco plant beds in Sampson and Yadkin Counties. (Scott).

MIDGES - NORTH CAROLINA - Severe infestation of midge larvae (not Smittia) of a tobacco plant bed in Bertie County. Twenty larvae found in a 2-inch soil sample, at a 3-inch depth. Most plants killed. (Gurhrie, Rabb, Scott). Moderate to light infestations of midge larvae (probably Smittia sp.) in Forsyth, Johnston, Sampson and Yadkin Counties. (Scott).

GRUBS - NORTH CAROLINA - Moderate to light infestations of probably Cotinis nitida in tobacco plant beds in Johnston and Lee Counties. (Scott).

CRANE FLIES - NORTH CAROLINA - Light to moderate infestation of larvae in tobacco plant beds in Hertford, Lee and Yadkin Counties. (Scott).

CUTWORMS - NORTH CAROLINA - Light infestation of tobacco plant beds in Sampson County. (Morgan). MISSISSIPPI - Reports of heavy infestations in onions, corn and gardens from south and central areas. Low temperature may delay infestations, however. (Insect Survey and Forecast).

APHIDS - NORTH CAROLINA - Light infestation of probably Myzus persicae in tobacco plant beds in Sampson County. (Morgan).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - NORTH CAROLINA - Moderate infestation of tobacco plant beds in Sampson County. (Morgan). FLORIDA - Averaging 5 larvae, pupae, adults per turnip plant in one area in Jackson County. Infesting tomato plants at Marianna. Control recommended. (Lamb). LOUISIANA - General widespread infestation in southeastern area. Severe damage in 2 fields of peppers, 1-2 adults on 25 percent of plants. Ten per plant on strawberries in Livingston Parish. (Oliver).

SEED-CORN MAGGOT (Hylemya cilicrura) - TENNESSEE - Infesting potatoes in Middle Tennessee. (Mullett). OKLAHOMA - Adult activity and larval populations on spinach foliage greatly reduced during past 10 days by low temperatures. By March 31, flies common in fields and 10 to 20 percent of plants contained eggs. (Walton).

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Light on wrapper leaves of lettuce in several fields at Yuma, March 24. (Ariz. Coop. Rept.). FLORIDA - Averaged 4 to 5 nymphs and adults per Irish potato plant in Alachua County. This aphid is rather widely scattered over the potato-growing areas of Alachua and Saint Johns Counties. (Hunter).

THRIPS - NEVADA - Economic population of onion thrips present in green onion field in Clark County (Gallaway, Mar. 26).

A SPITTLEBUG (Aphrophora sp.) - LOUISIANA - In one field of Tangipahoa Parish on 75 percent of strawberry plants in shaded areas. (Oliver).

A STRAWBERRY PAMERA (Pachyrachius sp.) - TEXAS - Heavy local infestation of this lygaeid on strawberries in Jefferson County. (Fuller).

STRAWBERRY APHID (Capitophorus fragaefolii) - CALIFORNIA - In damaging numbers in strawberry fields of Orange and Los Angeles Counties, in both old and new plantings. Control applied. (Calif. Coop. Rept., Feb.).

SPIDER MITES (Tetranychus spp.) - LOUISIANA - T. bimaculatus and T. desertorum in several fields of strawberries in Tangipahoa Parish. (Oliver). CALIFORNIA - Infestations of T. bimaculatus in small fruit in southern area increasing. (Calif. Coop. Rept., Feb.).

### COTTON INSECTS

Cotton Insect Situation, Lower Rio Grande Valley, Texas: Damaging numbers of THRIPS in cotton fields adjacent to onions. CUTWORMS in all areas, particularly where cotton follows leafy vegetables. SPIDER MITES in destructive numbers in a few fields before the cold weather. BOLLWORM found feeding on terminal bud of seedling plants. (Wene, Dean, Fuller).

DARKLING BEETLES (Blapstinus spp.) - TEXAS - Medium local infestation on cotton in Nueces County. (Nolan).

### INSECTS AFFECTING OTHER FIBER PLANTS

BOLLWORM (Heliothis armigera) - TEXAS - Light, medium to heavy widespread infestation on flax in Refugio County. Feeding on green pods, 15,895 per acre in one count near town of Bayside March 24. (Smith, Sherrer, Greer).

### FOREST, ORNAMENTAL AND SHADE TREE INSECTS

FALL WEBWORM (Hyphantria cunea) - FLORIDA - First-instar larvae in small webs on sweet gum in Alachua County. (Hetrick).

BARK BEETLES - ARKANSAS - Ips sp. and Dendroctonus terebrans active in isolated areas but not causing any serious damage. (Warren).

PINE SAWFLIES (Neodiprion sp.) - ARKANSAS - Infestations have practically disappeared in south Arkansas pine forests. (Warren).

COTTONWOOD LEAF BEETLE (Chrysomela scripta) - FLORIDA - All stages present in numbers on foliage of willows in Alachua County. (Hetrick).

DUSKY BIRCH SAWFLY (Croesus latitarsus) - FLORIDA - First to third instar larvae on river birch trees in Alachua County. (Hetrick).

WHITE-MARKED TUSSOCK MOTH (Hemerocampa leucostigma) - PENNSYLVANIA - Very abundant on roses in greenhouses in Butler County. Defoliating roses in 3 large ranges. (Adams).

A WAX SCALE (Ceroplastes sp.) - FLORIDA - Light to heavy on Chinese holly in a Norfolk nursery. (Harrell, Morris).

CAMELLIA SCALE (Lepidosaphes camelliae) - VIRGINIA - Generally heavy on camellia plants in a Norfolk nursery. (Harrell, Morris).

EUONYMUS SCALE (Unaspis euonymi) - VIRGINIA - Light to heavy on Euonymus in a Norfolk nursery. (Harrell, Morris).

#### INSECTS AFFECTING MAN AND ANIMALS

CATTLE GRUBS - UTAH - Moderately numerous in Kane, Weber, Grand and Salt Lake Counties. (Knowlton, et al).

HOUSE FLY (Musca domestica) - VIRGINIA - Becoming active over State. (Morris).

MOSQUITOES - UTAH - First and second instars in a few breeding ponds in Weber and Salt Lake Counties. (Fronk, Rees).

CATTLE LICE - UTAH - Severe in Kane County with only about 1500 hundred head of cattle known to have been treated. (Rose, Knowlton). Many herds in Salt Lake County need control. (Parrish, Knowlton).

SHEEP SCAB MITE (Psoroptes equi var. ovis) - VIRGINIA - Detected on 269 of 982 head inspected by veterinarians in Virginia during March. Total of 474 sheep dipped for infestations. (Livestock Health Bull. ).

BROWN DOG TICK (Rhipicephalus sanguineus) - UTAH - Engorged specimen taken from a dog at Ogden December 10, 1954. Det. H. Sollers. (Knowlton).

### STORED-PRODUCT INSECTS

STORED-GRAIN INSECTS - CALIFORNIA - Granary weevil (Sitophilus granarius) and saw-toothed grain beetle (Oryzaephilus surinamensis) infestation in sacked barley and oats light to heavy in Colusa County. (Calif. Coop. Rept., Feb.).

KHAPRA BEETLE (Trogoderma granarium) - CALIFORNIA - Known infestations have been recorded from 16 counties as follows: Alameda 2, Colusa 22, Fresno 10, Glenn 2, Imperial 41, Kern 19, Kings 3, Lake 4, Los Angeles 3, Madera 1, Riverside 3, San Bernardino 1, San Francisco 1, Tulare 5, Butte 3 and Sutter 1. Of the more than 4,000 properties inspected, less than 4 percent were found infested. Many infestations of grain found most recently are on farms where the grain is being held for feeding or planting and is not a factor in further outward spread, except as the used bags get back in channels of trade. Control over the disposition of these bags is being carefully handled by county agricultural commissioners. (Calif. Coop. Rept., Feb.).

DIPTEROUS LARVAE - TEXAS - Heavy local infestation in silage in Cottle County. (Clayton).

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### First Reported Records of Season (by areas):

MEADOW SPITTLEBUG hatching, March 31, in Maryland; LESSER CORNSTALK BORER larvae Florida; COLORADO POTATO BEETLE eggs, March 31, South Carolina; IMPORTED CABBAGEWORM adults, April 3, Maryland; RED-BANDED LEAF ROLLER adults in Virginia; TARNISHED PLANT BUG adults, March 25, Virginia.

LIGHT TRAP COLLECTIONS

	P. unipuncta	A. ypsilon	P. ornithog.	F. subterr.	H. armigera	P. margar.	P. sexta
MISS. (counties)							
Humphreys	135	12	1	6	1	18	
Pearl River			1	1			
Oktibbeha	1		1			1	
Coahoma	12					9	
TENN. (counties)							
Shelby	19	4	2			3	
Madison	15	2					
Lawrence	1						
Maury	8	4	1			5	
Robertson	3	2	2			2	
Greene	8	2	2				
TEXAS							
Weslaco	41	457	29		483		36
ARKANSAS							
Stuttgart	7	2					2
Fayetteville		1					
L.A.							
Baton Rouge	114	8	26	75	4		
Franklin	49	76	21	52	4	3	
St. Joseph	23	5		19		1	
Tallulah	58	23	1	2		10	

Other collections of importance: TENN. Agonoderus lecontei 12, Caenurgina erechthea 14; TEXAS- (Weslaco) Celerio lineata 712; KENTUCKY - Since March 15 a few P. unipuncta moths have been taken in 5 traps in south-western part of the State. LOUISIANA - (Baton Rouge) Mocis latipes 26, Empoasca fabae 1, Euetheola rugiceps 78; (St. Joseph) Euetheola rugiceps 5; (Tallulah) Laphygma exiqua 37, Estigmene acrea 2, Loxostege similalis 4; (Franklin) Heliothis sp. 3, Agrotis malefida 6, Diatraea saccharalis 24, E. rugiceps 60. Also Phyllophaga 1264 at Baton Rouge.

## RECENT IMPORTANT INTERCEPTIONS AT PORTS OF ENTRY

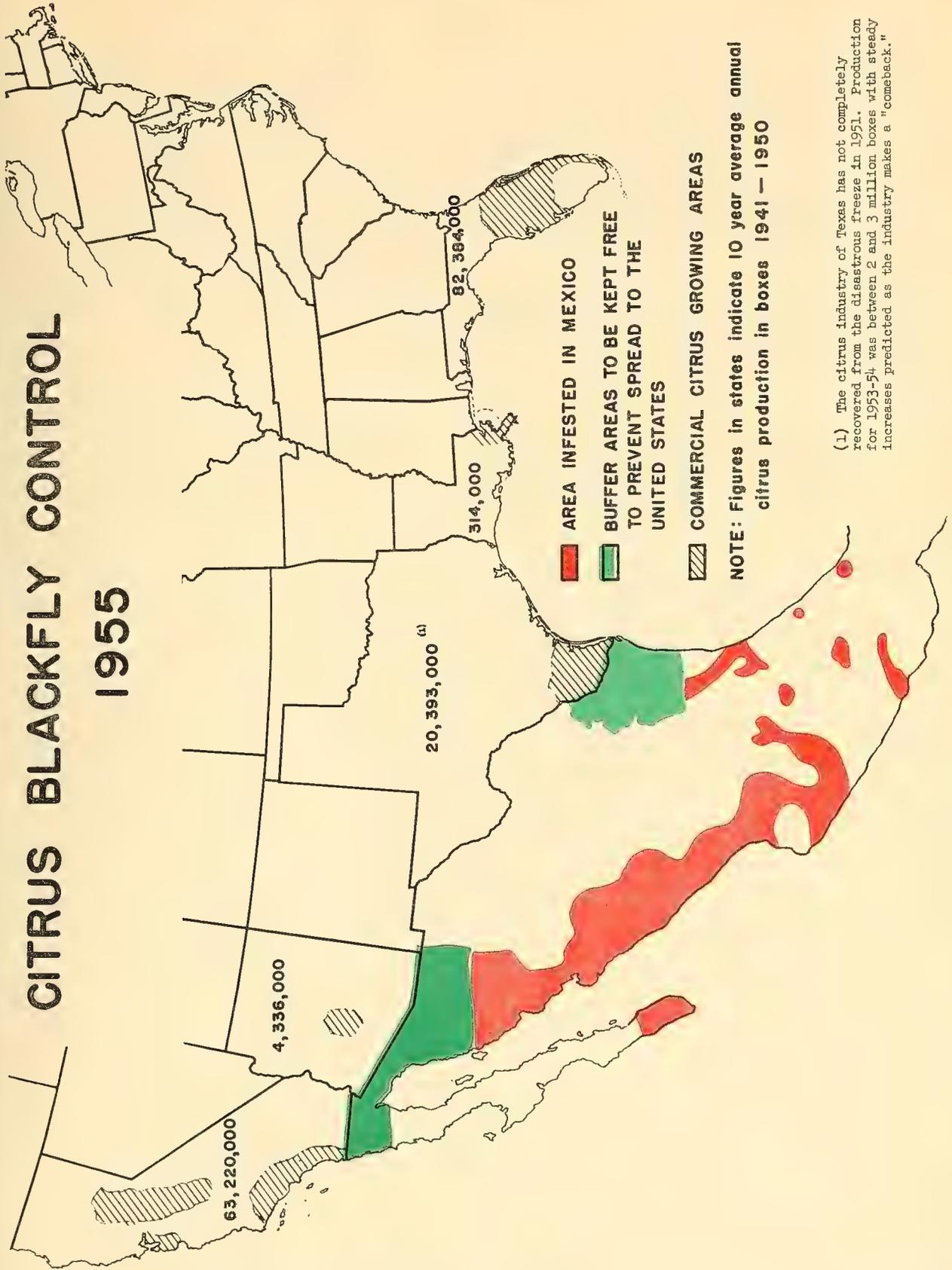
Living eggs, larvae and pupae of the citrus blackfly, Aleurocanthus woqlumi, were intercepted recently in baggage from Mexico on Calamondin (Citrus mitis) leaves and on sour lime leaves at Nogales, Arizona. (Ehringer, Westover) and on citrus leaves at San Antonio, Texas. (Johnston). This insect is considered an important pest of citrus and many subtropical plants in Mexico, parts of Central America, the West Indies and the Orient. Injury is caused by the larvae feeding on the underside of the leaves. This impairs the vitality of the tree, hinders growth and affects the quality of the fruit. Additional injury results from the development of sooty mold in the honeydew excretions of the insect that blackens the foliage and mars the appearance of the trees.

Observations on the biology of the citrus blackfly in the Canal Zone indicate that there are 3-6 generations a year with considerable overlapping of various stages. The eggs are deposited in spirals of 30-50 on the underside of the leaves, each female depositing about 100 eggs. Eggs hatch in 11-20 days. There are 3 larval instars; 7-16 days; 5-34 days; 6-20 days; and a pupal stage of 16-80 days. Adults may live 6-12 days. The eggs are canoe-shaped with rounded ends; larvae and pupae black, oval, shiny, and sparsely adorned with black spines; and adults dark brown with smoky wings marked with a white cross.

Over 150 hosts have been reported for the citrus blackfly. Preferred and most important are various species of citrus, mango, coffee, myrtle, cherimoya, sapote, persimmon, pear and quince. This insect is said to occur in Africa, Bahamas, Burma, Ceylon, China, Canal Zone, Costa Rica, Cuba, Haiti, India, Indo-China, Jamaica, Java, Malaya, Mexico, Nicaragua, Panama, Philippines, Siam, Straits Settlements, and Sumatra. It is not known to occur in the United States. (Compiled-Plant Quarantine Branch).

The map, prepared by Plant Pest Control Branch, on next page shows distribution of this insect in Mexico.

# CITRUS BLACKFLY CONTROL 1955



- AREA INFESTED IN MEXICO
- BUFFER AREAS TO BE KEPT FREE TO PREVENT SPREAD TO THE UNITED STATES
- COMMERCIAL CITRUS GROWING AREAS

NOTE: Figures in states indicate 10 year average annual citrus production in boxes 1941 - 1950

(1) The citrus industry of Texas has not completely recovered from the disastrous freeze in 1951. Production for 1953-54 was between 2 and 3 million boxes with steady increases predicted as the industry makes a "comeback."



MISCELLANEOUS INSECTS

COLLEMBOLA - NORTH CAROLINA - Severe infestation in earthworm culture in Guilford County. (Jones, Farrier).

SOUTHERN LYCTUS BEETLE (Lyctus planicollis) - MISSISSIPPI - Adults emerging from oak floors in Humphreys and Prentiss Counties. (Hutchins, Cochran).

OLD HOUSE BORER (Hylotrupes bajulus) - PENNSYLVANIA - Found in houses in Lycoming and Perry Counties. (Gesell, Pepper).

ADDITIONAL NOTES

GEORGIA - PLUM CURCULIO appearance to March 25 less than that of an average year. (Snapp). Heavy damage to onions and seed potatoes in Spalding and Butts Counties, March 24 by SEED-CORN MAGGOT. (Beckham).

KANSAS - Fifteen counties of central and south central Kansas were surveyed to determine the presence of APHID infestations and other insects that might affect wheat, barley, and oats. Minor infestations of no economic significance were found in a few wheat fields of Marion and Chautauqua Counties. Counts of these aphids averaged 2 to 5 per twenty-five sweeps of a 15-inch net. No GREENBUGS were found; the species collected all appeared to be ENGLISH GRAIN APHIDS. ARMY CUTWORM was found in nearly all fields examined in south central counties. Populations ranging from 1 to 8 larvae per square foot were common in most alfalfa fields in this area. Counts in wheat, barley, and oats from 1 to 5 larvae per yard of drill row. Many fall-seeded alfalfa fields in Cowley, Sumner, Sedgwick, Harvey, Butler, and Reno Counties require immediate control applications to prevent any further loss of stand. Many old stands of alfalfa in these counties will require frequent examination to determine need for insecticides to protect against loss of a part of the first hay crop. (Matthew).

### Weather Continued

reporting temperatures near January levels. Above normal temperatures returned to the North Central region extending as far south as the Texas Panhandle and the Ohio River Valley. New England and California reported near-seasonal temperatures for the week, but the Pacific Northwest had temperatures a little below normal during the period.

Except for a few areas of locally heavy amounts, most of the Nation received little or no precipitation during the period. Rain occurred every day of the week in the Pacific North West with accumulated amounts of up to 4 inches recorded along the coast. Precipitation was light in the inland areas of this region, but was beneficial to crops. Rain on the 31st and 1st brought heavy amounts of moisture to the Tennessee, northern Alabama, northern Mississippi area for the third straight week. Beneficial rains occurred in the dry region of the Gulf Coast on the 1st. New Orleans reported 0.46 inches which was the heaviest rain there since February 22nd. Galveston, Tex., recorded 2.73 inches of rain in 6 hours during the morning of the 1st.

Snowfall, accompanying the passage of a cold front on the 2nd and 3rd, brought 1 to 2 inches of moisture to north central Wyoming and south central Montana. This was one of the most severe spring storms of record in this area. Salt Lake City, Utah reported 12.8 inches of snow which was a record fall for April. Many main highways were blocked by drifting snow, and some difficulty was reported in keeping communications open. Another severe snow storm occurred on the 3rd in southern New England. This was the heaviest snow of the year for this region, with amounts of up to 20 inches being reported. This storm was centered in western Massachusetts, southern Vermont and northwestern Connecticut.

Strong winds were reported during the latter part of the week from Arizona and western Texas to North Dakota and Minnesota. These winds brought severe dust storms to the area resulting in heavy soil erosion losses. Winds of 50-70 mph for periods of 8 to 12 hours were reported in South Dakota on the 3rd. These winds also caused some structural damage in western Iowa. (Summary Supplied by U. S. Weather Bureau).

SUMMARY OF INSECT CONDITIONS - 1954

FLORIDA

Reported by H. A. Denmark

Cereal and Forage Insects:

GRASSWORMS (Mocis spp.) were reported from the southern part of the State in May and June on pasture grasses and cover crops. Damage was quite heavy ranging from 3 to 20 per square foot on millet, Bahia, Bermuda, St. Augustine and Pangola grasses and sugarcane. The infestations moved to the central, north, and western areas as the season progressed. This pest was active as late as December as a report was received from the northern part of the State that grassworms were feeding on Pangola grass at the rate of 23 per square foot. A CHINCH BUG (Blissus leucopterus insularis) caused light to medium damage to lawns in the southern part of State in January; small patches found infesting St. Augustine grass. Up to 300 per square foot in the southern area in July and August, and by this time the insect had spread to all parts of the State. A SOD WEBWORM (Pachyzancla phaeopteralis) was first reported from the south-central area on St. Augustine and Bermuda grass, averaging 2 larvae per square foot in June. By the last of July it had spread to the north-central part of the State with populations up to 40 per square foot. This is a troublesome pest as controls must be made every 10 days to two weeks in the active season. RHODES-GRASS SCALE (Antonina graminis) is present the year around in the southern part of State on grasses. Populations up to 300 per square foot reported from Key West in July. The scale was reported from Gainesville on St. Augustine grass for the first time in November. YELLOW SUGARCANE APHID (Sipha flava) is a pest of pasture grasses over State. First reports in April were from the south on Pangola grass averaging 25 per square foot. Populations continued to increase up to 500 per square foot at Clewiston in April and May. By June natural enemies had reduced population to a moderate infestation.

VELVETBEAN CATERPILLAR (Anticarsia gemmatilis) - The first infestation was reported on soybeans at Belle Glade in June. By July losses of 15 to 20 percent of soybean crops were reported from the northwestern area. Infestations ranging from 1 to 5 per plant in all areas through November on soybean, velvetbeans, hairy indigo and beans. FALL ARMYWORM (Laphygma frugiperda) averaged 60 per square foot on Bermuda grass in northern area in September. Scattered infestations

of 85 and 125 per square foot also reported. All reports but one came from north and central parts of State. LESSER CORN-STALK BORER (Elasmopalpus lignosellus) is usually considered a minor pest, however, it was severe over the State this past year due to dry weather. Infestations up to 50 percent reported on corn in western area in August and September. An average of 5 per peanut plant was reported from this same area in September. Stands of corn were reduced up to 30 percent in the Boynton and Pahokee areas in November with some fields replanted. A 30 percent infestation of blue lupine in central area in December. CORN EARWORM (Heliothis armigera) infestations in the Pahokee and Belle Glade areas were as high as 35 percent in untreated fields of sweet corn in March, 80 percent in April, and 100 percent in May. Infestations were considerably lower than this in treated fields. Up to 75 percent infestations in scattered plantings in the northern area in June and July on treated field corn. One to 20 percent infestations on millet in the north and western areas in September and November. A SCALE (Targionia sacchari), commonly found on lawns and pastures in the southern area the year round, caused considerable reduction in growth in areas of high infestations. SOUTHERN GREEN STINK BUG (Nezara viridula) is usually a pest of minor importance over State, and is controlled largely by its natural enemies. Infestations up to 10 per soybean plant in Belle Glade area in June and scattered infestations up to 25 percent of soybean plants in central area in October and November. RED-LEGGED GRASSHOPPER (Melanoplus femur-rubrum) caused some damage on pasture grasses and peanuts in north and western areas; up to 10 and 20 per square yard on Bahia grass at Quincy. Only a few infestations required control. SOUTHERN ARMYWORM (Prodenia eridania) was injuring hegari in June in the Everglades and control was necessary. Some light infestations on pastures in the northern area in September. RICE STINK BUG (Solubea pugnax) was collected in considerable numbers on seed heads of rice in the Everglades in June. Also reported from scattered central and southern areas on pasture grasses.

A GRASS SCALE (Odonaspis ruthae) averaged up to 1,000 per square foot on grasses in southern area in the summer months. Most grasses survive the infestations with only a reduction in growth. LUPINE MAGGOT (Hylemya lupini)- Early infestations in January and February caused considerable reduction in growth in some plantings in the north and western parts of the State. AMERICAN GRASSHOPPER (Schistocerca americana) was not the problem it usually is on corn, soybeans, peanuts, and pasture grasses in the Gainesville area. BLUEGRASS WEBWORM

(Crambus teterrellus) infested lawns in the spring and early summer over State. Averaged 30 to 40 per square foot on Bermuda grass in the Gainesville area in February. By November, reports were general from south to north. RED-NECKED PEANUTWORM (Stegasta bosquella) was a pest on peanuts during midsummer and early fall in the north and western areas. Average of 15 percent of the peanuts in the Gainesville area infested in September and October. YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) infested soybeans in the northern area at the rate of 2 to 5 percent in November.

Fruit Insects (other than citrus):

RED-BANDED THRIPS (Selenothrips rubrocinctus) averaged 1 to 15 per square inch of leaf surface on avocado, guava, and mango in the Homestead area in July. Also reported from Bartow area in October. A TORTRICID (Platynota stultana) was infesting avocados at rate of 50 to 75 per tree in August at Homestead. Severe damage to lychee on the panicles and young fruit. FALL WEBWORM (Hyphantria cunea) was first observed on pecan trees at Monticello last of April. Light infestations from this area in May. BLACK PECAN APHID (Melanocallis caryaefoliae) was light to medium in July and August at Monticello.

Truck Crop Insects:

SERPENTINE LEAFMINERS (Liriomyza sp.) were reported on potatoes, tomatoes, beans, and squash (0 to 6 per plant) in March from Dade County. Much higher populations in Palm Beach County. Also reported infesting crops in south and central areas from March to November, but no heavy damage. CABBAGE LOOPER (Trichoplusia ni) caused severe damage in Sanford area in late-maturing cabbage fields middle of April. From 2 to 6 per cabbage plant in southern part of the State from last of April to June 1. A virus gave complete control in the Belle Glade area by middle of June. CABBAGE APHID (Brevicoryne brassicae) caused severe damage to crucifers in the Everglades area in November. GREEN PEACH APHID (Myzus persicae) was a pest on the spring crop of potatoes in Hastings area. Control measures necessary. Pepper was generally infested in the central area in April and May. Up to 90 percent of some fields had an average of 10 per plant. GRANULATE CUTWORM (Feltia subterranea) was light to heavy on beets, cabbage, and beans in the Everglades area in April and May. VEGETABLE WEEVIL (Listroderes costirostris obliquus) caused heavy damage to potatoes last of March at Monticello. BANDED CUCUMBER BEETLE (Diabrotica balteata) was abundant on bell pepper at Sarasota in November, and on beans in the Everglades. Considerable injury to beans in Belle Glade area in November. MELON APHID (Aphis gossypii) infested

watermelons generally in the central area in April and May, however, usually controlled. MEXICAN BEAN BEETLE (Epilachna varivestis) was a pest of pole beans, string beans, and lima beans in the north and western areas in May and June. Most infestations below economic level. TOBACCO HORNWORM (Protoparce sexta) was infesting tomatoes moderately at Quincy in June. High populations (20 to 30 per tomato plant) were reported from Immokalee in November. SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) in all stages was reported on sweetpotatoes in the northern and western areas from the last of June through December. Infestations were light to heavy. BEAN LEAF ROLLER (Urbanus proteus) was reported on beans from Belle Glade to west Florida in November causing light to medium damage. Up to 75 percent of beans infested in some fields.

Tobacco Insects:

VEGETABLE WEEVIL damaged up to 10 percent of plants on the margins of tobacco beds in Gadsden County and adjoining areas during June. GREEN PEACH APHID caused light and scattered infestations from the first of April to the last of June in the tobacco-growing area. The highest infestation was at Quincy in April; average of 100 per plant on experimental planting, but commercial plantings were generally free of aphids at this time. Most infestations averaged 6 to 10 percent of the plants infested with 2 to 25 per plant. TOBACCO BUDWORM (Heliothis virescens) was reported the first of April in the Gainesville area. By the middle of April, budworms were reported from all parts of tobacco-growing area, from 2 to 20 per 100 plants. Fifty percent of the small plants north of Gainesville were infested with 1 to 5 larvae by the first of May. Controls were being applied in all cases. Egg deposition was quite heavy in the Suwannee Valley middle of May. Infestations ranged from 5 to 12 percent until the last of May, at which time it rose from 25 to 90 percent. Infestations decreased in June and remained relatively low. TOBACCO HORNWORM (Protoparce sexta) was reported first of April in Gainesville area which is the southern limit of the tobacco growing area. Light infestations (averaging 2 per plant) were kept under control by most growers with regular applications of insecticides through most of April. There was a buildup about the middle of May with some averages as high as 10 to 15 per 10 plants at Quincy and adjoining areas. Infestations were moderately high through May (5 to 20 percent of the plants were infested) with a decline in June. CABBAGE LOOPER (Trichoplusia ni) was reported to be causing light infestations (1 to 1,000 plants) in Quincy the last of April and the first of May.

Cotton Insects:

BOLL WEEVIL (Anthonomus grandis) was reported causing light infestations on cotton from the western area in August. Light infestations also reported from small plantings on the lower east coast in August. COTTON APHID (Aphis gossypii) caused light infestations, averaging 6 to 16 per plant, in west Florida in June and on the lower east coast in October. LEAF MINERS caused some damage in June. Up to 20 percent of the cotton in west Florida was infested. RED-LEGGED GRASSHOPPER caused light scattered damage to cotton in west Florida.

Forest, Ornamental, and Shade Tree Insects:

The plants listed below are usually infested with one or more insect pests throughout the year regardless of the control program. This report gives the seasonal fluctuation with no attempt to give a monetary loss.

A BARK BEETLE (Ips calligraphus) caused light to medium infestations on pines in the central, north, and west in June, July, and August. Increases in abundance in the western part of the State in October and November. PINE WEBWORM (Tetralopha robustella) caused some damage to young pine seedlings in the north and north-central areas from June through October. PAPAYA FRUIT FLY (Toxoptrypana curvicauda) was not the problem it usually is the Homestead area. GREEN SHIELD SCALE (Pulvinaria psidii), which is confined to the southern part of the State, caused damage to various ornamentals during the warmer months. APHIDS (Toxoptera aurantii and Aphis gossypii) caused varying damage to young growth of many ornamentals. EASTERN LUBBER GRASSHOPPER (Romalea microptera) was a pest of shrubs and tender growing plants from March through June. There were heavy buildups of A TEA SCALE (Fiorinia theae) on camellia during the months of July and August in the central and northern areas. The SCALE (Saissetia nigra) was quite abundant on hibiscus in June, July, and August in the south and central areas. THRIPS (Frankliniella sp.) infestations were medium to heavy on flowering plants in April and June in the central and northern areas.

Insects Affecting Man and Animals:

HORN FLY (Siphona irritans) was first reported from Gadsden County the first of March averaging 6 per cow. A week later averaged same on a herd of 25 cows in central area. Infestations from 6 to 60 per cow in north-central area April 1. During the same time averages were 3 to 15 in the north, 6 to 100 in the central, and 75 to 125 in the south. The wide difference in averages in the same area was partially due to the regularity in spraying. Infestations continued high (90 to 200 per cow) in the northern area from April to September. Over 400 per head reported in the south in August.

700 to 900/head on cattle in Quincy (north) in November while infestations were considerably lower in the south at this time. SCREW-WORM (Callitroga hominivorax) - Every calf dropped in March in the Belle Glade area was infested. Light infestations were reported in the central, north, and western areas in May and June. Most infestations were kept down by treating young calves and wounded animals as soon as they were found. Heavy infestations were being reported as late as November from Punta Gorda (south). GULF COAST TICK (Amblyomma maculatum) was the species most often reported on cattle in the southern part of the State. Populations as high as 815 were reported on some cows in August. Forty-four percent of 277 cows were infested with an average of 14 ticks, while 289 cows in adjacent pasture were practically free of the tick. Dipping and rotating the cattle to fresh pastures helped reduce populations.

## PENNSYLVANIA

Reported by J. O. Pepper

### Cereal and Forage Insects:

The ALFALFA WEEVIL (Hypera postica) has been found in 14 counties and severe damage occurred in a number of fields, particularly by larvae on the first cutting in Lancaster, York, Delaware, and Chester Counties. Recommended standard sprays to control overwintering adults did not give satisfactory results. Counties in which the alfalfa weevil has been found are as follows:

York	-	1952	Cumberland	-	1954
Lancaster	-	1952	Lebanon	-	1954
Chester	-	1953	Berks	-	1954
Delaware	-	1953	Montgomery	-	1954
Adams	-	1954	Schuylkill	-	1954
Franklin	-	1954	Dauphin	-	1954
Bucks	-	1954	Snyder (Originally reported as Juniata County)	-	1954

The ALFALFA PLANT BUG (Adelphocoris lineolatus) was found in Fulton, Adams, Montgomery, Berks, Lebanon, and Bucks Counties in late 1953. No damage data are available. A late generation of ARMYWORM (Pseudaletia unipuncta) caused some damage the latter part of July in the following counties: Lycoming, Lackawanna, Susquehanna, Tioga, Centre, Clearfield, Butler, Crawford, Erie, Warren, McKean, Potter Sullivan, Somerset. Control measures were necessary in some sections and at least 2000 acres were sprayed. The actual loss was not extensive. The spring generation of HESSIAN FLY (Phytophaga destructor) caused as high as 70 percent lodging of wheat in

Juniata County and a considerable increase of infested wheat was noted generally. The fall generation was quite severe in early-planted wheat in the central area and considerable losses were noted. Infestations were also found in barley. EUROPEAN WHEAT STEM SAWFLY (Cephus pygmaeus) infested as high as 50 percent of the stand with considerable lodging and was generally abundant in southwestern Pennsylvania. Twenty acres of wheat was destroyed in Clarion County by WHEAT WIREWORM (Agriotes mancus). ENGLISH GRAIN APHID (Macrosiphum granarium) was present generally but not as severe as in 1953. Control measures for MEADOW SPITTLEBUG (Philaenus leucophthalmus) are generally accepted and the average increase in dry hay by controlling this pest was over one-half a ton for the fourth year in succession. Control measures were necessary in southeastern Pennsylvania for the PEA APHID (Macrosiphum pisi) in many alfalfa and clover fields. CLOVER ROOT BORER (Hylastinus obscurus) was very abundant in most clover fields and the TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus) was observed doing damage in a number of clover fields. Egg punctures by a BILLBUG (Calendra minima) was noted in much of the wheat stems examined. POTATO LEAFHOPPER (Empoasca fabae) became abundant after the first cutting of alfalfa, particularly in the southern part of the State. Average increases of dry hay of almost one-half ton resulted from control measures. The EUROPEAN CORN BORER (Pyrausta nubilalis) was slightly less than in 1953 and in many parts of the State evidences of damage were obscured by favorable growing conditions. LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) was very abundant in south central Pennsylvania and numerous H. meles were collected.

#### Fruit Insects:

CODLING MOTH (Carpocapsa pomonella) increased over 1953 and RED-BANDED LEAF ROLLER (Argyrotaenia velutiana) caused considerable damage late in the season in some sections. LESSER APPLEWORM (Grapholitha prunivora) increased in northwestern Pennsylvania. MITES are becoming a most important pest on apples. The PLUM CURCULIO (Conotrachelus renuphar) is much less important on apples than a few years ago. APPLE MAGGOT (Rhagoletis pomonella) was also considerably less than 1953. The PEACH TREE BORER (Sanninoidea exitiosa) increased considerably on plums, prunes, and cherries. An increase in catfacing injury by PLANT BUGS and STINK BUGS on peaches was noted. LESSER PEACH BORER (Synanthedon pictipes) is present in most peach orchards in northwestern Pennsylvania. GRAPE BERRY MOTH (Polychrosis viteana) was heavier than in several past years. CHERRY FRUIT FLIES (Rhagoletis cinquulata and R. fausta) continue to be a problem in northwestern Pennsylvania.

Vegetable Insects:

TOMATO RUSSET MITE (Vasates lycopersici) was reported from Mercer, Fulton, Adams, Franklin, Lancaster, York, Luzerne, Schuylkill, Lehigh, Berks, and Cumberland Counties in 1954. Control measures were necessary in most places and in Mercer County three acres of tomatoes were destroyed. All infestations were on plants from southern sources. TWO-SPOTTED SPIDER MITES severely injured a tomato field in Cumberland County. POTATO FLEA BEETLE (Epitrix cucumeris) and TOBACCO FLEA BEETLE (E. hirtipennis) were very abundant on tomatoes in the south central area shortly after planting. GARDEN SLUGS and VARIEGATED CUTWORM (Peridroma margaritosa) were particularly damaging to garden tomatoes. SEED-CORN MAGGOT (Hylemya cilicrura) in many sections damaged planted seeds and in western Pennsylvania some fields of sweet corn had to be replanted. CORN FLEA BEETLE (Chaetocnema pulicaria) was quite active on corn in south-eastern Pennsylvania early in the season. More than the usual number of reports of the RHUBARB CURCULIO (Lixus concavus) were received. The POTATO STALK BORER (Trichobaris trinotata) and POTATO LEAFHOPPER (Empoasca fabae) caused some damage; the latter where spraying of potatoes was neglected for pea harvestings. Control of WIREWORMS was necessary in some areas.

Forest, Shade Tree and Ornamental Insects:

The EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) continues to be a major pest of Christmas tree plantations and ornamental plantings. WEEVILS (Hylobius pales and Pissodes approximatus) caused extensive damage in plantations. These pests breed in the cut stumps in Christmas tree plantations. PINE CHAFER (Anomala oblivia) heavily damaged the needles of a Scotch pine plantation in Cambria County. Heavy damage by PINE TORTOISE SCALE (Toumeyella numismaticum) was noted in Clearfield County. Other insects causing some injury to evergreen plantations were an APHID (Cinara watsonii) and PINE WEBWORM (Tetralopha robustella). BLACK VINE WEEVIL (Brachyrhinus sulcatus) severely damaged taxus and hemlock in several sections. EASTERN SPRUCE GALL APHID (Chermes abietis) was severe in some spruce plantings. Extensive defoliation of forest trees occurred in southeastern sections of the State by the FALL CANKERWORM (Alsophila pomataria).

Insects Affecting Man and Animals:

STABLE FLIES (Stomoxys calcitrans) apparently were more abundant than usual. NORTHERN FOWL MITE (Bdellonyssus

sylviarum) was found in several poultry houses.

Household Insects:

CLOVER MITE (Bryobia praetiosa), BOXELDER BUG (Leptocoris trivittatus) and ELM LEAF BEETLE (Galerucella xanthomelaena) caused considerable concern in homes. CARPET BEETLES appear to be more common than usual. POWDER POST BEETLES caused much damage.

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Some of the More Important Economic Insects of Pennsylvania - 1954, as Evaluated by the Extension Entomology Office of The Pennsylvania State University.

Meadow s pittlebug (Philaenus leucophthalmus).

House fly (Musca domestica).

Biting flies on animals (Stomoxys calcitrans, Siphona irritans, Tabanus sp. and Chrysops sp.).

Leafhoppers (mainly on hay and potatoes). (Empoasca fabae).

Root maggots - several sp.

Mites - several sp.

Flea beetles - several sp.

Codling moth (Carpocapsa pomonella).

Cutworms - several sp., including armyworms.

Wireworms - several sp.







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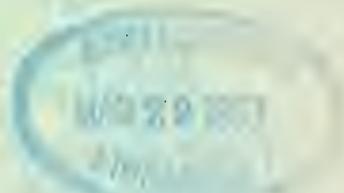
*Cooperative*  
**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL BRANCH**

**AGRICULTURAL RESEARCH SERVICE**

**UNITED STATES DEPARTMENT OF AGRICULTURE**



# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Economic Insect Survey Section  
Plant Pest Control Branch  
Agricultural Research Service  
United States Department of Agriculture  
Washington 25, D. C.

## COOPERATIVE ECONOMIC INSECT REPORT

## Highlights of Insect Conditions

Heavy carryover of SUGARCANE BORER in Louisiana. (page 315 ).

CLOVER LEAF WEEVIL causing damage in Delaware, Missouri and Illinois, Virginia and Utah also report activity. (page 316 ).

MEADOW SPITTLEBUG hatching in Delaware, Maryland, and Pennsylvania. (page 317 ).

PEA APHID increasing on alfalfa in Delaware. Buildup continues in Virginia and Maryland. Appearing in several other states. (pages 317, 328 ).

ALFALFA WEEVIL active in Virginia, Maryland and Pennsylvania. (page 316 ).

BROWN WHEAT MITE causing damage in wide areas of Oklahoma and Kansas. Also in Washington County, Utah. (pages 316, 328 ).

Spring POTATO PSYLLID situation. (page 322 ).

BOLL WEEVIL survival counts in Virginia low. (page 324 ).

Illustrated key to species of TROGODERMA and to related genera of DERMESTIDAE commonly encountered in stored grain in California. (after page 330 ).

LIGHT TRAP collections. (page 326 ), ADDITION NOTES. (pages 328, 329).

First REPORTED RECORDS of season (by areas). (page 329 ).

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Reports in this issue are for the week ending April 8, 1955, unless otherwise designated.

## WEATHER FOR THE WEEK ENDING APRIL 11, 1955

Showers and a general warming trend over the Country made the appearance of spring weather almost a reality during the week. However, skeptics could point to subfreezing temperatures over much of the Nation during the middle of the period as evidence that the exodus of winter was not complete. By the end of the week, temperatures were high again with stations in the northern third of the Country reporting their highest temperatures of the year.

The major center of precipitation in the Nation was located in the lower Mississippi River Valley. Southern Tennessee, northern Mississippi and northern Alabama reported over 2 inches of rain for the 4th straight week as thunderstorms moved over the area on the 5th and 6th. These heavy showers caused extensive erosion and flooded low lands. Rains along the Gulf Coast from Texas to western Florida over the weekend brought locally excessive amounts of moisture to southern Louisiana. Two inches of rain were also reported on the Olympic Peninsula in Washington. Showers were general, but light, over the remainder of the country, with the exception of the Southwest, the California Coast and a small area in the Mid-West where no precipitation was recorded during the period.

Alternating periods of warming and cooling kept temperatures near normal over most of the Nation during the week. Below normal temperatures were centered in the western Rocky Mountains where two cold frontal passages were reported during the period. Cold air outbreaks east of the Rockies brought subfreezing temperatures as far south as Oklahoma on the 7th and Virginia on the 8th. However, above normal temperatures at the beginning of the period and unseasonably warm temperatures on the 9th and 10th resulted in above normal temperatures for most of this area. The greatest positive departures from normal were located along the Canadian Border in North Dakota and Minnesota. Temperatures above 80° were reported at many stations in this area on the 9th and 10th. Duluth, Minn. recorded a temperature of 79° on the 10th, which equaled the station's record for highest temperature this early in the season.

The severe snow storm, occurring at the end of the last period in south central Montana and north central Wyoming, continued on the 4th. Sheridan, Wyo. and Billings, Mont. reported 33 inches of snow on the ground on the 5th.

Strong winds continued to pummel the drought stricken regions of the lower Western Plains. Soil drifting was reported from northeastern New Mexico to southeastern Nebraska. (Summary Supplied U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

EUROPEAN CORN BORER (Pyrausta nubilalis) - DELAWARE - Pupation in Sussex County 50 percent compared with 15 at this time in 1954, (Late News). PENNSYLVANIA - Apparently little mortality in Blair County as larvae readily found in corn stalks. (Udine).

SUGARCANE BORER (Diatraea saccharalis) - LOUISIANA - Survey of cane trash and early-planted cane for overwintering borers in various areas of the cane belt showed 1299 live borers per acre and 423 dead or percentage of 24.6 dead. This reveals heavy carryover of borers for fourth consecutive year and indicated likelihood of a destructive infestation for the coming season. As there were but few first generation borers in fields prior to recent cold weather, mortality was probably insignificant. The delayed development with continuous cultivation, however, should result in further reducing the winter carryover. (Dugas).

CORN EARWORM (Heliothis armigera) - LOUISIANA - Twenty-five per 200 sweeps in white clover in St. Landry Parish, 2 per 200 sweeps of white clover in West Feliciana Parish. (Oliver, Apr. 2).

CHINCH BUG (Blissus leucopterus) - DELAWARE - Few adults taken in meadow near Andrews ville. (Milliron). LOUISIANA - One per seedling corn plant in St. Landry Parish. (Oliver).

CORN FLEA BEETLE (Chaetocnema pulicaria) - DELAWARE - Adults very prevalent, from 2 to 4 per sweep of 15-inch net, in meadow near Andrews ville and at some places in Kent County. (Milliron). ILLINOIS - From 0-20 per 10 sweeps in roadside grass beside old corn fields, apparently highest in eastern Illinois. (Petty).

ENGLISH GRAIN APHID (Macrosiphum granarium) - MISSOURI - Light infestation, 4 to 25/linear foot of drill row on barley, rye and wheat in extreme southeast. (Kyd, Thomas).

GREENBUG (Toxoptera graminum) - LOUISIANA - Light in several fields of oats and wheat in Bossier, Claiborne, Avoyelles and Rapides Parishes. (Oliver).

APHIDS - ARKANSAS - Aphids mostly English grain aphid (Macrosiphum granarium) and corn leaf aphid (Rhopalosiphum maidis) generally distributed, but light, in central and north-western counties. Predators active. (Warren).

BROWN WHEAT MITE (Petrobia latens) - UTAH - Severely infesting barley in Santa Clara-St. George area of Washington County. (Knowlton, Hughes). OKLAHOMA - Numerous in western and north central areas. Heavy damage in many fields. (Flora, Henderson, Howell).

ARMYWORM (Pseudaletia unipuncta) - FLORIDA - Larvae collected at Gainesville. (Patton). LOUISIANA - Twenty-three per 200 sweeps of white clover and 20 per 200 sweeps of oats in St. Landry Parish, 2 per 100 sweeps in oats in West Feliciana Parish, April 2. Two per 100 sweeps in Avoyelles Parish, and 3 per 100 in Claiborne Parish on small grains April 7. (Oliver). MISSOURI - A few moths in small grain fields in southeast as far north as St. Genevieve County. A very few overwintered fourth and fifth instar larvae noted but no spring-generation larvae found. (Kyd, Thomas).

ALFALFA WEEVIL (Hypera postica) - DELAWARE - Active throughout State, severe near Bridgeville, elsewhere scarce to moderately abundant. (Milliron). MARYLAND - Adults averaging 6-8 per 50 sweeps on alfalfa in Queen Annes, Talbot, and Anne Arundel Counties. Larvae beginning to damage tops of plants. A few adults taken by sweeping in Baltimore and Frederick Counties. (U. Md., Ent. Dept.). VIRGINIA - Adults active: 4 per 100 sweeps in Loudoun, Stafford, and Spotsylvania Counties, 3 per 100 in Fauquier County. (Morris, Muka).

CLOVER LEAF WEEVIL (Hypera punctata) - DELAWARE - Heavy damage to red clover at Kenton and many other locations. Common on alfalfa but less destructive. (Milliron). VIRGINIA - Two larvae per 100 sweeps in Rockbridge, Frederick, Orange and Bedford Counties. (Morris). ILLINOIS - State average 11.4 larvae per square foot and range in all fields 1.5 to 30.5 per square foot with highest population in southeastern, east-southeastern and central areas. Insect less abundant than at same time for previous two years, although two reports of severe leaf ragging. (Petty). MISSOURI - Evidence of damage in all areas. From 3-18 per square foot of red clover and 1-7 per square foot of alfalfa in east-central area. From 0.5 to 4 per square foot in red clover and alfalfa in southeast. Larvae in all stages and about 10 percent show fungus disease. (Kyd, Thomas). UTAH - Adults on alfalfa at Leeds. (Knowlton).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - DELAWARE - Adults active on red clover. Many small to half-grown larvae at most locations. (Milliron).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - DELAWARE - Adult injury noted from Newark to Harrington. (Milliron). MISSOURI - Moderate to heavy damage to sweetclover along Mississippi River bottoms. Four to 5 adults per crown in one St. Genevieve County field. (Kyd, Thomas).

CLOVER ROOT CURCULIO (Sitona hispidula) - VIRGINIA - Adult population per 100 sweeps by county: Frederick 2, Fauquier 4, Stafford 20, Spotsylvania 19, Culpeper 14, Orange 1. (Morris).

BEAN LEAF BEETLE (Cerotoma trifurcata) - DELAWARE - Adults collected in red clover near Felton. (Milliron). VIRGINIA - In connection with surface woods trash examination for surviving boll weevil in southeastern counties, bean leaf beetle was found at rate of 1-11 beetles per 10 square yards of trash. (Cotton Ins. Sect., VPI Ext., and Va. State Ent.).

MEADOW SPITTLEBUG (Philaenus leucophthalmus) - DELAWARE - Hatching well underway on alfalfa, clovers and other plants in Kent and Sussex Counties. Beginning in New Castle. (Milliron). PENNSYLVANIA - A few nymphs hatched in alfalfa and clover in southern Lancaster and York Counties. (Pepper). Eggs about ready to hatch in Washington County. Readily found in Blair County. (Udine). MARYLAND - Scarce but beginning to hatch on alfalfa and red clover over most of State. (U. Md., Ent. Dept.).

PEA APHID (Macrosiphum pisi) - VIRGINIA - Increasing rapidly on alfalfa throughout State. Surveys of alfalfa in 9 counties revealed populations from 10 to about 1000 per sweep of 15-inch net, heaviest in Bedford County. Indications heavy populations also in more southern counties. (Morris). MARYLAND - Building up tremendously on alfalfa on Eastern Shore. From 20-450 per sweep in Queen Annes and Talbot Counties. Only 6 per sweep in Montgomery County. (U. Md., Ent. Dept.). PENNSYLVANIA - Very few in alfalfa in Lancaster County. (Pepper). DELAWARE - Increasing on alfalfa and clovers in some locations. (Milliron). ILLINOIS - Extremely light in northern two-thirds of State. Average of 1.6 per 10 sweeps in clover and alfalfa in southern third. (Petty). MISSOURI - Very light, 0-2 per sweep, on alfalfa in southeast. (Kyd, Thomas). UTAH - Observed on alfalfa at Leeds. (Knowlton). ARIZONA - Appearing in alfalfa in Marana-Sahuarita areas April 4-6. (Ariz. Coop. Rept.).

YELLOW CLOVER APHID (Myzocallis trifolii) - OKLAHOMA - Widespread in most parts of State. Spraying common in most areas. (Bryan, Flora, Bieberdorf, Howell). ARIZONA - Heavy buildup in Salt River Valley alfalfa April 1. General in Marana-Sahuarita areas April 4-6. Spotted damage in Graham County. (Ariz. Coop. Rept.).

FLOWER THRIPS (Frankliniella tritici) - LOUISIANA - Heavy on white clover in West Baton Rouge Parish. (Oliver).

TOBACCO THRIPS (Franklinella fusca) - LOUISIANA - Moderate on white clover in St. Landry Parish, April 2. and on crimson clover in Claiborne Parish, April 7. (Oliver).

GREEN CLOVERWORM (Plathypena scabra) - LOUISIANA - Thirty-six per 200 sweeps of white clover St. Landry, 23 per 200 sweeps East Feliciana Parish, April 2. Twenty per 100 sweeps in crimson clover in Claiborne Parish and 15 per 100 sweeps on alfalfa Bossier Parish, April 7. (Oliver). ARKANSAS - Infestations relatively heavy in alfalfa. Up to 2 first to third-instar larvae per sweep of 12-inch net. (Warren).

LEAFHOPPERS - ILLINOIS - One female Empoasca sp. collected on red clover at Eldorado April 6. (Petty).

VA. - Population in alfalfa per 100 sweeps (by county) Rockbridge 3, Augusta 4, Fauquier 4, Stafford 12, Spotsylvania 5. (Morris).

POTATO LEAFHOPPER (Empoasca fabae) - LOUISIANA - Thirteen per 200 sweeps in California burclover and 6 per 200 in white clover at Baton Rouge March 30. Fifteen per 200 sweeps in sweetclover and 41 per 200 sweeps in California burclover at Baton Rouge April 4. (Oliver).

CRANE FLIES - TENNESSEE - Heavy infestation in about 300 acres of ladino clover and pastures in Hawkins County. (Dozier).

TARNISHED PLANT BUG (Lygus lineolaris) - DELAWARE - Adults numerous in crimson clover at Greenwood; less abundant in other legumes. (Milliron). PENNSYLVANIA - Adults in hay in Lancaster County, April 5. (Pepper). LOUISIANA - Two adults, 7 nymphs per 200 sweeps of white clover in St. Landry Parish; 23 adults, 8 nymphs per 200 sweeps of sweetclover and 20 adults, 13 nymphs per 200 sweeps of burclover East Baton Rouge Parish; 6 adults, 4 nymphs per 200 sweeps of vetch West Feliciana Parish, April 2. Twelve adults, 8 nymphs per 100 sweeps in alfalfa, Bossier Parish, April 7. (Oliver). ILLINOIS - Average of 0.1 and 0.4 adults per sweep in alfalfa and clover in southwestern and southeastern areas, respectively. (Petty).

LYGUS BUGS - ARIZONA - Building up in alfalfa in areas of Maricopa County. (Ariz. Coop. Rept.).

BRISTLY CUTWORM (Lacinipolia renigera) - DELAWARE - Continues abundant in forage legumes generally. (Milliron).

CLAY-BACKED CUTWORM (Agrotis gladiaria) - MISSOURI - Light to moderate populations, 1 to 12 per square yard, continue to damage red clover, alfalfa and pasture over much of southern two-thirds of State. Larvae mainly third and fourth instars. Damage light but increasing. (Kyd, Thomas).

CUTWORMS - LOUISIANA - Agrotis ypsilon and Feltia subterranea averaging 1 per 3 linear feet of row in St. Landry Parish, April 2. These species continue to cause considerable damage to young corn and soybeans in this parish, April 7. (Oliver).

ARKANSAS - Agrotis sp. infestations light in alfalfa and crimson clover in northwestern area. (Warren). TENNESSEE - Heavy scattered infestations in pasture fields in north central area. (Mullett). Small numbers of Feltia ducens in most alfalfa fields and in a few pasture and small grain fields in northeastern counties. Cutworms ranged from 2-3 per square foot in Sevier County to less than 1 per square foot in more northern counties. (Dozier).

### FRUIT INSECTS

CODLING MOTH (Carpocapsa pomonella) - NORTH CAROLINA - Overwintering larvae in Wilkes County survived the freezing temperatures of late March. (Turnipseed).

APPLE APHID (Aphis pomi) - OREGON - Hatching on apple, April 4, at Hood River. (Ellertson). Hatching March 28 at Milton-Freewater. (Wallace). NORTH CAROLINA - Young aphids, recently hatched, killed by freeze of late March in Wilkes County. There was only a partial hatch and remaining eggs show no evidence of being affected by the weather. (Turnipseed).

GREEN PEACH APHID (Myzus persicae) - OREGON - Hatching March 9 at Milton-Freewater. Abundance low compared with previous years. (Wallace). UTAH - Some present in peach blossoms at Leeds. (Knowlton).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - PENNSYLVANIA - Moths depositing eggs in most apple orchards, Adams County, April 4. (Asquith).

EUROPEAN-RED MITE (Metatetranychus ulmi) - NORTH CAROLINA - Newly-hatched mites on apple in Wilkes County killed by freezing temperatures of late March, but unhatched eggs - appear not to have been affected. (Turnipseed). VIRGINIA - Eggs light to medium in apple orchards in northern area but heavy in scattered orchards. Hatch expected by April 15. (Hill).

SCALE INSECTS - VIRGINIA - FORBES SCALE (Aspidiotus forbesi) and SCURFY SCALE (Chionaspis furfura) infestations light and scattered in apple orchards of northern part of State. TERRAPIN SCALE (Lecanium nigrofasciatum) infestations light in Rappahannock County. (Hill). NEW YORK - SAN JOSE SCALE and LECANIUM SCALE reported in more than usual numbers and building up in Monroe County. (Corey).

A LEAF MINER (Callisto geminatella) - VIRGINIA - Adults first observed emerging in northern apple orchards, March 31. (Hill).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - NORTH CAROLINA - Overwintering pupae in Wilkes County unaffected by freeze of late March. (Turnipseed).

PEAR THRIPS (Taeniothrips inconsequens) - OREGON - Peak of emergence reached April 6 in Willamette Valley. (Jones). Abundance low compared with previous years. (Wallace).

PEAR PSYLLA (Psylla pyricola) - OREGON - Actively laying eggs since March 17, Hood River. (Ellertson). NEW YORK - Egg laying fairly heavy in protected orchards in Ulster County, but cool weather apparently held up usual egg laying for this date. (Palmer). Eggs found in small numbers, April 6, Wayne County. (Small). First adults found February 20, during a warm spell, and first eggs found April 5 in Niagara County. (McNicholas). Eggs found in limited numbers in Monroe County. (Corey). Fair number of eggs April 6 in Orange County. (Zaharchuk).

TARNISHED PLANT BUG (Lygus lineolaris) - PENNSYLVANIA - Few on peach buds at York, April 7. (Pepper).

PLUM CURCULIO (Conotrachelus nenuphar) - VIRGINIA - Emergence expected in a week or 10 days. (Hill).

A LEAF ROLLER (Platynota stultana) - FLORIDA - Averaging 1 to 4 larvae per panicle of lychee at Merritt Island, Brevard County. (Pinkerton).

BLACK CHERRY APHID (Myzus cerasi) - NEW YORK - Hatching on April 5 in Orange County. (Zaharchuk).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - DELAWARE - Hatching as far north as Newark. Small nest conspicuous in wild cherry trees from Hartly southward. (Milliron).

MEXICAN FRUIT FLY (Anastrepha ludens) - TEXAS - In the Rio Grande Valley area more adults trapped this period than any other 15-day period this season. In 11 properties a total of 11 A. ludens, 7 females (2 of which were gravid) and 4 males were taken. All specimens were trapped in Hidalgo County. The fruit fly population, as revealed by traps, has been comparatively low throughout the year as only 29 adult A. ludens have been trapped. Two larval infestations were found in grove inspections, the first of the current season found on March 22, in grapefruit, near Mercedes, and the other also in grapefruit, was found near Mission, March 28. Both infestations were very light, each containing only one infested fruit. (Mex. Fruit Fly Cont. Proj., 16-31).

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Increased from 5 per 100 terminals March 28 to 134 per 100 terminals April 4 on navel oranges at Tempe. (Ariz. Coop. Rept.).

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - Infestation found in Nuevo Laredo, Tamaulipas, immediately across the Rio Grande from Laredo, Texas was most significant finding in the northeastern area during this period. This new infestation found March 15 consisted of only one leaf, and was located 3 blocks from the nearest infested property of 1954. Seven new infestations were found in the Victoria district, Nuevo Leon, this period. (Citrus Blackfly Cont. Proj., March 16-31).

SIX-SPOTTED MITE (Tetranychus sexmaculatus) - FLORIDA - Infestations continue to increase on citrus and becoming severe on new leaves. (Pratt, Thompson, Johnson).

#### TRUCK CROP INSECTS

BEEF LEAFHOPPER (Circulifer tenellus) - ARIZONA - Light infestation in all early fields of cantaloup in Salt River Valley, March 31. (Ariz. Coop. Rept.).

### Spring potato psyllid situation

A survey in late March of psyllids on wild host plants in the overwintering and spring breeding areas in the Southwestern States showed above normal populations were available to move into northern potato and tomato growing areas in Colorado, Utah, Wyoming, Nebraska and Montana. The highest populations occurred in central Arizona where they averaged 225 per 100 sweeps. This is double the population occurring in 1954 in this area. An average population of 13 in southern California is one-third of that in 1954. In southwestern Texas and southern New Mexico psyllids averaged 22 per 100 sweeps which is about half as many as occurred in 1954.

It is believed that southern California is the source of psyllids infesting northern Utah during the summer months, central Arizona is the source for psyllids infesting eastern Utah and western Colorado, and the Texas-New Mexico area is the source for eastern Colorado, eastern Wyoming and western Nebraska. In the latter area epidemic numbers resulted during the summer in 1949 following a spring population of 18 in the Texas-New Mexico area, in 1950 following a spring population of 19, and in 1953 following a spring population of 29. Few previous records are available for comparison in the areas west of the mountain range.

The development of epidemic numbers in the Northern States in 1955 will depend on weather conditions during May and June when the northward movement occurs. Slightly above normal temperature in May and about normal temperature in June in the Northern States is favorable for a psyllid movement. (Wallis).

CABBAGE APHID - DELAWARE - Light infestation on seeding cabbage near Georgetown. (Milliron).

GREEN PEACH APHID (Myzus persicae) - NORTH CAROLINA - Tobacco plant beds in Moore and Scotland Counties with 3-4 aphids per leaf in limited areas along margins of beds. (Guthrie).

IMPORTED CABBAGEWORM (Pieris rapae) - DELAWARE - Adults in flight generally in Kent and Sussex Counties. (Milliron).

AN INTRODUCED FLEA BEETLE (Phyllotreta cruciferae) - DELAWARE - Adults active near Townsend on turnips and kale. (Milliron).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - LOUISIANA - Continued to threaten strawberries in Tangipahoa Parish. Moderate in onions in West Feliciana Parish. Severe on peppers in St. James Parish, April 2. Severe infestation on tomatoes, cabbage and turnips in Ascension Parish. (Oliver).

THRIPS - ARIZONA - Light infestation on 80 acres of onions in Maricopa County, March 25. (Ariz. Coop. Rept.).

ONION THRIPS (Thrips tabaci) - LOUISIANA - Moderate infestation in onions in West Feliciana Parish. (Oliver, April 2).

CLAYBACKED CUTWORM (Agrotis gladiaria) - LOUISIANA - Very severe infestation in home gardens in Claiborne and Webster Parishes, 75 percent of garden peas destroyed. Average of 1 cutworm per linear foot of row and up to 5 larvae observed under one plant, Claiborne Parish. (Oliver).

SEED-CORN MAGGOT (Hylemya cilicrura) - DELAWARE - Adults at many locations in Kent and Sussex Counties. (Milliron).

FLEA BEETLES - TENNESSEE - Becoming active in tobacco beds in Greene County and causing scattered damage to beds not killed by last freeze. (Dozier).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - NORTH CAROLINA - Moderate infestations continue. (Scott). VIRGINIA - Evidence of light feeding by adults in several plant beds in Pittsylvania County. (Dominick).

NORTHERN MOLE CRICKET (Gryllotalpa hexadactyla) - NORTH CAROLINA - Light infestation in tobacco plant beds in Onslow County. (Algood).

### COTTON INSECTS

PINK BOLLWORM (Pectinophora gossypiella) - TEXAS - Total season's inspection to March 31 shows average of about 5 hibernating larvae in each 100 bolls examined since January 1. Fifty-one percent of fields examined showed living pink bollworms in bolls from standing stalks while only 16 percent of fields in which stalks have been destroyed showed survival in surface debris. All areas report no evidence of mortality of hibernating pink bollworms from the recent freeze. (PBW Cont. Proj.).

Boll Weevil Survival Counts, Virginia:

Surface trash examinations for surviving boll weevils in southeastern Virginia have been completed. Live boll weevils were found at rates of 0 to 968 per acre with average of 73 per acre. The 1954 fall examinations showed average of 2,759 weevils per acre for Southampton County while spring examinations at same sites showed no weevils. In Mecklenburg County, 484 weevils per acre were found in 1954 fall survey compared with 193 per acre in spring of 1955. In Brunswick County, there were 2,130 weevils per acre compared with 96 in spring examinations. The 1954 fall examinations showed an average for all samples of 2,033 weevils per acre compared to 73 per acre in spring of 1955. Percent survival was 3.5 percent. (Cotton Ins. Sect., VPI Ext., and Va. State Ent.).

Cotton Pest Situation, Lower Rio Grande Valley, Texas:

SPIDER MITES found widely but numbers do not justify control measures. Very light infestations of BOLLWORMS in a few older cotton fields. Low numbers of COTTON APHIDS and FLEAHOPPER adults. THRIPS damaging seedling cotton in fields adjacent to onions. (Wene, Dean, Fuller).

AN ANT (Solenopsis sp.) - ARIZONA - Damage to seeds in 25 acres early cotton in Continental area. About 40 percent of seeds affected. The ants eat into the seed after it has softened. Det. F. Werner. (Ariz. Coop. Rept.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

ORANGE TORTRIX (Argyrotaenia citrana) - IDAHO - Found on geranium cuttings by a florist in Twin Falls and submitted for identification in December 1954. Plants were shipped in from an infested State. As far as known this is the first record of a collection of the species in Idaho. (Douglass, Manis).

ELM LEAF BEETLE (Galerucella xanthomelaena) - ARIZONA - Beginning to appear on elm in Phoenix. Control started. (Ariz. Coop. Rept.).

TENT CATERPILLARS (Malacosoma pluviale and M. disstria) - OREGON - Surveys in northwestern area indicate lower infestations than last year in most cases. Where most serious infestations occurred in 1954 there are, as a rule, no signs of eggs. Apparently larvae starved for lack of food. Where lighter infestations occurred a few eggs can be found, especially on preferred hosts such as wild apple. None to two egg masses per three minutes of examination were the usual find with an occasional five or six per three minutes. This indicates infestations will probably be spotty. (Roth).

BOXWOOD LEAF MINER (Monarthropalpus buxi) - NORTH CAROLINA - Moderate infestation in Jackson County. (Scott).

OYSTERSHELL SCALE (Lepidosaphes ulmi) - VIRGINIA - Infestations heavy on lilacs in northern Virginia. (Jackson).

### INSECTS AFFECTING MAN AND ANIMALS

BEDBUG (Cimex lectularius) - OKLAHOMA - Reported from several apartments in Oklahoma City. (Rogers).

HEAD LOUSE (Pediculus humanus capitis) - NORTH CAROLINA - Medium infestation on a child in Wake County. (Jones).

MOSQUITOES - FLORIDA - Mansonia perturbans, in adult stage, collected in Highlands County. Adults of Wyeomyia vanduzeei and W. mitchelli fairly abundant in shady hammocks in same county. (Weems). VIRGINIA - Anopheles punctipennis observed biting during week March 15 at Charlottesville. (Bobb).

CATTLE GRUBS - OKLAHOMA - Heel fly activity at high level over most of State. (Howell).

EAR TICK (Otobius megnini) - UTAH - Less numerous in ears of young cattle at Milford than in springs of 1953 and 1954. (Esplin, Knowlton).

A BUFFALO GNAT (Prosimulium pecuarum) - ARKANSAS - Being found in most southern counties. Although not as heavy as in some years, bothering cattle to some extent. (Barnes, April 5).

CHICKEN MITE (Dermanyssus gallinae) - NORTH CAROLINA - Laying house of over 1000 birds severely infested in Scotland County. (Farrier).

### STORED-PRODUCT INSECTS

KHAPRA BEETLE (Trogoderma granarium) - ARIZONA - Moderate to severe infestation in 3 large grain and seed mills and 1 farm storage barn in Phoenix area. Also in 1 retail feed store at Parker. (March reports). (Ariz. Coop. Rept.).

A BULB MITE (prob. Rhizoglyphus echinopus) - NORTH CAROLINA - Caused about 30 percent loss of 3,000 gladiolus bulbs in storage in Alamance County. Easter lilies in Scotland and Wake Counties infested, some almost commercially unsalable. (Farrier).

LIGHT TRAP COLLECTIONS

	P.	A.	P.	F.	H.	P.
	unipuncta	ypsilon	ornithog.	subterr.	armigera	margaritosa
<u>LOUISIANA</u>						
Bat. Ro.	4	20	6	64	1	7
St. Jos.	27	1		2		5
Franklin	12	8	6	16	1	1
Tallulah	235	49	2	7	1	33
<u>MISS. (Counties)</u>						
Coahoma	12	2				20
Humphreys	153	34		2		35
Oktibbeha	26	2				3
Pearl R.	12	2				3
Washington	126	17				21
<u>KY. (County)</u>						
Trigg		69				
<u>ARKANSAS</u>						
Hope	136					1
Stuttgart	64	3			1	1
Van Buren	4	4				1
Fayette.	32	18				19
<u>S. C. (County)</u>						
Oconee		15				

Other collections of importance: MISSISSIPPI - Washington County, Agrotis malefida 11, Caenurgina erechtea 17, Trichoplusia ni 3, KENTUCKY - Heavy catches of seed-corn beetle in southwest tip of State. SOUTH CAROLINA - Cutworms 3, Euethola rugiceps 2. LOUISIANA - Baton Rouge, E. rugiceps 14, Phyllophaga sp. 158; Franklin, E. rugiceps 6; Tallulah, Laphygma exigua 111, Loxostege similalis 30, Phyllophaga spp. 53.

## MISCELLANEOUS INSECTS

TERMITES - VIRGINIA - Flights attracting attention. (Morris).  
MARYLAND - Reports of swarming from several counties.  
(U. Md., Ent. Dept.). OKLAHOMA - Swarming widespread.  
(Howell). PENNSYLVANIA - R. flavipes swarming in Jefferson,  
Westmoreland and Butler Counties. (Adams, Udine).  
MISSISSIPPI - Winged-forms of Reticulitermes flavipes emerging  
in Coahoma, Lee and Leflore Counties. (Hutchins).

OLD HOUSE BORER (Hyiotrupes bajulus) - MARYLAND - Infesting  
timbers of home in Anne Arundel County. (U. Md., Ent. Dept.).

ELM LEAF BEETLE (Galerucella xanthomelaena) - PENNSYLVANIA - Causing concern around homes in Adams, Columbia,  
Delaware and Centre Counties. (Pepper, Gesell, Menusan, Adams).

GERMAN COCKROACH (Blattella germanica) - NORTH CAROLINA -  
Large apartment building in Alamance County generally infested.  
(Scott).

THRIPS - MISSISSIPPI - Thrips, probably Frankliniella fusca,  
reported many times coming to lights, entering houses and cars  
and biting people at Starkville. (Hutchins).

## RECENT IMPORTANT INTERCEPTIONS AT PORTS OF ENTRY

Living larvae of the Asiatic rice borer, Chilo suppressalis (wlk.)  
= simplex (Btlr.))\* , were intercepted recently in rice straw from  
Japan at Houston, Texas (Slobodnik) and at New Orleans, Louisiana  
(Hamilton). This insect is considered a serious pest of rice  
in the Orient. It is said to occur from India east to China, Japan  
and Korea, south to Malaya and the East Indies and east through  
the Pacific Islands to Hawaii. It has become established in recent  
years in the rice growing areas of Spain. In addition to rice, it  
has been reported attacking sugarcane, corn, sorghum, millet,  
species of Typha and Phragmites and various grasses. Injury to  
rice is caused by the larvae feeding in the stems. Young plants  
when attacked are severely injured, often killed. Older plants  
are weakened so that they are easily flattened by wind or rain  
and fail to produce full heads of grain. Many dead shoots and  
leaves appear in heavy infestations.

Observations on the biology of the insect indicate that it hibernates  
as a mature larva in straw or stubble. The number of generations  
vary from 2 to 4. Adult emergence in spring is very irregular.

\*Kapur, A. P. 1950. The identity of some Crambinae associated with  
sugarcane in India and some species related to them. Roy. Ent. Soc.  
London Trans. 101(11): 389-434.

Mating and egg laying occur soon after emergence. Eggs are deposited in large irregular clusters, often as many as 100, on tips of leaves or under leaf sheaths. Larvae on hatching bore into the stem. Many larvae may occur together. Larval stage lasts about 4 weeks. Pupation occurs in the stems. Pupal stage averages 10 days.

Living larvae of C. suppressalis have been intercepted on numerous occasions in rice straw from the Orient used as packing for china and brass ware, carved wood and curios and in rice straw mats or rope used as dunnage aboard ships. It is not known to occur in the continental United States. (Compiled - by Plant Quarantine Branch).

#### ADDITIONAL NOTES

KANSAS - Non-economic infestations of GREENBUG (Toxoptera graminum) were found in several central and south central counties. Counts per foot of drill row of wheat and/or barley ranged from 0.5 to 5 aphids per foot. Sweep counts ranged from 3 to 10 greenbugs per 25 sweeps of a 15-inch net. ENGLISH GRAIN APHIDS (Macrosiphum granarium) were found on wheat in nearly all fields in this area. Counts averaged 5 to 10 aphids per 25 sweeps of a 15-inch net. PEA APHID (Macrosiphum pisi) has begun to appear in nearly all alfalfa fields in central and southern Kansas and as far north as Ottawa County. Counts very light, only 5 to 20 aphids per 25 sweeps of a 15-inch net. (Matthew). Very light, scattered colonies of small aphid, probably YELLOW CLOVER APHID (Myzocallis trifolii), found on alfalfa in southern Sumner County. This aphid also was reported on alfalfa in Meade County. Specimens being confirmed. (Frazier). ARMY CUTWORMS (Chorizagrotis auxiliaris) found in wheat, barley, and alfalfa fields of central and south central Kansas. Infestations of economic importance were found in seedling alfalfa fields of Reno, Sedgwick, Sumner, Harper, and Kingman Counties. Counts in fall-seeded alfalfa averaged 2 per square foot. No counts of over one larva per square foot in wheat or barley fields in this area or in most wheat fields of western Kansas. (Harvey, Depew). Light to severe infestations of BROWN WHEAT MITE (Petrobia latens) occurs throughout south central Kansas. Counts on well-established wheat range from 25 to 60 per linear foot of drill row. Counts in many drought-affected wheat fields ranged from 40 to over 400 mites per foot of drill row. The counties in which the heavier infestations occur are Reno, Kingman, Pratt, Barber, Harper, Sumner, and Sedgwick. (Matthew).

Counts in wheat fields of the two tiers of counties south from Ellis and Russell Counties ranged from 25 to 100 mites per foot of drill row. (Harvey). Counts in western Kansas range from 25 to 100 per foot of drill row with heavy infestations in fields of volunteer wheat. (Depew). Examination of girdled corn stalks showed 100 percent winter mortality of Southwestern corn borer (Diatraea grandiosella) larvae in one field in Geary County (central) and in one in Cloud County (north central). Another field in Cloud County showed 10 percent survival.

WEST VIRGINIA - (Kearneysville area, April 13) - CODLING MOTH (Carpocapsa pomonella) overwintering larvae under bark on trees about usual in numbers. Spring brood emergence expected to be normal. APHIDS hatching complete. Populations below normal. ORCHARD MITES overwintered populations slightly less than usual except CLOVER MITE (Bryobia praetiosa) which has become more widespread with substantial increase in numbers. RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) egg-laying has been comparatively light. Population appears to be rather low. (Hamstead).

First Reported Records of Season (By Areas):

APPLE APHID hatching, March 28, Oregon; GREEN PEACH APHID hatching March 9, Oregon; RED-BANDED LEAF ROLLER ovipositing, April 4, Pennsylvania; A LEAF MINER (Callisto geminatella) adults emerging, March 31, Virginia; PEAR PSYLLA ovipositing, March 17, Oregon, and eggs April 5 and 6, adults February 20, New York; TARNISHED PLANT BUG, April 7, Pennsylvania; BLACK CHERRY APHID hatching April 5, New York; EASTERN TENT CATERPILLAR hatching in Delaware, and SEED-CORN MAGGOT adults noted in same State; and CORN EARWORM moth at Stuttgart, Arkansas.



STATE OF CALIFORNIA  
 DEPARTMENT OF AGRICULTURE  
 W. C. JACOBSEN, DIRECTOR  
 SACRAMENTO  
 March 10, 1955

ILLUSTRATED KEY TO SPECIES OF TROGODERMA AND TO RELATED GENERA OF  
 DERMESTIDAE COMMONLY ENCOUNTERED IN STORED GRAIN IN CALIFORNIA

The keys which follow are partly original work and partly from three other sources: 1. Hinton, 1945; 2. Beal, 1954; 3. Howe and Burges, 1955. The adult characters distinguishing the species of Trogoderma are largely the work of Okumura. The larval key is by Blanc and the characters used are from Hinton and Beal except for particularly important characters defining granarium, which are from Howe and Burges.

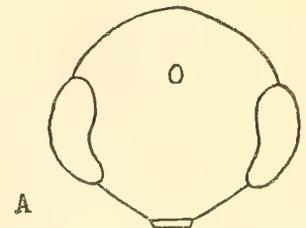
References cited are:

1. Hinton, H.E. Beetles Associated with Stored Products British Museum, 1945.
2. Beal, R. S. Jr., Biology and Taxonomy of the Nearctic Species of Trogoderma University of California Pub. in Ent., 10(2): 35-102, 1954.
3. Howe, R. W., and Burges, H.D., Trogoderma afrum Pr., a synonym of T. granarium and a comparison with T. versicolor. (In press).

To work the keys it is necessary to make microscopic dissections of adults and slide mounts of the larvae. Some of the drawings are diagrammatic and complete in detail only to the extent necessary.

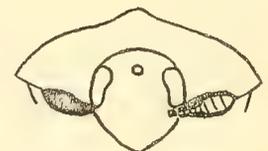
A. ADULTS

1. Head with a median ocellus (A); species usually less than 5.5 mm. long.....2



Head without an ocellus; species usually 5.5-12 mm. long.....DERMESTES Linnaeus

- 2(1). Prothorax without cavities for the reception of the antennae or, if cavities are present, they are not visible from frontal view. Dorsal surface always hairy, only rarely with a few patches of scale-like hairs among normal hairs.....3



Prothorax with cavities for the reception of antennae (B); dorsal and ventral surface clothed entirely with triangular or broadly oval scales  
 .....ANTHRENUS Fabricius

3(2). Hind tarsi with basal segment as long or longer than second..TROGODERMA Berthold 4

Hind tarsi with basal segment much shorter than second (C).....ATTAGENUS Latreille

4(3). Greatest width of male genitalia more than 2/3 the length of aedeagus (D).....5

Greatest width of male genitalia less than 2/3 the length of aedeagus (E).....8

5(4). Tergite of first periphallic segment almost straight at middle of distal margin(F)..6

Tergite of first periphallic segment forming an angle at middle of distal margin (G) .....simplex Jayne

6(5). Width of bridge of male genitalia narrower than aedeagus at point where they cross each other (H).....7

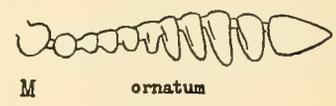
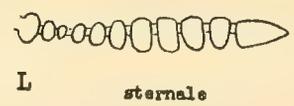
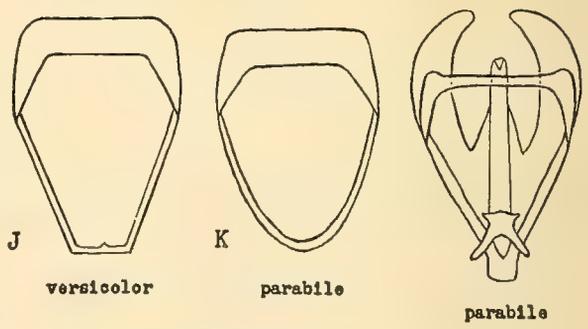
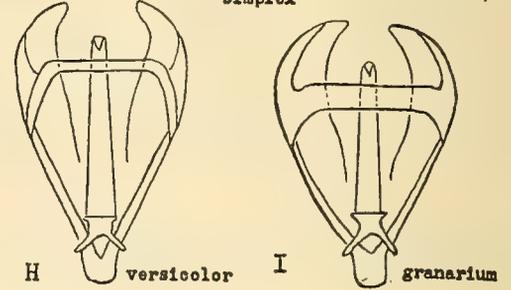
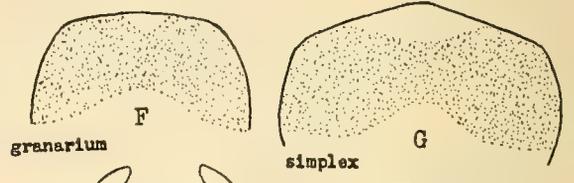
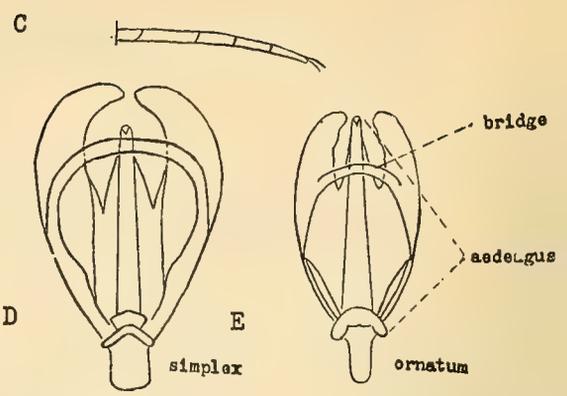
Width of bridge of male genitalia as wide or wider than aedeagus at point where they cross each other (I).....granarium Everts

7(6) Ninth abdominal segment or ring segment of male flattened ventrally (J); inner margin of eyes emarginated (A) versicolor (Creutzer)

Ninth abdominal segment or ring segment of male rounded ventrally (K); inner margin of eyes not emarginated.....parabile Beal

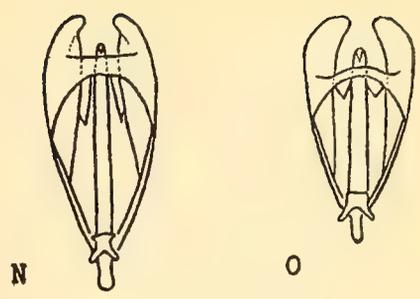
8(4). Third segment of male antenna minute, about 1/2 of either second or fourth segments in length and width; segments of club in length and width; segments of club only moderately eccentric (L).....9

Third segment of male antenna approximating second and fourth segments in length and width; segments of club decidedly eccentric or pectinate (M)..ornatum (Say)



9(8). Median section of bridge between lateral lobes of male genitalia more or less straight (N).....sternale Jayne

Median section of bridge between lateral lobes of male genitalia arched (O)  
..... grassmani Beal

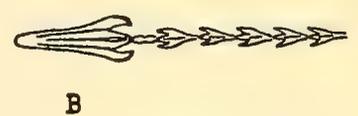


B. MATURE LARVAE

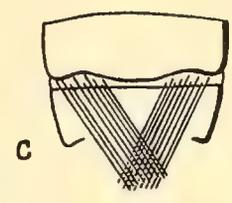
1. Urogomphi present on dorsum of 9th abdominal segment(A)..DERMESTES Linnaeus  
Urogomphi absent.....2



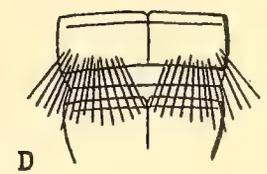
2(1). Hastisetae (spear-headed hairs) present on abdominal tergites (B).....3  
Hastisetae absent.....ATTAGENUS Latreille



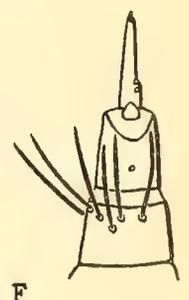
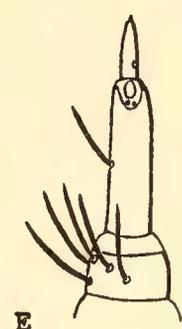
3(2). Tufts of hastisetae on abdominal tergites arising entirely from a membranous area on the caudo-lateral edge of segments; hastisetae from right and left sides usually converging over the cauda (C)  
.....ANTHRENUS Fabricius



Tufts of hastisetae on abdominal tergites arising from the sclerotized dorsal surface of the segments; hastisetae not obviously convergent over the cauda (D)  
.....TROGODERMA Berthold 4



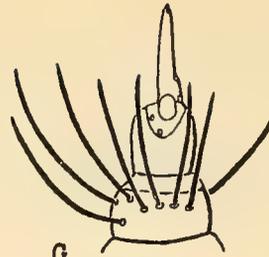
4(3). Second antennal segment 3 times length of 1st (E).....simplex Jayne  
Second antennal segment less than twice length of 1st (F).....5



E simplex F parabile

5(4). Setae of basal antennal segment arranged in a whorl, almost completely encircling the segment, setae not bunched on the mesal side of the segment (G).....6

Setae of basal antennal segment bunched on mesal side of segment, 1/3 or more of the outer portion of the segment bare (H).....7

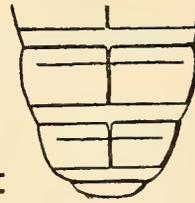


G  
*versicolor*



H  
*grassmani*

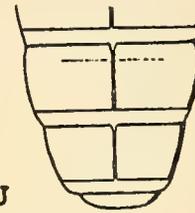
6(5). Abdominal tergites 1 through 8 each bearing a transverse line (antecostal suture) near the anterior margin of the sclerotized area (I); 2nd antennal segment normally without setae (G) .....*versicolor* (Creutzer)



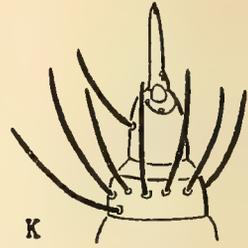
I

Abdominal tergites with antecostal suture on segments 1 through 6, but with suture faint or interrupted on 7th and usually absent on 8th (J); 2nd antennal segment with or without a seta (K)

.....*granarium* Everts



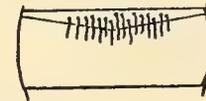
J



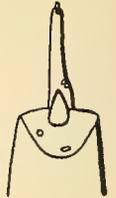
K

*granarium*

7(5). Setae of anterior portion (acrotergite) of 1st abdominal tergite all sufficiently long to extend caudad across the antecostal suture (L); accessory papilla of 2nd antennal segment extended distally into a sharp point (M).....8



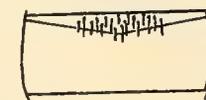
L



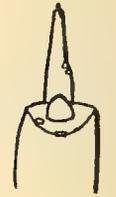
M

Setae of 1st abdominal acrotergite short, at least part of the more anterior setae not sufficiently long to cross the antecostal suture (N); accessory papilla of 2nd antennal segment rounded distally, not with a sharp point (O)&(F)

.....*parabile* Beal



N



O

8(7). 2nd antennal segment without setae.....9

2nd antennal segment normally with one or two setae (P).....*sternale* Jayne

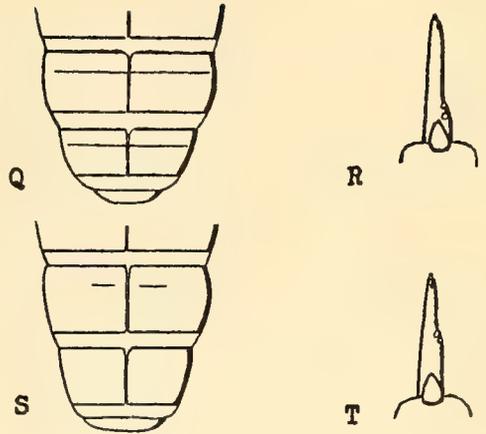


P

*sternale*

9(8). Antecostal sutures of 7th and 8th abdominal tergites extending completely across the tergites (Q); basal sensory pores of terminal antennal segment situated at about basal  $\frac{1}{4}$  (R)&(H).....grassmani Beal

Antecostal sutures of 7th and 8th abdominal tergites not extending completely across the tergites, sometimes suture entirely absent on 8th segment (S); basal sensory pores of terminal antennal segment situated distad of basal  $\frac{1}{3}$  (T)  
 .....ornatum (Say)



(This is an illustrated revision of a previously issued unnumbered key released January 12, 1955.)

H. M. Armitage, Chief  
 Bureau of Entomology

*George T. Okumura*

By: George T. Okumura  
 Systematic Entomologist

A separate of  
 Cooperative Economic Insect Report  
 5(15) 1955

and

*F. L. Blanc*

By: F. L. Blanc  
 Systematic Entomologist







VOL.5 No.16

APRIL 22, 1955

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*Cooperative*  
**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL BRANCH**

**AGRICULTURAL RESEARCH SERVICE**

**UNITED STATES DEPARTMENT OF AGRICULTURE**



# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Economic Insect Survey Section  
Plant Pest Control Branch  
Agricultural Research Service  
United States Department of Agriculture  
Washington 25, D. C.

## COOPERATIVE ECONOMIC INSECT REPORT

## Highlights of Insect Conditions

EUROPEAN CORN BORER survival survey in North Dakota. (page 333).

ARMYWORM larvae active in Texas and Louisiana. Light moth flights in southern Illinois and Missouri. Moths increasing in Tennessee and central Kentucky. (page 334 ). Also see LIGHT TRAP collections. (pages 346-48).

WINTER GRAIN MITE infestations light to heavy in southwest Missouri and southeast Kansas. Oklahoma, Texas and Utah also report on this mite. (page 334 ).

PEA APHID heavy in Virginia and Delaware, continues to increase in Maryland. Illinois and Kansas have low populations. (pages 335, 347).

Some heavy infestations of ALFALFA WEEVIL in Delaware. Serious in northern Virginia. Damage noticeable in areas of Maryland. Activity increasing in Utah. (pages 335, 347 ).

BEET LEAFHOPPER conditions in southern Great Plains and adjacent areas. Also a statement on this pest from Utah. (page 340 )

BOLL WEEVIL survival in Georgia low but expected to be high in central Texas. (page 343 ).

BARK BEETLE damage to pines serious in south Georgia areas. (page 345 ).

First REPORTED RECORDS of season (by areas). (page 347 ).

NOTES received too late for inclusion in the body of this issue. (pages 347, 348).

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Reports in this issue are for the week ending April 15, 1955 unless otherwise designated.

WEATHER BUREAU'S 30-DAY OUTLOOK  
Mid-April to Mid-May 1955

The Weather Bureau's 30-day outlook for the period mid-April to mid-May calls for temperatures to average above seasonal normals over most of the country east of the Continental Divide except for near normal along the South Atlantic and Gulf Coasts. Warmest departures are expected in the mid-West and Great Lakes Region. West of the Rockies below normal temperatures are predicted.

Precipitation is forecast to exceed normal in States along the Mississippi and Missouri Valleys and also in the Pacific Northwest. Subnormal amounts are expected over the Northeast and far Southwest. In unspecified areas near normal amounts are in prospect.

This report released by the Weather Bureau on April 15, 1955

Weather forecast given here is based on the official 30-day "Resume and Outlook," published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington, D. C. Price: \$4.80 a year, \$2.40 for six months.

WEATHER FOR THE WEEK ENDING APRIL 18, 1955

General warming continued throughout the Country this week in spite of the showery conditions prevalent over most of the Nation during the first half of the week. Above normal temperatures prevailed east of the Rocky Mountains during the period, with many states reporting the warmest week since last October. Temperatures 9° to 12° degrees above normal were recorded along the Canadian Border. Chattanooga, Tenn. reported a temperature of 91° on the 17th, which was the highest of record for this early in the season. Record high temperatures for this early in the season were equaled at Birmingham, Ala. (90°), Macon, Ga. (92°), and Jackson, Miss. (89°) on the 17th. Below normal temperatures were centered along the Oregon-Idaho Border.

Showery conditions throughout the Nation during the first part of the week brought precipitation to all regions except a small area along the Mexican Border. Amounts were generally light in the western half of the Country, but most of the eastern half (Weather continued on page 348 ).

CEREAL AND FORAGE INSECTS

EUROPEAN CORN BORER (Pyrausta nubilalis) - NORTH DAKOTA - Winter survival survey made in Cass, Richland, Barnes and Ransom Counties showed average of 63.7 live borers per 100 plants and an average mortality of 9.6 percent. (Goodfellow).

GRASSHOPPERS - MISSOURI - A few second-instar Melanoplus femur-rubrum nymphs in alfalfa and pastures in extreme southwest area. Average of 1 per 10 sweeps. (Kyd, Thomas). KANSAS - Melanoplus spp. nymphs observed in several southeast counties, about five per square yard in a few local areas. (Matthew).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - MISSOURI - Overwintering mortality greatly increased during last two weeks; 100 percent in all fields in Newton, Jasper and Barton Counties. (Kyd, Thomas). OKLAHOMA - Mortality of 12.5 percent found in McClain County April 14. (Arbuthnot).

CORN FLEA BEETLE (Chaetocnema pulicaria) - ILLINOIS - Adult very abundant in grass beside old corn fields, 67 per 10 sweeps. (Petty).

DESERT CORN FLEA BEETLE (Chaetocnema ectypa) - ARIZONA - Damaging corn in some fields in Maricopa County. (Ariz. Coop. Rept.).

GREENBUG (Toxoptera graminum) - MISSOURI - No greenbugs observed in southwest area. (Kyd, Thomas). KANSAS - Minor infestations in 6 of 16 southeast counties surveyed. Very few colonies and counts ranged from 3 to 5 per 25 sweeps; no noticeable damage. (Matthew).

ENGLISH GRAIN APHID (Macrosiphum granarium) - DELAWARE - Light to moderately heavy infestation on rye over State, common on barley in Dover area. (Milliron). MISSOURI - Very light, up to 2 per foot of drill row, on wheat and barley in southwest area. (Kyd, Thomas). KANSAS - Non-economic infestations, 3 to 9 per 25 sweeps of 15-inch net, in wheat and barley in 16 southeast counties. (Matthew).

BROWN WHEAT MITE (Petrobia latens) - OKLAHOMA - Practically absent from fields in some southwestern counties. (Stiles). Control measures still necessary in north central area. (Henderson). TEXAS - Medium to heavy widespread infestation on wheat in Cottle, Foard, Knox, Baylor, Hardeman and Childress Counties. Large areas in these counties seriously damaged by this pest. (Davis). UTAH - Has appeared in dryland grain in Salt Lake County. (Lieberman, Knowlton).

ARMYWORM (Pseudaletia unipuncta) - TEXAS - Medium to heavy widespread infestation on oats in Brazos, Burleson and Grimes Counties. (Whipplecht). OKLAHOMA - Moths taken in trap at Stillwater. (Fenton). LOUISIANA - Occasional larvae in clover and oats Tangipahoa and Jefferson Davis Parishes. (Oliver). TENNESSEE - Moths continue to increase. Indications egg laying has started in some areas. (Dozier). KENTUCKY - Moths caught at light trap in 2 counties along Ohio River in north central area. Relatively heavy catches in central area. (Rodriguez). ILLINOIS - Light flight of moths in southwestern area night of April 12. (Petty). MISSOURI - Light flight of moths continues to occur over southern half of State. Fourth and fifth instar overwintering larvae in southwest area. (Kyd, Thomas).

ARMY CUTWORM (Chorizagrotis auxiliaris) - UTAH - Attacking alfalfa and small grains in some Juab County areas, 6-8 per crown in one alfalfa field near Nephi. (Burtenshaw, Knowlton). Damage also in Box Elder County (Daniels, Knowlton) and in Washington County. (Hughes).

SEED-CORN MAGGOT (Hylemya cilicrura) - DELAWARE - Adults numerous generally. (Milliron). ARIZONA - Heavy on 160 acres of corn at Mesa April 6, field replanted. (Ariz. Coop. Rept.).

WINTER GRAIN MITE (Penthaleus major) - MISSOURI - Relatively heavy numbers on all small grains and grasses in southwest area, from 8-65 per foot of small grain drill row to over 200 per square foot of grasses. No damage to small grain evident. (Kyd, Thomas). OKLAHOMA - Large numbers in some fields in Wagoner County. (Stiles). KANSAS - Light to severe infestations found in southeastern counties. Infestations that may require control occur in Montgomery, Labette, Cherokee, Neosho, Wilson, and Crawford Counties. Counts range from 50 to around 600 mites per linear foot of drill row. (Matthew). TEXAS - Medium to heavy widespread on small grain in Comal County. (Shaver). UTAH - Heavily attacking volunteer wheat in one field in Salt Lake County. (Lieberman, Knowlton).

CORN EARWORM (Heliothis armigera) - LOUISIANA - Continues to increase in white clover, 5 per 100 sweeps in one field, Jefferson Davis Parish. Four per 100 sweeps in Tangipahoa Parish. (Oliver).

YELLOW CLOVER APHID (Myzocallis trifolii) - CALIFORNIA - Total of 125,000 acres of alfalfa treated during March in Imperial County. Light to heavy infestations in San Bernardino County. Heavy in desert area, but light in coastal areas of San Diego County. Heavy infestations also in Riverside County and some injury in Riverside County. (Cal. Coop. Ins. Rept., March).

ARIZONA - A general, rapid increase in all southern counties. In areas of Maricopa County, populations have increased from 0.7 per leaf on old stands to 6.6 per leaf during past 10 to 14 days, and from 0.3 to 1.63 on new plantings, all counts on untreated fields. (Arizona Coop. Rept.). TEXAS - Medium local infestation on alfalfa in Navarro County. (Burleson). Heavily infesting spots of fields in El Paso County. Control difficult because of quick build-up. (Foster).

PEA APHID (Macrosiphum pisi) - DELAWARE - Becoming abundant on clovers and alfalfa throughout State, destructive populations in several areas. (Milliron). MARYLAND - Continuing to build up on alfalfa over most of State. From 7 to 340 per sweep in alfalfa in five counties, Worcester to Montgomery. Also increasing on red clover. (U. Md., Ent. Dept.). ILLINOIS - Remains low; 22 per 100 sweeps in southeastern area, 11 per 100 in southwestern and 10 per 100 in west southwest. (Petty). KANSAS - Small colonies in alfalfa in 16 southeast counties, from 10-30 per 25 sweeps. Lady beetles ranged from 3 to 9 per 25 sweeps. (Matthew).

ALFALFA WEEVIL (Hypera postica) - UTAH - Active in Washington and Kane Counties and in warmer areas elsewhere. (Knowlton). MARYLAND - Adults average from 1 to 6 per 10 sweeps in 5 counties, Worcester to Montgomery; larvae averaged from 0.1 to 7 per sweep. Larval damage noticeable on Eastern Shore. (U. Md., Ent. Dept.). DELAWARE - Some fields heavily infested, increasing generally in all plantings. (Milliron).

CLOVER LEAF WEEVIL (Hypera punctata) - DELAWARE - Continues moderately destructive generally, most larvae full-grown. (Milliron). ILLINOIS - Averaged 11.9 larvae per square foot in red clover, 4.6 in alfalfa and 10.9 in mixtures. Highest populations in eastern and central areas. (Petty). MISSOURI - Average of 1.5 to 3 per crown of alfalfa in southwest area. Larvae half to full grown. (Kyd, Thomas).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - DELAWARE - Adults prevalent in all forage legumes. Larvae attacking red clover in many locations. (Milliron). MARYLAND - From 1 to 1.8 per 10 sweeps on red clover in Dorchester County. (U. Md., Ent. Dept.). ILLINOIS - About 8 per 100 sweeps in southern third of State. (Petty).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - LOUISIANA - Severe infestation, 8-10 per square foot, in about 25 acres of clover in Tangipahoa Parish. (Oliver).

WHITE-FRINGED BEETLES (Graphognathus spp.) - LOUISIANA - Pupae found at Hammond March 24. First report of pupae for 1955. (WFB Cont. Proj.).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - ILLINOIS - A few specimens on alfalfa in central and eastern areas. In one field of sweetclover in eastern area 8.5 per square foot. (Petty).

A WEEVIL (Sitona explicita) - GEORGIA - Larvae feeding on nodules of lupine in Colquitt County, April 7. (Beck).

CLOVER ROOT CURCULIO (Sitona hispidula) - ILLINOIS - From 8-36 per 100 sweeps in southern half of State. (Petty).  
MARYLAND - From 2.2 to 3.2 per 10 sweeps on red clover in Dorchester County. Also common in alfalfa fields. (U. Md., Ent. Dept.).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - KANSAS Adults in alfalfa fields in southeast counties, from 1-5 per 25 sweeps of 15-inch net. (Matthew).

CUTWORMS - KENTUCKY - Practically destroyed a small field of oats near Burkesville. Ground in sod last year. (Price).  
MISSISSIPPI - Various crops being destroyed in Covington and Forrest County. (Broome, Hunsucker). MISSOURI - A few Agrotis ypsilon moths at lights in southwest area. Up to 1 larvae of Peridroma margaritosa per square yard in pastures and roadside grass in southwest corner of State. (Kyd, Thomas).

CLAY-BACKED CUTWORM (Agrotis gladiaria) - MISSISSIPPI - White clover and corn being destroyed in Oktibbeha County. (Broome, Hunsucker). MISSOURI - Second to fifth instar larvae throughout State; 1 to 3 per square yard in pasture, 1 to 7 in alfalfa and 1 to 12 in red clover. Damage to new growth of alfalfa and clovers. A few moths at lights in southwest. (Kyd, Thomas).

GREEN CLOVERWORM (Plathypena scabra) - TEXAS - Medium to heavy widespread infestation on vetch in Kaufman County. (Randolph).

ALFALFA CATERPILLAR (Colias philodice eurytheme) - DELAWARE - Few small larvae in crimson clover at Slaughter Beach. (Milliron).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - LOUISIANA - Three per 100 sweeps in clover Tangipahoa Parish. (Oliver)

CLOVER LEAFHOPPER (Aceratagallia sanguinolenta) - DELAWARE - Adults appearing on clovers in vicinity of Greenwood. (Milliron).

MEADOW SPITTLEBUG (Philaenus leucoththalmus) - DELAWARE - First-instar nymphs very numerous on red clover at Mt. Pleasant. (Milliron). PENNSYLVANIA - Beginning to hatch in legumes in Snyder, Centre, and Clearfield Counties. (Gesell, Adams). Also in southwest area. (Udine). Hatch well along in southeastern counties. (Menusan). ILLINOIS - Occasional nymph reported from eastern area. (Petty).

TARNISHED PLANT BUG (Lygus lineolaris) - LOUISIANA - Eleven per 100 sweeps of clover Tangipahoa Parish. (Oliver). ILLINOIS - Approximately 13 per 100 sweeps in alfalfa and clover fields in southern half of State. (Petty).

CLOVER MITE (Bryobia practiosa) - ARIZONA - More abundant on alfalfa at Yuma than during past few weeks. (Ariz. Coop. Rept.).

### FRUIT INSECTS

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - MARYLAND - Moths and egg masses in Washington County April 11. (U. Md., Ent. Dept.). PENNSYLVANIA - Continuing to deposit eggs in large numbers. (Asquith). INDIANA - Spring brood egg laying likely passed. Infestations in most orchards in southern area will probably be very light owing to extremely light carryover from 1954. Carryover north of Indianapolis was heavier. (Hamilton).

APHIDS - INDIANA - Rosy apple aphids are about two-thirds grown and are far more numerous in Orleans area than the apple aphid. The former species is present in numbers large enough to cause damage if conditions remain favorable. (Marshall). NEW JERSEY - Rosy apple aphid appearing all over State. (Merrill). NEW YORK - Rosy apple aphid scarce in Ulster County. Moderate numbers hatching in Niagara County, large numbers in Orleans County and fairly heavy numbers in Monroe County, April 14. (Wkly. News Lett.).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - NORTH CAROLINA - First adult taken this season in Wilkes County April 6. (Turnipseed).

CODLING MOTH (Carpocapsa pomonella) - INDIANA - Pupation just starting at Vincennes. (Hamilton).

EUROPEAN RED MITE (Metatetranychus ulmi) - NORTH CAROLINA - Unsprayed apple trees in Wilkes and Alexander Counties had 2-4 nymphs per developing leaflet. (Turnipseed). OHIO - Began hatching April 13. (Cutright). INDIANA - Half grown mites not difficult to find on apple in Orleans area. (Marshall). Hatched forms at Vincennes April 12. (Hamilton).

TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus) - OHIO - Most overwintering mites now on ground cover foliage and numerous eggs present but no hatching to April 12. (Cutright).

CLOVER MITE (Bryobia praetiosa) - OREGON - Heavy infestation of eggs and newly-hatched larvae on cherry in many orchards in The Dalles area. (Burts). CALIFORNIA - Heavy infestation in prune orchards in Napa County. (Cal. Coop. Ins. Rept., March). UTAH - Eggs numerous in apple orchards in several counties. (Knowlton, Hughes). ARIZONA - Bryobia sp. heavy in some orchards in Navajo County. (Ariz. Coop. Rept.).

UNSPOTTED TENTIFORM LEAF MINER - MARYLAND - Adults in large numbers in orchards in Washington County April 11. (U. Md., Ent. Dept.).

EYE-SPOTTED BUD MOTH (Spilonota ocellana) - OREGON - First overwintering larvae noted April 4 in buds just beginning to open in Linn County. (Jones).

PEAR THRIPS (Taeniothrips inconsequens) - OREGON - Slightly more common than last year, but spotted. Peak emergence April 8 in The Dalles area. (Burts).

A MOTH (Mineola scitulella) - OREGON - More numerous than last year, quite numerous around The Dalles. Larvae began emerging from hibernaculae April 5. (Burts).

PEACH TWIG BORER (Anarsia lineatella) - UTAH - Damage to peach orchards at Santa Clara and Hurricane. (Hughes, Knowlton).

PEAR PSYLLA (Psylla pyricola) - OREGON - Slightly more abundant in Medford area. Adults out last of January, eggs found February 14, heavy by middle of March. First nymphs April 6 compared with March 25 in 1953 and March 9 in 1954. Nymphs emerging generally April 7. (Gentner). NEW YORK - Light numbers of eggs in Dutchess County. Heavy deposits in Columbia County April 15. (Wkly. News Lett.).

TARNISHED PLANT BUG (Lygus lineolaris) - PENNSYLVANIA - Active on peaches in Adams County. (Asquith). NEW YORK - Noted on peach in Orange County. (Wkly. News Lett.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - PENNSYLVANIA - Very abundant on fruit and wild cherry in southeast area. (Menusan). Hatching on fruit in southwest area. (Udine).

TENT CATERPILLARS - NEW YORK - Hatched larvae found in Orange County, April 14. (Wkly. News Lett.).

FALL CANKERWORM (Alsophila pometaria) - PENNSYLVANIA - Beginning to hatch on fruit in southeast area. (Menusan).

CITRUS RED MITE (Metatetranychus citri) - CALIFORNIA - Light to heavy in San Bernardino County, medium to heavy in Orange County, medium in Santa Barbara County and generally light in San Diego County. (Cal. Coop. Ins. Rept., March).

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Increasing on citrus in Yuma area. (Ariz. Coop. Rept.).

A MITE (Tetranychus yumensis) - ARIZONA - Causing damage in many citrus groves on Yuma Mesa. (Ariz. Coop. Rept.).

FILBERT BUD MITE (Phytoptus avellanae) - OREGON - One of worst infestations occurring in loose budded varieties. (Thompson).

A GRAPE LEAFHOPPER (Erythroneura sp.) - CALIFORNIA - Light to heavy populations in vineyards in desert regions of San Diego County. (Cal. Coop. Ins. Rept., March).

## TRUCK CROP INSECTS

BEET LEAFHOPPER (Circulifer tenellus) - UTAH - Overwintering population and host plant acreage in breeding grounds adjacent to Great Salt Lake and Utah Lake are larger than 1954 and larger than for several years. Conditions have been favorable for germination of Russian-thistle and it is expected that this host will attract and harbor a large portion of the first brood that will be maturing on alfalfa, African mustard and blister cress and thus decrease movement of leafhoppers to tomato crops in cultivated districts of Utah in late May and early June. (Dorst).

### Beet-Leafhopper Conditions in the Southern Great Plains and Adjacent Areas

A serious epidemic of curly top, a virus disease transmitted by the beet leafhopper, occurred on sugar beets in southwestern Kansas in 1953. In 1954, it was widely distributed over the Great Plains area, causing considerable loss to growers of susceptible crops. In addition, considerable damage occurred on spinach in the Winter Garden area of Texas. To determine the distribution of the overwintered beet leafhopper and its weed hosts, a study of the area was made in February and March 1955. Beet leafhoppers were found distributed in the Southwest and Plains area west of the 100 Meridian from the Rio Grande to the Platte River Valley, as shown on map on opposite page. The highest populations were found in Crane, Loving, Ector, Winkler, Ward, Midland, and Reeves Counties, Texas, and Eddy and Lee Counties, New Mexico, where spring host plants were abundant and widely distributed. Nymphs occurred in the same general areas. In other areas the spring host plants occurred only in the most favorable situations, in towns and cities where sufficient moisture had accumulated to permit their germination. Because of the drought they were absent or occurred sparsely over the greater portion of the territory studied.

Based upon current conditions it is anticipated that the majority of the beet leafhopper spring migrants which are likely to move northward into Kansas, and possibly adjacent states, during 1955, will come from southeastern New Mexico and adjacent areas of Texas. These areas are southwest of where the high overwintered populations were found in 1954. It thus appears that the overwintered breeding areas are not static and occur where there is sufficient fall moisture to germinate the winter hosts. (Douglass, Peay, Cowger).





CABBAGE CATERPILLARS - NEW JERSEY - Heavy emergence of adults. Egg laying week of April 11. (Merrill). DELAWARE - Imported cabbageworm (Pieris rapae) adults numerous, eggs being deposited. (Milliron). NORTH CAROLINA - Nearly mature larvae of Pieris rapae on broccoli in Wake County April 6. (Dogger). SOUTH CAROLINA - Cabbage looper larvae noted at Charleston April 6, first of season. Imported cabbageworm light but increasing on cabbage. (Cuthbert, Deen). OREGON - Large numbers of adults noted at Medford, April 8. (Gentner).

CABBAGE APHID (Brevicoryne brassicae) - CALIFORNIA - Infestation from light to heavy in southern California. Most cole crops require regular treatments. (Campbell). SOUTH CAROLINA - Populations continue to decline in Charleston areas, mainly due to disease and insect parasites. (Cuthbert, Deen). DELAWARE - Young cabbage infested near Ellendale, heavy in seeding cauliflower at Thompsonville. (Milliron).

A FLEA BEETLE (Phyllotreta cruciferae) - DELAWARE - Heavy on young cabbage and radish at Georgetown. Treatment required. (Milliron).

CABBAGE CURCULIO (Ceutorhynchus rapae) - PENNSYLVANIA - Moderate infestation on cress and dandelion in Centre County. Det. S.W. Frost. (Gesell).

ONION THRIPS (Thrips tabaci) - UTAH - Becoming a problem on onions at Leeds and Washington. (Knowlton, Hughes).

ONION MAGGOT (Hylemya antiqua) - OREGON - Adults started emerging in Benton County during week ending April 15. (Crowell).

ONION PLANT BUG (Labopidea allii) - TEXAS - Light to heavy in field onions in Ellis, Dallas, Rockwall and Collin Counties. Up to 15 to 20 per plant. (Gunter). Over 200 acres in Navarro County heavily infested, 10 per mature plant. (Burleson).

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - SOUTH CAROLINA - First larvae in fields in Charleston area April 5. (Cuthbert, Deen). GEORGIA - Light damage to tomato in Tift County April 4. (Morgan).

SEED-CORN MAGGOT (Hylemya cilicrura) - MISSISSIPPI - Destroying bean seed in Webster County. (Hutchins).

PEA LEAF WEEVIL (Sitona lineata) - OREGON - Populations in freezing varieties of peas quite heavy, heavier than last year. Control being attempted in Hillsboro area. (Hanna).

CUTWORMS - TEXAS - Medium to heavy widespread on vegetable crops in Nacogdoches County. (Clifton). Moths numerous and larvae active in Collin County. (Edwards). Heavy widespread in Panola County on all young plants, both field and garden. Some gardens almost completely destroyed and stands of young corn reduced to one-half to two-thirds. (Ross).

SALT-MARSH CATERPILLAR (Estigmene acrea) - CALIFORNIA - Epidemic numbers made replanting of several fields of vegetables necessary in San Diego County during March. (Cal. Coop. Ins. Rept.).

SPRINGTAILS - TENNESSEE - Large numbers appearing locally in gardens and yards of east Tennessee. (Mullett).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - GEORGIA - Heavy larval damage to foliage and roots of turnips in Irwin County, April 1. (Davenport, Murphy). MISSISSIPPI - More numerous than usual in Covington and Forrest Counties. Also complaints from Jasper and Scott Counties. (Broome, Hutchins). LOUISIANA - Ten percent infestation in pepper field Tangipahoa Parish. (Oliver). SOUTH CAROLINA - Larvae have caused severe damage in several tobacco plant beds as well as to some turnip and carrot plantings in Florence area. (Allen, Hodge, Creighton, April 9).

GREEN JUNE BEETLE (Cotinis nitida) - KENTUCKY - Larvae injuring tobacco plant beds in northern portion of State, about 1 larvae per square yard. (Boush).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - NORTH CAROLINA - Light infestation in tobacco plant beds in Surry County, moderate in Onslow County. (Allgood, Young).

STRAWBERRY WEEVIL (Anthonomus signatus) - MARYLAND - Adults active in strawberry fields, Somerset County. (U. Md., Ent. Dept.).

SPIDER MITES - LOUISIANA - Tetranychus desertorum and T. bimaculatus continue to infest strawberries in Tangipahoa Parish. (Oliver).

MELON APHID (Aphis gossypii) - ARIZONA - Starting to reproduce on cantaloup in Yuma area April 6. (Ariz. Coop. Rept.).

## COTTON INSECTS

### Boll Weevil Survival Counts in Georgia:

Spring examinations of surface trash from woods adjacent to old cotton fields, to determine the number of boll weevils surviving the winter, have been completed in four regions in Georgia. The average for the State was 48 live weevils per acre of surface trash. This compares with 467 weevils one year ago. Based on the number of weevils found during the fall and comparing with the spring count, the winter survival for the State was 48 percent. Five of the 51 fields examined, or 10 percent, were infested. Five samples or 90 square feet were taken from each of the 51 farms from March 1 to March 28. The samples were taken from the following area: northwest (Gordon County), north central (Spalding, Butts, Coweta, Meriwether, Henry, Lamar, and Pike Counties), east central (Burke County), and south (Tift County). In addition to the low boll weevil count, there were also few other insects present that are usually found hibernating in the trash samples. This was similar to the fall samples and is attributed primarily to the 1954 drought. (Beckham, Dupree).

### Boll Weevil and Cotton Fleahopper Hibernation and Survival Studies at Waco, Texas During the Winter of 1954-1955

#### Boll Weevil

Five hundred field-collected boll weevils were installed in each of 10 cages located in a wood lot on October 29, 1954 in a continuance of survival studies made each year beginning with the winter of 1939-1940. Activity of boll weevils is recorded almost daily until removal of surviving weevils begins on May 1 of each year. Activity during March, 1955 was greater than during March of the high survival years of 1954, 1952, 1946 and 1941 but it was less than during high survival years of 1953, 1950, 1945 and 1944. The winter of 1954-1955 was mild. Freezing temperatures occurred on a total of 23 days--0 days in November, 6 in December, 6 in January, 7 in February and 4 in March. The lowest temperature recorded for the winter was 21° on February 11, 1955. The mild winter and activity in the hibernation cages during the first three months of the year indicate that boll weevil survival in the central Texas area may be expected to be high this year.

#### Cotton Fleahopper

Collections of two species of croton were made on November 29, 1954 for the cotton fleahopper survival studies. One hundred Croton texensis

plants were collected from one location in each of Bell, Coryell and Bosque Counties. One hundred Croton capitatus plants were collected from one location in each of McLennan, Falls, Limestone and Hill Counties. These host plants (100 plants per cage) were installed on February 15, 1955. The first emergence of cotton fleahopper nymphs occurred on March 4. A total of 2492 nymphs emerged during March. In 1954 the first emergence occurred February 17 and the emergence during February and March of that year was 326. In 1953 first emergence occurred March 14 and total emergence for the month was 7,269. In 1952 first emergence occurred March 20 and total emergence for the month was 1583. There was no emergence in March of 1951 and 1950. Collections of host plants and locations were the same for all years. A first instar cotton fleahopper nymph was found in the field on a seedling croton March 9. Second and third instar nymphs were found on the same host plant March 24. Subsequent inspections at the same location indicated that development of the generation was not completed as no large nymphs were found and seedling croton plants were killed by cold weather which occurred on March 26-28. Since moisture conditions at the end of March were good, prospects for the early development of host plants such as evening primrose and horsemint are considered to be good. Build-up of fleahopper populations should be early and host plants should mature early resulting in migration of fleahoppers to cotton early enough so that injurious infestations may be prevented through the use of the regularly scheduled early-season insecticide applications in the area, the last of which is scheduled for the week of June 6-11.

(Parenchia )

Cotton Insect Situation, Lower Rio Grande Valley, Texas:

COTTON FLEAHOPPERS have been reported from practically the entire valley, from 3 to 8 percent infestation. A few BOLL WEEVILS on early-planted cotton in some areas. APHID and SPIDER MITE infestations are light. BOLLWORMS are feeding in terminal buds in scattered locations. (Wene, Dean, Fuller).

COTTON APHID (Aphis gossypii) - ARIZONA - Starting on stub cotton in Buckeye area. (Ariz. Coop. Rept.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

BARK BEETLES (principally Ips spp.) - GEORGIA - Damage to pines has already reached serious proportions in many south Georgia areas. A survey recently completed by U.S. Forest Serv. indicated 37 counties in this part of the State have infestations ranging from light to heavy and that approximately 50 million board feet of timber have been killed. It is likely that additional timber will be lost during the spring and summer months. (Jordan, Dyer).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - TENNESSEE - Large numbers of tents beginning to appear all over State. (Mullett). FLORIDA - Adults emerging in Gainesville area. (Hetrick). MARYLAND - Appearing on wild cherry and other trees, Somerset to Montgomery Counties. (U. Md., Ent. Dept.).

TENT CATERPILLARS - NEW JERSEY - Wild cherry and other trees beginning to show activity from tent caterpillars. (Merrill).

ELM LEAF BEETLE (Galerucella xanthomelaena) - PENNSYLVANIA - Migrating to elms in southeastern area. (Menusan).

A BLISTER BEETLE (Epicauta torsa) - FLORIDA - Hundreds of adults per plant defoliating mimosa trees and damaging young leaves on holly in Nassau County. (Frederick).

WHITE PINE WEEVIL (Pissodes strobi) - PENNSYLVANIA - Fifteen percent of trees infested in 5 acres of white pine Clearfield County. (Adams).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus)- KANSAS - Heavy infestations in Ellsworth County, light infestations observed in Rooks and Mitchell Counties. (Brady).

BENEFICIAL INSECTS

LADY BEETLES - ILLINOIS - From 5-21 adults per 100 sweeps in alfalfa and red clover in southern half of State. (Petty).

A CUTWORM PARASITE (Ophion sp.) - TENNESSEE - Total of 1500 taken in light trap in Maury County week ending April 13, 500 in Lawrence County and 300 in Knox County. (Dozier).

LIGHT TRAP COLLECTIONS

		<u>Pseudaletia</u>	<u>Agrotis</u>	<u>Peridroma</u>	<u>Prodenia</u>	<u>Heliothis</u>	<u>Feltia</u>
		<u>unipuncta</u>	<u>ypsilon</u>	<u>margaritosa</u>	<u>ornithog.</u>	<u>armigera</u>	<u>subterr.</u>
TENN. (counties)							
Madison	4/6-4/13	121	7	7	1		
Lawrence		46	9	4			
Maury		84	13	15	3		
Robertson		6	6	1	2		
Cumberland		21	7	0			
Knox		4	1	2			
Greene		24	7	1	5		
GA. (counties)							
Tift	3/30-4/2	3				4	
S. CAROLINA							
Charleston	4/5-11	2	1			1	3
Clemson		41					
MISS. (counties)							
Coahoma		66	16	20			
Humphries		117	20	31	4		1
Oktibbeha		223	12	24	2		
Pearl River		21	2	2	5	6	7
LOUISIANA							
Baton Rouge*	4/8-14	9	5	2	60		56
Franklin	4/7-11	2	1		4		8
Tallahah*	4/9-15	229	25	22	7	10	14

Some other collections of importance: LOUISIANA - Baton Rouge, Euethela rugiceps 26; Tallulah, Laphygma exigua 37, L. frugiperda 1, Loxostege similalis 16, TENNESSEE - Ophion sp. (cutworm parasite) 2473. SOUTH CAROLINA - Clemson, cutworms 56. Also 166 Caenurgina erechtea for Tennessee.

\*Two traps operated at Baton Rouge, 3 at Tallulah.

MISCELLANEOUS INSECTS

TERMITES - PENNSYLVANIA - Very extensive infestation in school building in Clearfield County. (Adams).

CORRECTION: CEIR 5(11):227 - After "A BARK BEETLE..." should read Hexarthrum ulkei. Det. R. E. Warner.

First Reported Records of Season (by areas):

WHITE-FRINGED BEETLE pupae at Hammond, Louisiana, March 24. ALFALFA CATERPILLAR larvae and CLOVER LEAFHOPPER adults in Delaware. MEADOW SPITTLEBUG nymphs in Illinois. ORIENTAL FRUIT MOTH adult in Wilkes County, North Carolina, April 6. EYE-SPOTTED BUD MOTH larvae out in Oregon April 4. TENT CATERPILLAR larvae in Orange County, New York, April 14. FALL CANKERWORM hatching in Pennsylvania. ONION MAGGOT adults started emerging Benton County, Oregon, April 15. COLORADO POTATO BEETLE larvae at Charleston, South Carolina, April 5.

ADDITIONAL NOTES

VIRGINIA - Pea aphid, clover leaf weevil and alfalfa weevil extremely severe and have reached emergency proportions in northeastern counties. A fungus disease that usually controls the clover leaf weevil is not effective this spring. Alfalfa weevils are extremely heavy in several counties and pupation is occurring. It is rumored that there are outbreak areas heretofore not known to be infested. (Willey, Morris).

MISSISSIPPI - Light trap collections at Stoneville: Pseudaletia unipuncta 371, Agrotis ypsilon 14, Heliiothis armigera 4, A. malefida 16, Peridroma margaritosa 49, Caenurgina erechtea 29, Diacrisia virginica 3, Estigmene acrea 1. (Merkl).

ARKANSAS

Light Trap Records:

Location	Period	<u>P.</u> <u>unipuncta</u>	<u>P.</u> <u>marg.</u>	<u>A.</u> <u>ypsilon</u>	<u>H.</u> <u>armig.</u>
Hope	4/8-14	133	17	10	1
Stuttgart	4/7-13	293	0	14	0
Van Buren	4/8-14	19	1	11	0
Varner	4/3-14	52	11	0	3
Fayett.	4/9-14	235	33	55	0

First 1955 record at Fayetteville - two tomato hornworm adults (Protoparce quinquemaculata) April 13. (Warren).

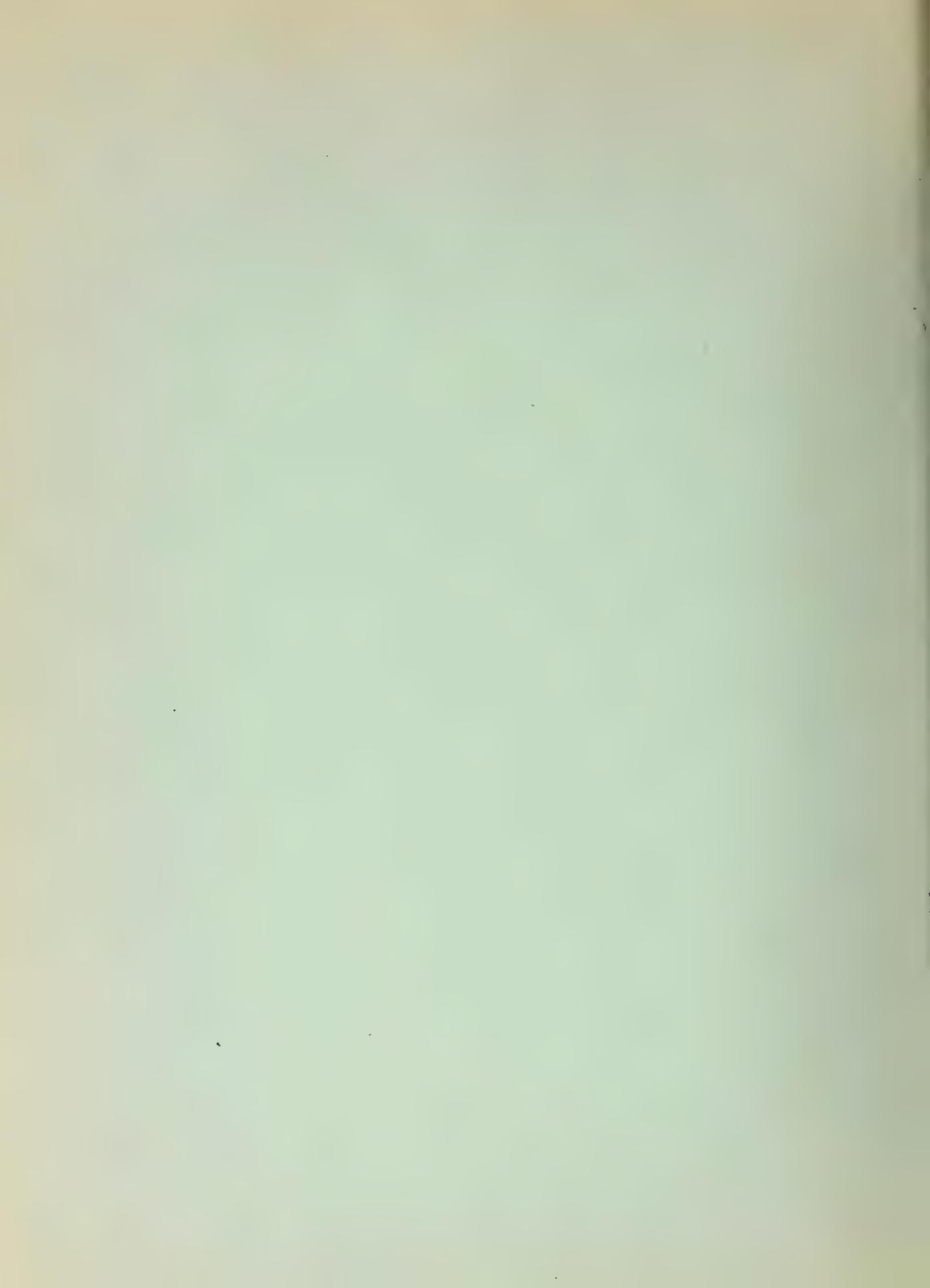
NEBRASKA - WHEAT CURL MITE (Aceria tulipae) found in a field containing volunteer wheat in Custer County. ARMY CUTWORMS (Chorizagrotis auxiliaris) reported from Hitchcock, Logan, Valley, Stanton and Knox Counties. As many as five per square foot in alfalfa field in Custer County. BEET LEAFHOPPER (Circulifer tenellus) apparently on increase in Red Willow County area. Previously only two overwintering adults were found and now many nymphs in that area. CATTLE GRUBS (Hypoderma sp.) - Activity of cattle indicated adult flies in Brown and Rock Counties. JUNE BEETLES (Phyllophaga sp.) observed flying to lights in Lincoln. CLOVER MITES (Bryobia praetiosa) very prevalent throughout State. (Andersen).

Weather continued:

received amounts in excess of one half inch. The cold front moving eastward from Texas during the first of the week brought torrential rains and severe thunderstorms to areas of the Southeast, particularly along the Gulf Coast. Mobile, Ala., reported 13.36 inches of rain on the 13th. Most of this fell within a 6 hour period during the morning. The heavy rains broke the prolonged drought and brought flooding and serious soil erosion to this area. Coastal areas of the Pacific Northwest received rain every day of the week. Amounts in excess of 2 inches were accumulated along the Washington Coast.

Blizzard conditions in southeastern Wyoming and the Nebraska Panhandle on the 11th and 12th brought beneficial moisture to that area. Snow was reported as far south as the Texas Panhandle on the 13th. (Summary Supplied by U.S. Weather Bureau).





H. W. Capps

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APRIL 29, 1955

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*Cooperative*  
**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL BRANCH**

**AGRICULTURAL RESEARCH SERVICE**

**UNITED STATES DEPARTMENT OF AGRICULTURE**

# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Economic Insect Survey Section  
Plant Pest Control Branch  
Agricultural Research Service  
United States Department of Agriculture  
Washington 25, D. C.

## COOPERATIVE ECONOMIC INSECT REPORT

## Highlights of Insect Conditions

ARMYWORM infestations in areas of Texas, Arkansas, Louisiana, Mississippi, Alabama, Tennessee and North Carolina. Moths out as far north as Champaign, Illinois and Maryland. (pages 351, 371). LIGHT TRAP collections show moth numbers in several states. (page 368 ).

CUTWORMS damaging crops in Kentucky, Tennessee, Missouri, Texas and other states. (pages 352, 371 ).

SALT-MARSH CATERPILLAR infestations widespread in Texas. (page 357 ).

PEA APHID reported on alfalfa from many states, heaviest in Kentucky, Maryland and Delaware. (page 355 ).

YELLOW CLOVER APHID serious in areas of Arizona, New Mexico and Oklahoma. Building up in some Kansas counties. (page 356 ).

ORCHARD MITES active in fruit areas. (page 359 ).

SEED-CORN MAGGOT causing concern on vegetables in Oklahoma, Arkansas, South Carolina and Virginia. (page 361 ).

BROWN COTTON LEAFWORM moths reported from Burleson County, Texas. (page 364 ).

NEW RECORDS include RUSTY PLUM APHID for California, (page 358), a WEB-SPINNING SAWFLY for Florida (page 365 ), and a SPIDER MITE for Hawaii (page 370 ).

NOTES received too late for inclusion in the body of this issue. (page 371 ).

First REPORTED RECORDS of season (by areas). (page 371 ).

WEATHER FOR THE WEEK ENDING APRIL 25, 1955

Dust storms in the Great Plains, tornadoes in the Mississippi Valley, frequent showers in the North and East, and a continued contrasting temperature regime of abnormal warmth in the East and unseasonably low temperatures in the far West for the third consecutive week were the main features of the week's weather.

At the beginning of the period a low pressure system centered over North Dakota was responsible for high winds and resulting dust storms in the central and northern Great Plains. As the system moved eastward thunderstorms with severe winds and hail and scattered tornadoes occurred in the upper Mississippi Valley. A tornado was reported near Lonark, Ill., and Belleville, Wisc., on the 18th, and Tyler, Minn., on the 19th, the latter causing damage estimated at \$100,000.

Another low pressure system centered over Kansas on the 23d was attended by dust-blowing winds over the Great Plains. As the trailing cold front of this system moved across the Southern States on the 24th, a tornado occurring in the vicinity of Hartselle, Ala. killed 4 persons, injured 20 or more, and destroyed 40 homes and 2 churches. Damage by this storm was estimated at \$750,000.

In the eastern half of the Nation abnormally high temperatures persisted throughout the week. Maxima during the early part of the week rose into the 80's as far north as the Great Lakes, and over the weekend several stations in extreme southern Texas reported 100° or above. The high temperatures favored rapid crop growth. West of the Continental Divide minima early in the week were in the 20's in eastern Washington and Oregon and near freezing along the Coast. On the 19th and 21st, freezes damaged some fruit in Arizona at elevations above 4,000 feet. A minimum of 24° at Prescott, Ariz., on the 19th was a new record there for so late in the season.

Several inches of new snow fell in the Sierra Nevada and Cascade Mountains and in some of the northern Rocky Mountain ranges. In the eastern part of the Country only traces of snow remain in a few extreme northern sections. (Summary Supplied by U.S. Weather Bureau).

Reports in this issue are for the week ending April 22, 1955 unless otherwise designated.

CEREAL AND FORAGE INSECTS

GRASSHOPPERS - VIRGINIA - Hatching underway week ending April 15. (Morris). TEXAS - Hatching in pasture lands in Travis and Williamson Counties. (Kirchhof). MISSOURI - Light hatch of Melanoplus femurrubrum and M. mexicanus. (Thomas). NEBR - First-instar Melanoplus sp. nymphs collected in alfalfa in Lancaster and Jefferson Counties, 17 per 25 sweeps. (Andersen, Connin). KANSAS - Newly-hatched Melanoplus spp. becoming more numerous in eastern and southern areas. From 5 to 10 nymphs per square yard in margins of many alfalfa fields. Viable eggs of M. differentialis and M. bivittatus in nearly all stops in east central and south central counties. No hatching of these species yet. (Matthew).

EUROPEAN CORN BORER (Pyrausta nubilalis) - NORTH DAKOTA - Survival survey in Traill and Grand Forks Counties showed average of 31 live borers per 100 plants and average mortality of 30 percent. (Goodfellow).

ARMYWORMS - TEXAS - From 10-20 per square foot in grain and vetch in Delta, Rockwall and Hunt Counties, larvae small. Twelve to 15 per square foot in Kaufman County. (Garner, Randolph).

ARMYWORM (Pseudaletia unipuncta) - LOUISIANA - Moderate to heavy, 3-5 per square foot, in rye grass-clover pasture in Avoyelles Parish. Disease apparently effective. (Oliver). MISSISSIPPI - Light infestation in 100-acre wheat field in Lowndes County. (Hunsucker). ALABAMA - Severe outbreaks have occurred in small grain and pastures in western area. Specific reports the past week from Perry and Greene Counties. (Arant). ARKANSAS - Infestation general from Crawford east to St. Francis and south to Chicot and Ashley Counties. From 1-2 second to fourth instar larvae per 20 sweeps of 12-inch net. Economic infestation in Chicot and Ashley Counties where counts up to 58 larvae per 20 sweeps. Most larvae in this area in first instar. (Warren). MISSOURI - Moderate to locally heavy flights of moths in southern half of state. Larvae light to moderately heavy, 1 to 8 per linear foot of drill row, in rank small grains in Dunklin and Pemiscot Counties. (Thomas). KANSAS - A few overwintered larvae found along fencerows in east central and south central areas. Moths increasing at lights and have been taken in Riley, Douglas, and Cowley Counties. (Matthew). ILLINOIS - Moth flight noted April 21 in Champaign. (Petty et al). NORTH CAROLINA - Observed in oats in Carteret County, first report of season. (Newsom, Jones).

ARMY CUTWORM (Chorizagrotis auxiliaris) - SOUTH DAKOTA - Average 5 per square foot in alfalfa and up to 7 per linear foot of row in winter wheat in Tripp County, April 18. (Lofgren). NEBRASKA - Four to 10 per square foot in southeastern Madison County. Lincoln and Fillmore Counties have damage to alfalfa. Reports indicate infestation statewide. (Andersen). UTAH - Severely infesting several thousand acres of dry-land grain in Juab County. Three hundred acres of wheat stripped on one farm. Alfalfa also damaged in some areas. (Knowlton, Lieberman, Burtenshaw). Heavy on alfalfa in areas of Washington County. (Hughes). WYOMING - Light damage in Goshen County, 0.2 larva per square foot. (Spackman).

CUTWORMS - TEXAS - Heavy widespread on corn and other crops in San Augustine County. (Sowell). Twenty to 60 per square foot in vetch in Kaufman County, 5-50 per square foot in vetch and vetch-small grain mixture in Delta, Hunt and Rockwall Counties. (Garner, Randolph). LOUISIANA - Black cutworm (Agrotis ypsilon) damaged seedling corn in St. Landry Parish. (Oliver). ARKANSAS - Variegated cutworm (Peridroma margaritosa) very light in small grain and moderately light in legumes. (Warren). KENTUCKY - Seriously damaging small grain in south central area, about 5 per square foot. (Starks). NORTH CAROLINA - Black cutworm observed in oats in Carteret County. (Newsome, Jones). TENNESSEE - Damaging pastures and legumes in Clarksville area. Several plantings of lespedeza completely defoliated. (Scott). OHIO - Half-grown larvae of Feltia subgothica abundant in scattered fields of alfalfa and red clover in central area. (Parks, Goleman). ILLINOIS - Cutworms, principally Lacinipolia renigera, in clover vary from 0 to 15 per 10 square feet. (Petty et al). MISSOURI - Light numbers of black cutworm moths at lights in central area and light numbers of variegated cutworm moths in southern third of State. One larva of the latter species per square foot in alfalfa in extreme southeast. Mixed populations of Agrotis subgothica and A. gladiaria continue to cause increasing damage to clovers, alfalfa and some pastures over entire State. Some parasitism. (Thomas). KANSAS - Agrotis gladiaria light to moderate, 1 to 9 per square yard, in pastures, alfalfa and clover in east central area. (Matthew). MARYLAND - One per square foot in pasture field, Montgomery County. (J. Md., Ent. Dept.). WASHINGTON - Not nearly as abundant as a year ago. (Keene).

WEBWORMS - KANSAS - Infestations of a soil webworm,, probably Nomophila noctuella, observed in Johnson and Douglas Counties. Also reported from Franklin, Anderson, and Neosho Counties. Moving in to oats and causing reduction in stand. From 1-15 larvae per square foot some fields, high of 40 per square foot in one field in Johnson County. (Matthew).

WINTER GRAIN MITE (Penthaleus major) - KANSAS - Light populations, 50-100 per foot of drill row, in dense stands of barley and wheat in Johnson and Douglas Counties. Infestations continue in a few local areas of southeastern counties. (Matthew).

BROWN WHEAT MITE (Petrobia latens) - OKLAHOMA - Populations rather high in wheat during past three weeks in several northwestern counties. Survey April 20-21 indicated average populations per linear foot in 5 counties as follows: Noble 192, Grant 232, Garfield 567, Alfalfa 738, Kingfisher 840. Because of drought and freeze injury to the plants, the mites moved to the greener leaves, and damage was intensified. Several thousand acres of wheat were sprayed, with approximately 7,500 being treated in the Kingfisher and Garfield areas alone. Most eggs observed recently are the white summer type which are not expected to hatch until fall. (Henderson). KANSAS - Continues to cause added injury to drought-affected wheat and barley in south central area. From 50-300 per foot of drill row in many fields. (Depew). Infestations in western Republic County may require control. (Burkhardt). UTAH - Commonly found on wheat in areas of Juab and Salt Lake Counties. Highest populations east of Copperton. (Lieberman, Knowlton). Seriously abundant in some Santa Clara fields. (Hughes).

CORN FLEA BEETLE (Chaetocnema pulicaria) - DELAWARE - Common in many meadows in Kent and Sussex Counties. (Milliron). ILLINOIS - From 3 to 36 per 100 sweeps along roadside by old corn, but conditions unfavorable due to windy weather. (Petty, et al).

CORN BILLBUGS - SOUTH CAROLINA - First damage of season found April 11 at Florence. About 5 percent one field. (Kirk).

HESSIAN FLY (Phytophaga destructor) - NEBRASKA - Three to 4 samples of wheat, 6 plants each, examined from Imperial, Grant, Wallace, Ogallala and Arnold areas showed less than 10 percent of tillers infested. (Hamilton). OHIO - Ideal conditions for germination in fall resulted in light infestation in isolated fields of winter wheat near west end of Lake Erie, where such were sowed on recognized fly-free date. (Parks, Goleman).

CHINCH BUG (Blissus leucopterus) - OKLAHOMA - Total of 150 adults per 100 plants of corn, 5 inches tall, in 80 acres of corn at Stratford, April 22. (Arbuthnot). LOUISIANA - Light spotty infestations, up to 4 adults per plant in seedling corn, in St. Landry Parish. (Oliver).

RICE STINK BUG (Solubea pugnax) - ARKANSAS - Numbers heavy in wheat in Ashley County, 30-40 per sweeps. Also on small grain in Chicot and Desha Counties. (Warren). LOUISIANA - Three to 5 per 100 sweeps in oats in Acadia Parish. (Oliver).

SEED-CORN MAGGOT (Hylemya cilicrura) - NORTH CAROLINA - Seven-acre stand of corn destroyed in Cleveland County, from 2-10 larvae per seed. (Mistic). UTAH - Adults active at Nephi. (Knowlton).

ALFALFA WEEVIL (Hypera postica)- DELAWARE - Increase in all untreated alfalfa. Severe damage general some areas. (Milliron). MARYLAND - Very active. From 4-33 adults per 10 sweeps. Larvae not generally abundant, but 182 taken per 10 sweeps in one field in Talbot County. Damage evident and spraying general. (U. Md., Ent. Dept.). VIRGINIA - Outbreaks heavy and doing severe damage in several counties in northern, northeastern and east central districts. Counties reporting infestations for first time are Nottoway, Henrico, King William, Louisa, Hanover, Chesterfield and Lunenburg. (Morris). UTAH - Activity has been retarded by unusually late spring. Moderate in areas of Washington County. (Knowlton, Hughes). WYOMING - Control operations starting throughout State. (Spackman). OREGON - Adult noted in collection at State Department of Agriculture at Salem, collected at Mosier June 26, 1952. This record is 150 miles north and 120 miles west of nearest county in which insect had been recorded. (Roth).

CLOVER WEEVILS - SOUTH CAROLINA - From 30-40 Hypera meles and H. nigrirostris adults per 80 sweeps in Greenwood County, April 15. (Johnson). ILLINOIS - Sitona sp. range from 12 per 100 sweeps to 30 per 100 sweeps. (Petty et al). KANSAS - Clover leaf weevil larval counts average 3-7 per square foot in several fields of alfalfa in Anderson, Franklin, Johnson, and Douglas Counties. About 50 percent infected with a fungus. (Matthew).

CLOVER LEAF WEEVIL (Hypera punctata) - PENNSYLVANIA - Larvae pupating in south central area. (Pepper). DEL. - Leaf injury to clovers continues generally. (Milliron). VA. - Reported from all parts of State. (Morris). ILLINOIS - Populations vary in red clover from 3 to 50 per square foot over State. Highest in central area where average is 32 per square foot on red clover and 21 on alfalfa. The situation in general is easing with warm weather promoting plant growth and the fungus which is very noticeable. (Petty et al). MISSOURI - Damage easing in southern two-thirds of State due to rapid increase of fungus disease which involves 50-85 percent of larvae. Few fields with economic populations. (Thomas). NEBRASKA - One per 25 sweeps in alfalfa in Lancaster County. (Andersen).

CLOVER ROOT CURCULIO (Sitona hispidula) - DELAWARE - Many adults in alfalfa and clovers. (Milliron). PENNSYLVANIA - Adults common in clover and alfalfa in south central area. (Pepper). MARYLAND - Adults numerous in alfalfa and clover. (U. Md., Ent. Dept.) KANSAS - Infestations in nearly all alfalfa surveyed in east central area. Counts from 1-5 per 25 sweeps to high of 18 per

25 sweeps in one field in Anderson County. (Matthew). NEBRASKA - Few reported in alfalfa in Lancaster and Fillmore Counties. (Anderson, Connin.) CALIFORNIA - Light to heavy in alfalfa fields in Siskiyou County. (Cal. Coop. Ins. Rept., Apr. 18).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris)- DELAWARE - Increasing on red clover. Noted on sweetclover at Pearson. (Milliron). PENNSYLVANIA - Active and mating in legumes in Centre County. (Adams). MARYLAND - Four to 8 adults per 10 sweeps on clover in Montgomery County. Larvae in clover in Talbot County. (U. Md., Ent. Dept.) ILLINOIS - From 0 to 24 adults per 100 sweeps with higher populations in central and southwestern areas, highest in western area where average of 9 adults per 100 sweeps. Twelve percent of stems of red clover infested in east southeast, 40 percent in west southwest, 18 percent in east and 14 percent in central region. (Petty et al).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - NEBRASKA - Feeding prevalent in second-year sweetclover. Some damage in seedling sweet-clover. (Roselle). KANSAS - Light in second-year clover of central area and light to moderate in east central area. (Gates).

CLOVER ROOT BORER (Hylastinus obscurus) - PENNSYLVANIA - Old fields heavily infested. (Adams).

PEA APHID (Macrosiphum pisi) - NEW JERSEY - Populations not high in alfalfa. (Merrill). MARYLAND - Alfalfa generally infested, heaviest on Eastern Shore. (U. Md., Ent. Dept.). DELAWARE - Moderately abundant at most places, very heavy at some. (Milliron). NORTH CAROLINA - Alfalfa generally infested in Wake County, from 2 to 25 per terminal in most heavily infested fields. (Mitchell, Spink). Average of 25 per plant in alfalfa in Cleveland County. (Mistic). KENTUCKY - Building up to damaging populations on alfalfa in central area. (Starks). OHIO - Less than 1 per 10 sweeps in alfalfa in 6 central counties. (Parks, Goleman). ILLINOIS - Population still low with maximum of 25 per 100 sweeps. (Petty et al). MISSOURI - Slow increase in southeast area, from 3-16 per-sweep. Parasites and predators numerous. (Thomas). TEXAS - Five to 10 per sweep on vetch in Delta, Hunt, and Rockwall Counties. (Garner, Randolph). NEBR. - Large numbers reported damaging alfalfa in Red Willow County. Slight infestation in alfalfa in Seward and Fillmore Counties, 9 per 25 sweeps. (Andersen). KANSAS - Non-economic populations continue in eastern and southern counties; highest count 60 per 25 sweeps of 15-inch net. Parasites and predators abundant and increasing. (Matthew). NEW MEXICO - Declining in Mesilla Valley where spotted heavy infestations occurred earlier. (Dobson). CALIFORNIA - Medium to severe in Riverside County. (Coop Ins. Pest Rept., Apr. 18). VIRGINIA - Infestations heavy and causing severe damage to alfalfa in all parts of State. Stands have been reduced and growth delayed or stopped. (Morris).

APHIDS - KANSAS - Non-economic populations of greenbug (Toxoptera graminum) and/or English grain aphid (Macrosiphum granarium) in barley and wheat of central and south central areas. Counts average only 8-12 per 25 sweeps of 15-inch net. (Matthew). ARKANSAS - Infestation on small grain and legumes light compared with same period in 1954. Parasitism and predatism high. Syrphid larvae almost equal number of aphids in a few fields. Greenbug infestations practically non-existent except in scattered local areas. (Warren). TEXAS - English grain aphid light but widespread on oats in Kaufman County. (Randolph). VIRGINIA - Aphids heavy on barley in Surry and Henrico Counties. (Willey, Davis).

YELLOW CLOVER APHID (Myzocallis trifolii) - OKLAHOMA - Very severe damage to alfalfa in Stillwater area, some stands reduced as much as 75 percent. (Flora). TEXAS - Light local infestation on alfalfa in Dimmit County, medium in El Paso County. (Richardson, Foster). ARIZONA - Light to extremely heavy on 2000 acres in Yuma area, young plants being killed. Also light to extremely heavy, up to 36 per leaf, on 1620 acres in Salt River Valley. From 40-84 percent damage in untreated old plantings. (Ariz. Coop. Rept.) KANSAS - Infestation in alfalfa in Butler, Cowley, Sedgwick and Sumner Counties. Beginning to build up in some fields of Cowley and Sumner Counties; however, no control measures required or reported. (Matthew). NEW MEXICO - Now active through southern half of State. Building up in Lea County area, very severe in Chaves and Eddy Counties, spotted in Mesilla Valley, severe in Tularosa Basin, and infestation beginning in Virden Valley. (Dobson). CALIFORNIA - Treatments repeated every eight days in some alfalfa fields in Imperial County. Light to severe over much of Riverside County. Infestation found in alfalfa in Fresno County. (Coop. Ins. Pest Rept, Apr. 22).

LEAFHOPPERS - ILLINOIS - Five specimens of Empoasca sp., females, collected. Macrosteles fascifrons collected at Urbana. (Petty et al). ARKANSAS - A few leafhoppers, tentatively identified as Empoasca fabae, taken from vetch in Pulaski and Desha Counties. (Warren). NEBRASKA - M. fascifrons averages one per 25 sweeps in alfalfa in Lancaster County. (Andersen). UTAH - Dikraneura carneola in small grains and grasses and Aceratagallia arida in alfalfa active and sometimes numerous. (Knowlton).

MEADOW SPITTLEBUG (Philaenus leucophthalmus) - ILLINOIS - Hatch just underway. Population in central area is 12 per 100 stems and in eastern 8 per 100 stems. (Petty et al). OHIO - Hatching in clover and alfalfa began second week of April. Population variable from field to field; less than 1954 in central area. (Parks, Goleman). MARYLAND - Scarce in most fields of alfalfa and clover. Up to 5 nymphs per 10 stems in Montgomery County. (U. Md. Ent. Dept.). DELAWARE - Small

spittle masses conspicuous, but not numerous, on clovers; some on alfalfa. (Milliron). VIRGINIA - Nymphs active in all areas. (Morris). PENNSYLVANIA - Ninety percent hatched; very abundant in southwest. (Udine). Hatching in northwest counties. (Adams). Spittle masses abundant in south central area. (Pepper).

CORN EARWORM (Heliothis armigera) - LOUISIANA - Three per 100 sweeps in burclover in St. Landry Parish, 20 per 100 on sweetclover in East Baton Rouge Parish, 5 per 100 sweeps in white clover in Acadia Parish, and 3 per 100 in white clover in Avoyelles Parish. (Oliver). \*

GREEN CLOVERWORM (Plathypena scabra) - MISSOURI - Larvae, all stages, averaging 2-4 per 10 sweeps in alfalfa in extreme southeast counties. (Thomas). TEXAS - Six to 7 per sweep on vetch in Kaufman County. (Randolph). ARKANSAS - Numerous in most fields of legumes, up to 3 per sweep in Crawford County. (Warren).

ALFALFA CATERPILLAR (Colias philodice eurytheme) - ARKANSAS - Widespread but light, up to 3 per 20 sweeps of vetch in Pulaski County. (Warren).

SALT-MARSH CATERPILLAR (Estigmene acrea) - TEXAS - Medium to heavy widespread infestation on clovers, flax, pastures, cotton and shrubs, principal damage to clover for seed and flax, in Matagorda, Wharton, Ft. Bend, Jackson, Victoria, Calhoun and Refugio Counties. (Davis, Cowger, Pfannstiel). Medium to heavy infestation in rice sections of Waller County. Caterpillars reported on highway. (Garon). Light widespread infestation on small grain and legumes in Kaufman County. (Randolph).

POTATO LEAFHOPPER (Empoasca fabae) - LOUISIANA - From April 14-21 a total of 152 specimens collected at Baton Rouge on burclover. (Oliver).

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - ARKANSAS - Single specimen taken on vetch in Pulaski County. (Warren). FLORIDA - Larva on field corn at Gainesville. (Tissot, Kuitert).

MEADOW PLANT BUG (Miris dolabratus) - DELAWARE - First-instar nymphs appearing in meadows east of Dover. (Milliron).

VETCH BRUCHID (Bruchus brachialis) - ARKANSAS - Has appeared in vetch and crimson clover fields in Arkansas River Valley. (Warren).

\* FLORIDA - Two larvae collected from field corn at Gainesville. (Tissot, Kuitert). MISSOURI - A very few small larvae, up to 2 per 10 sweeps of alfalfa in extreme southeast counties. (Thomas).

TARNISHED PLANT BUG (Lygus lineolaris) - NEBRASKA - Six per 25 sweeps in alfalfa in Lancaster County. (Andersen). ILLINOIS - From low of 4 per 100 sweeps in east southeastern to high of 60 per 100 sweeps in western area. (Petty et al). TEXAS - Light, 1-2 per square foot, on vetch in Kaufman County area. (Garner, Randolph). LOUISIANA - Five per 100 sweeps in burclover in St. Landry Parish. (Oliver).

BEAN LEAF BEETLE (Cerotoma trifurcata) - ILLINOIS - Occasional beetle, only 4 to 8 per 100 sweeps, in central region. (Petty et al). MISSOURI - Adults, 3 to 8 per foot of row, causing locally heavy damage to germinating soybeans in extreme southeast counties. (Thomas).

WHITE GRUBS - TEXAS - Heavy infestation in Travis County on pasture grasses and legumes and on oats. (Kirchhof).

A CHINCH BUG (Blissus leucopterus insularis) - FLORIDA - Average 150, all stages, per square foot on St. Augustine grass at Gainesville. First record this year and is very early for damage this far north. (Kerr).

GREEN JUNE BEETLE (Cotinis nitida) - VIRGINIA - Large numbers in some lawns in Richmond. (Willey).

RUSTY PLUM APHID (Hysteroneura setariae) - CALIFORNIA - Found for first time in California on grass in Imperial County. (Cal. Coop. Ins. Rept., April 18).

### FRUIT INSECTS

APHIDS - OREGON - Apparently heavy mortality in green peach aphid (Myzus persicae) due to sudden drops in temperature after development had begun. Few live stem mothers found on peach and nectarine trees this spring. (Roth). UTAH - Green peach aphid moderately numerous on peach foliage in Washington County. Hatching in central area. (Knowlton, Hughes). INDIANA - Increasing rapidly at Orleans. (Marshall). OHIO - Rosy apple aphid not as numerous as in 1954. Reproduction first noted April 21. (Cutright). VIRGINIA - Rosy apple infestations in Albemarle and Nelson Counties scattered and light. Apple aphid (Aphis pomi) light to moderate on apple in Albemarle, Nelson, Buckingham and Nottoway Counties. (Bobb). MICHIGAN - Rosy apple aphid (Anuraphis roseus) abundant at Paw Paw, St. Joseph, and Fennville. (Hutson).

ORCHARD MITES - NEW YORK - European red mite (Metatetranychus ulmi) scarce in eastern area but slightly more numerous than last year. (Dean). PENNSYLVANIA - European red mite 50-60 percent hatched in Erie County. (Adams). NEW JERSEY - Many European red mites had hatched by April 18 in central and southern areas. (Merrill). VIRGINIA - European red mites light to moderate on apple in central area. (Bobb). INDIANA - European red mite egg-laying underway at Vincennes. Two-spotted spider mite (Tetranychus bimaculatus) still mostly on ground cover and trunks of apple trees. Eggs from overwintered females hatching. (Hamilton). Increasing rapidly at Orleans, 5 or more per leaf near trunk on many trees. (Marshall). OHIO - European red mite hatching about 50 percent complete, April 21. Two-spotted spider mite eggs, first generation, started to hatch April 18. (Cutright). MICHIGAN - Heavy infestation of European red mite at East Lansing. (Hutson). OREGON - A few two-spotted spider mite adults in pear fruit clusters since April 15 in Medford area. Tetranychus willamettei also noted in pear fruit clusters in this area. A plum mite (Diptacus gigantorhynchus), determined by H. H. Keifer, is heavy on plums near Talent. (Gentner). WASHINGTON - Cherry rust mite (Vasates fockeui) and peach silver mite (V. cornutus) numerous, first on fruit buds April 9. (Anthon).

PLUM CURCULIO (Conotrachelus nenuphar) - ILLINOIS - Carryover generally light in Carbondale area. (Chandler). INDIANA - Thirty adults jarred from 5 trees at Vincennes compared with 13 for previous week. (Hamilton). OHIO - Entered orchards in northeastern area April 21. First taken in southern area April 12. (Rings). MARYLAND - One jarred from peach at Beltsville April 21. (U. Md., Ent. Dept.) PENNSYLVANIA - A specimen on peach taken by beating in Franklin County. (Pepper).

CATFACING INSECTS - OHIO - Tarnished plant bug abundant and feeding on peach blossoms April 21 at Wooster. First record of season on peach March 31. Dusky stink bug (Euschistus tristigmus) fairly abundant on apples and peaches in Lawrence County April 11. One-spot stink bug (E. variolarius) fairly abundant on peaches in Adams County April 12. (Rings). PENNSYLVANIA - Many specimens of mirids and pentatomids taken by beating in Franklin, Adams, and Lancaster Counties. (Pepper).

CODLING MOTH (Carpocapsa pomonella) - OKLAHOMA - First adults emerged at Stillwater April 15. (Bieberdorf). ILLINOIS - Considerable pupation at Villa Ridge and Carbondale. (Chandler). VIRGINIA - Spring-brood adults emerging in Hampton area. (Bobb).

LESSER PEACH TREE BORER (Synanthedon pictipes) - VIRGINIA - Moths emerging in numbers in eastern counties. (Bobb).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana)- VIRGINIA - Hatching has begun in central area. (Bobb). NEW YORK - Few eggs deposited by April 22 in eastern area. (Dean).

PEAR PSYLLA (Psylla pyricola) - OREGON - About 35 percent of eggs on twigs still unhatched in Medford area. (Roth). NEW YORK - Egg deposition generally moderate to heavy in Orleans County. (West). Heavy number eggs in Greene County. (Buckley).

TENT CATERPILLARS - NEW YORK - Eastern tent caterpillar (Malacosoma americanum) first observed this season on apples near Poughkeepsie April 8. Injury to fruit buds in untreated commercial orchards. (Dean). Numerous in sprayed orchards in Ulster County again this year. (Palmer).

CITRUS RED MITE (Metatetranychus citri) - CALIFORNIA - Light to heavy in citrus orchards in Riverside County. (Cal. Coop. Ins. Pest Rept., April 18).

PLUM GOUGER (Anthonomus scutellaris) - OKLAHOMA - First collected in Payne County April 16. (Bieberdorf).

CURRENT FRUIT FLY (Epochra canadensis)- OREGON - First emergence near Hubbard April 19. (Rasmussen).

SAN JOSE SCALE (Aspidiotus perniciosus) - WASHINGTON - Abundant on cherry trees in Wenatchee area. (Anthon).

EUROPEAN FRUIT LECANIUM (Lecanium corni) - PENNSYLVANIA - Severe on 4-acre peach orchard in Erie County. (Adams).

GRAPE MEALYBUG (Pseudococcus maritimus) - WASHINGTON - Abundant enough to require control measures on some grape fields in Yakima Valley. (Keene).

CORRECTION: Fruit notes from VIRGINIA in CEIR 5(8) should be credited to M. L. Boxx. (Morris)

TRUCK CROP INSECTS

SEED-CORN MAGGOT (Hylemya cilicrura) - OKLAHOMA - Bud infestation of spinach continued at moderate levels with 10-20 percent of plants affected with less than one egg per plant. (Walton). ARKANSAS - Together with vegetable weevil causing abandoning of some planting of early vegetables in southeastern area. (Warren). SOUTH CAROLINA - Heavy infestation reported on vegetables from various areas. (Nettles). VIRGINIA - Active on germinating seeds in Halifax, Warwick and Elizabeth City Counties. (Brame, Hall, Morris).

MELON APHID (Aphis gossypii) and a mite (Tetranychus desertorum) - ARIZONA - Starting to increase on cantaloup in Yuma area. (Ariz. Coop. Rept.).

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - NORTH CAROLINA - Observed in Irish potatoes in Orange, Rowan, Catawba and Randolph Counties, severe some gardens. (Scott). Light infestation of adults in Duplin County, but many eggs on 80 percent of plants. (Brett).

LEAFHOPPERS - ARIZONA - Leafhoppers, probably Empoasca solana, heavy on approximately 500 acres of potatoes in Tolleson-Hassayampa area. (Ariz. Coop. Rept.).

BEAN LEAF BEETLE (Cerotoma trifurcata) - NORTH CAROLINA - Medium infestation in most fields of snap beans in Rowan and Randolph Counties. (Scott). TENNESSEE - Light damage to pole and snap beans in west Tennessee. (Dozier).

PEA APHID (Macrosiphum pisi) - MARYLAND - Infesting peas on lower Eastern Shore. Spraying underway. (U. Md., Ent. Dept.).

PEA LEAF WEEVIL (Sitona lineata) - WASHINGTON - Infesting early peas in Pacific County, "ragging" foliage. (Brannon).

APHIDS - NORTH CAROLINA - Light general infestation of aphids, possibly Myzus persicae, on cabbage in Randolph County. (Scott). VIRGINIA - Light numbers of green peach aphid on spinach in Norfolk area. (Brubaker, Greenwood, Hofmaster). ARIZONA - An aphid increasing rapidly on tomato and pepper in Phoenix area. (Ariz. Coop. Rept.).

CABBAGE CATERPILLARS - MICHIGAN - A few scattered Pieris rapae at Lansing. (Hutson). TENNESSEE - Ten percent infestation on untreated cabbage in Shelby County. (Dozier).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Infesting 250 acres of lettuce at Hassayampa. (Ariz. Coop. Rept.).

A FLEA BEETLE - (Phyllotreta cruciferae) - DELAWARE - abundant east of Dover in uncultivated land, present on crucifers at Ellendale. (Milliron).

HARLEQUIN BUG (Murgantia histrionica) - DELAWARE - Adults abundant on seeding cauliflower at Georgetown. (Milliron). NORTH CAROLINA - Light infestation on collards in Duplin County. (Brett).

BEET LEAFHOPPER (Circulifer tenellus) - CALIFORNIA - Indications are that following the spring spraying, populations will be low enough to cause very little curly-top damage to 1955 crops. Practically all leafhoppers should be out of the foothills by first part of May. (Green, April 8). Movement to cultivated districts of central UTAH from desert breeding grounds of western Arizona and southeastern California first detected April 23. Movement much more extensive in southern Utah. Migration expected to reach peak about May 20. The invasion of the cultivated districts of northern UTAH and western COLORADO is expected to be light to moderate. (Dorst).

ASPARAGUS BEETLE (Crioceris asparagi) - DELAWARE - Adults feeding and depositing eggs near Woodside. Light scattered injury in other areas. (Milliron). VIRGINIA - Ovipositing on asparagus spears in Norfolk area. (Brubaker, Greenwood, Hofmaster).

THRIPS - NEW MEXICO - Causing economic injury to onions in southern half of Dona Ana County. Building up farther north. Some spraying. (Dobson). TEXAS - Thrips tabaci light locally in Floyd County. (Simonds). Building up to destructive levels in unharvested fields in Rio Grande Valley area. (Wene). LOUISIANA - Franklinella cephalica severe on strawberry blossoms in Tangipahoa Parish. (Oliver).

Vegetable Pest Activity in Rio Grande Valley Area, Texas:

SPIDER MITES light to medium on cantaloupes. CABBAGE APHIDS and CABBAGE LOOPERS light to medium on cabbage. CUCUMBER BEETLES infestation medium on cantaloupes. TOMATO FRUITWORM medium to heavy on tomatoes, found in practically every field. FLEA BEETLES are medium to heavy on young eggplant while TWO-SPOTTED SPIDER MITE is causing a lot of damage on young plants of this crop. (Wene).

MEADOW SPITTLEBUG (Philaenus leucophthalmus) - DELAWARE - A few appearing on strawberries at most places in Kent and Sussex Counties. (Milliron).

Pests of Strawberry Fruits in Tangipahoa Parish, Louisiana:

A caribid (Harpalus pennsylvanicus) damaging ripe strawberry fruits. An occasional nitidulid (Lobiopa insularis) also found. From 25 to 50 percent of strawberries classified as culls in most sections of this parish due to damage by ground beetles, field crickets and snails. (Oliver).

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - DELAWARE - First adults of season in Georgetown area. (Milliron).

STRAWBERRY WEEVIL (Anthonomus signatus) - DELAWARE - Adults active from Townsend southward. (Milliron). NORTH CAROLINA - Severe infestation of dewberry in Duplin County, 33 percent of buds cut. No evidence of activity in nearby field of strawberries. (Mitchell). TENNESSEE - Light damage in untreated strawberry beds, about 10 percent of buds cut in Robertson County. (Dozier).

FLEA BEETLES - TENNESSEE - Light infestations in most tobacco beds. (Mullett).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - NORTH CAROLINA - Reported in tobacco plant beds in Columbus County. (Raper). ARKANSAS - Together with seed-corn maggot damaging truck crops in southeastern area, some fields of early vegetables abandoned. (Warren)

CUTWORMS - TENNESSEE - Light to severe damage to tobacco plant beds in Clarksville area. (Scott).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - DELAWARE - Attacking early potatoes at Ellendale. (Milliron). VIRGINIA - Damage to tobacco plant beds heavier than in 1954. (Dominick, Morris, April 15).

### COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Light scattered infestations on earliest cotton in Brownsville, Rio Hondo, Elsa, Los Fresnos and Mission areas. Highest infestation showed 5 percent square damage. (Wene, Dean, Fuller). First weevil of season on cotton found in Waco area April 20. (Parencia).

BOLLWORMS - TEXAS - Reported from entire lower Rio Grande Valley area. Severe infestations in earliest cotton. (Wene, Dean, Fuller).

COTTON FLEAHOPPER (Psallus seriatus) - TEXAS - Ten per sweep on primrose in Robertson County. (Wipprecht). Increasing throughtout the valley area, insecticides required in a few fields. (Wene, Dean, Fuller).

BROWN COTTON LEAFWORM (Acontia dacia) - TEXAS - Adults observed in Burleson County. Up to 60 per acre on bare ground where they emerged. First found March 22, large numbers since March 29, peak emergence April 5. (Lloyd).

LEAF MINERS - TEXAS - Light infestation in many fields in Refugio County. (Greer).

SPIDER MITES - TEXAS - Light infestation in many fields in Refugio County. (Greer). Spotted heavy infestations in Los Fresnos area. (Wene, Dean, Fuller).

APHIDS - TEXAS - Medium infestation on cotton in Refugio and Aransas Counties. (Greer). Increasing in the valley area, although damaging infestations in only a few fields. Parasites and predators increasing. (Wene, Dean, Fuller).

GRASSHOPPERS - ARIZONA - Damaging young cotton plants in field margins at Higley. From 1 to 10 per square yard. (Ariz. Coop. Rept.).

The ANT reported damaging seeds of cotton in Continental area of ARIZONA (CEIR, 5(15):324) has been identified as Solenopsis xyloni by M. R. Smith. (Ariz. Coop. Rept.).

### FOREST, ORNAMENTAL AND SHADE TREE INSECTS

PINE SAWFLYS - VIRGINIA - Larvae of Neodiprion sp. just beginning to feed on pine in eastern area. (Brame). ARKANSAS - An infestation of Neodiprion sp. ranging from at least 7 miles by 1-1/4 miles has appeared in southwestern Bradley County. Defoliation of pulpwood-size trees ranged up to 50 percent. (Warren).

EUROPEAN PINE SAWFLY (Neodiprion sertifer) - MICHIGAN - Abundant at Lansing. (Hutson).

EASTERN TENT CATERPILLAR - (Malacosoma americanum) - RHODE ISLAND - Hatching and tents apparent April 20. (Mathewson). CONNECTICUT - Began hatching April 4. Small tents observed. Det. B. W. McFarland. (Johnson).

ELM LEAF BEETLE (Galerucella xanthomelaena) - VIRGINIA - Larval damage starting on elms in Warwick County. (Brame).

AN ASH MIRID (Neoborus illitus) - CALIFORNIA - Infestations building up in Sacramento County. (Cal. Coop. Ins. Rept., Apr. 18).

EASTERN SPRUCE GALL APHID (Chermes abietis) - MICHIGAN - Generally abundant in spruce plantings in lower half of State. (Hutson).

CANKERWORMS - NEW JERSEY - Hatching April 18. (Merrill).

A WEB-SPINNING SAWFLY (Neurotoma fasciata) - FLORIDA - Collected from wild cherry at Gainesville. Apparently first record for species in Florida. (Weems).

A GEOMETRID (Phigalia titea) - PENNSYLVANIA - Moths numerous on trunks of forest trees in Bedford County. Det. S. W. Frost. (Gesell).

PINE BARK APHID (Pineus strobi) - PENNSYLVANIA - Heavy infestation on a few Scotch pines in Armstrong County. (Adams).

OLEANDER SCALE (Aspidiotus hederæ) - PENNSYLVANIA - Heavy infestation on twigs of rhododendron in Lancaster. (Pepper).

AZALEA LACE BUG (Stephanitis pyrioides) - NORTH CAROLINA - Nymphs numerous in azaleas in Wake County. (Smith).

APHIDS - NEW MEXICO - Building up to large populations on roses and other ornamentals in southern half of State. (Dobson).

A LEAF ROLLER - INDIANA - Unidentified species of leaf roller or plume moth causing severe damage to buds in commercial plantings of peonies in Vincennes area. (Hamilton).

#### INSECTS AFFECTING MAN AND ANIMALS, ETC.

HORN FLY (Siphona irritans) - MISSOURI - Average of 250-300 per animal in south central area with counts up to over 500 per head. (Wingo). KANSAS - Collected in Russell County. No counts recorded. (Gates). TEXAS - Light widespread infestation on cattle in Harrison County. (Rose). LOUISIANA - About 67 per animal on 85 cattle in East Baton Rouge Parish. (Oliver).

MOSQUITOES - MISSOURI - Severe annoyance by heavy numbers in extreme southeast counties. (Thomas). UTAH - Aedes dorsalis and A. vexans, largely larval stages, have required control in Weber County. Up to April 18 only adults of Culiseta inornata had been collected. (Fronk).

TICKS - ILLINOIS - First wood ticks in apple orchards in Jackson County April 16. (Chandler). RHODE ISLAND - American dog tick (Dermacentor variabilis) beginning to show up. (Mathewson). MISSOURI - Lone star tick (Amblyomma americanum) averaging 75-90 per head on cattle with counts up to 125 per head in south central area. (Wingo). ARKANSAS - Reported appearing in numbers in Hempstead County. (Warren).

CATTLE BITING LOUSE (Bovicola bovis) - LOUISIANA - Heavy on several head of cattle in St. Landry and Tangipahoa Parishes. (Oliver).

HORSE FLIES - MISSOURI - Moderate to locally heavy on livestock in Shannon County, from 5-15 per animal. (Wingo).

BLACK FLIES - ARKANSAS - Infestations general in eastern area. Humans, livestock and deer subjected to much annoyance in local areas. Logging operations have been curtailed in some areas. (Warren).

COCKROACHES - NEW MEXICO - Larger numbers than usual for time of year in southern half of State. (Dobson).

BED BUGS - NEW MEXICO - Reported as numerous from home in Santa Fe. First report of bed bugs in New Mexico since 1953. (Dobson).

#### BENEFICIAL INSECTS

LADY BEETLES - NEW MEXICO - Lady beetles and other predators numerous in untreated fields infested with yellow clover aphid but unable to control the infestations. (Dobson). TEXAS - Medium to heavy infestation attacking aphids on weeds in McLennan and Falls Counties. (Landrum). KANSAS - First larvae of season noted April 19 in Cowley and Sumner Counties. (Matt.) ILL.-Coincidental with low pea aphid population are the following lady beetle counts per 100 sweeps: northwestern area 5, western 60, central 5, eastern 37, west southwest 44, east southeast 44. (Petty et al).

#### RECENT IMPORTANT INTERCEPTIONS AT PORTS OF ENTRY

Of interest recently was the unusual interception of a living adult pentatomid, Eurydema oleraceum, with grapes in baggage from Austria at New York, N. Y. (Corlis, Turner). This insect has been reported injurious to vegetable crops in Europe, the Near East, Siberia and Turkestan. In some sections of Germany and Sweden it is said to be very destructive to rutabagas, cabbage and radishes. In other parts of Europe it seems to be of little consequence as a pest. In addition to crucifers, it has been reported feeding on alfalfa, asparagus, bean, beet, cereals, clover, lettuce, and several ornamental plants.

Observations on the biology of the insect in Sweden indicate it hibernates as an adult under plant debris. Eggs are deposited in clusters on the underside of the leaves in May and June. They hatch in about a month. The nymphs and adults suck the juices from the leaves of the food plant, with the greater injury occurring later in the season when the adults appear. There is one generation a year. Adults of E. oleraceum have been intercepted occasionally in past years with seeds, bulbs, or plants from Czechoslovakia, Denmark, Germany and the Netherlands at various ports. It is not known to occur in the United States. (Compiled - Plant Quarantine Branch).

LIGHT TRAP COLLECTIONS

		Pseudaletia unipuncta	Prodenia ornithog.	Peridroma margaritosa	Agrotis ypsilon	Heliothis armigera	Feltia subterr.
LA.							
Baton R.	4/13-22 <u>1/</u>	25	219	6	43	15	156
Franklin	4/12-20	1	10		10	6	21
Tallahah	4/18-22 <u>1/</u>	270	64	18	89	18 <u>2/</u>	46
MISS. (Counties)							
Coahoma	4/15-22	132		5	7		3
Humphreys		208	7	9	66	1	6
Oktibbeha		212	17	5	12	1	
Pearl River		10	9	3	8	8	9
ALA.							368
Auburn	4/1-21	48	13			6	4
TEXAS (County)							
McLennan	4/15-22	64	7	28	10	6	13
ARKANSAS							
Hope	4/15-21	52		6	5		
Stuttgart	4/14-20	10			5		
Van Bur.	4/15-21	31		1	4	1	
Varner	4/15-19	51		8	7		
Fayette.	4/15-21	544		50	48	2	
Clarksvil.	4/19	12		4			
Osceola	4/11-19	1333		17	47	3	
<u>1/</u>	Two traps at Baton Rouge, 3 at Tallulah						
<u>2/</u>	Also two H. virescens						

LIGHT TRAP COLLECTIONS (Continued)

Pseudaletia unipuncta Prodenia ornithog. Peridroma margaritosa Agrotis ypsilon Heliiothis armigera Feltia subterr.

TENN. (Counties)	4/14-20	248	4	16	9	1 (sp.)	9
Shelby		64	3	13			
Madison		158	4	8			
Lawrence		240	16	12			
Mauzy		132	6	3			
Robertson		27		22			
Knox		276					
Greene							
S. C.							
Charlest.	4/12-18	11					
Clemson	4/18-23	29					
N. C.							
Faison	4/19	3					
MD. (County)							
Montgomery	4/13-21	22	4	7			
GA. (County)							
Tift	4/4-9	1					5

Other light trap collections of interest: LOUISIANA - 92 Empoasca fabae, Baton Rouge; 100 Loxostege similalis, 2 Protoparce quinquemaculata at Tallulah. TEXAS - 2 Laphygma frugiperda in McLennan County. TENNESSEE - 3100 Agonoderus lecontei. SOUTH CAROLINA - 1 L. frugiperda at Charleston. GEORGIA - 1 Elasmopalpus lignosellus, 1 H. virescens.

Additional collections: MISSISSIPPI -(Washington County 4/16-22) - P. unipuncta 672, A. ypsilon 66, H. armigera 12, P. margaritosa 69, P. ornithogalli 21.

NOTES OF INTEREST FROM HAWAII

SEED-CORN MAGGOT (Hylemya cilicrura) caused heavy damage to seedling cabbage, broccoli and beans on Maui during first quarter of 1955.

The taro leafhopper (Megamelus proserpina) was reported in an outbreak at Honokohau Valley, Maui, in the third quarter of 1954. The infestation was due to planting material brought from an infested area. About 100 specimens of the egg predator, Cyrtorhinus fulvus, were sent from Honolulu and have brought the outbreak under full control.

A MITE (Paratetranychus mangiferus), a new record for the Territory, was found in large numbers on Eugenia jambos leaves on Oahu in September, 1954.

(Weber)

MISCELLANEOUS INSECTS

CLOVER MITE (Bryobia praetiosa) - TENNESSEE - Causing much concern around residences in Clarksville area. (Scott). VIRGINIA - Invading homes in Hampton (Adams) and in Richmond (Willey). MICHIGAN - Abundant at St. Johns, Jackson, and Lansing. (Hutson).

TERMITES - RHODE ISLAND - Swarms of Reticulitermes flavipes reported intermittently since March 4, especially large numbers recently. (Mathewson). CONNECTICUT - Winged forms appeared in buildings March 9, now appearing outside. (Johnson);

BOXELDER BUG (Leptocoris trivittatus) - MICHIGAN - Generally abundant. (Hutson).

A POWDER POST BEETLE (Lyctus sp.) - WASHINGTON - Infesting oak flooring in Okanogan and Asotin Counties. Also infesting wicker baskets in Clark County. (Brannon).

ADDITIONAL NOTES

GEORGIA - LESSER PEACH TREE BORER (Synanthedon pictipes) - Infestation is moderate in some peach orchards, light in others. (Snapp). CLOVER LEAF WEEVIL (Hypera punctata) - Moderate leaf feeding by larvae in a crimson clover pasture in Spalding County, April 13. (Beckham). TOBACCO HORNWORM (Protoparce sexta) - pupae numerous in old pimento pepper field in Spalding County. (Beckham).

TENNESSEE - Severe infestations of dingy and clay-backed CUTWORMS in pastures, gardens and truck crops in Middle Tennessee. (Mullett). Cutworms (Feltia sp.) were also found to be numerous in alfalfa and pasture fields in central and western counties, averaging 1 to 3 per square foot. Cutworms are also causing local damage to tobacco beds in Robertson County. (Dozier). First instar ARMYWORMS (P. unipuncta) in Middle Tennessee in small grain. Infestations appear spotted and light. (Mullett). APHIDS are abundant in many grain fields in central and western counties, from 0 to 80 per plant. No damage noticeable. CLOVER LEAF WEEVIL found in most alfalfa fields, ranging up to 4 per square foot. Approximately 25-50 percent of larvae diseased. (Dozier).

First Reported Records of Season (by areas)

ARMYWORM moths at Champaign, Illinois, April 21, and in Montgomery County, Maryland, April 13; larvae in Tennessee and North Carolina. CORN BILLBUG damage in South Carolina April 11. SIX-SPOTTED LEAFHOPPER at Urbana, Illinois. BEAN LEAF BEETLE out in Missouri and Illinois. TWO-SPOTTED SPIDER MITE eggs hatching in Indiana and Ohio. PLUM CURCULIO taken from peach trees in Maryland and Pennsylvania. CODLING MOTHS emerging in Oklahoma and Virginia. RED-BANDED LEAF ROLLER hatching in Virginia. CURRANT FRUIT FLY emerging Hubbard, Oregon, April 19. PLUM GOUGER collected Payne County, Oklahoma, April 16. BOLL WEEVIL on cotton at Waco, Texas, April 20. TICKS appearing southern Illinois April 16 and Rhode Island. LADY BEETLE larvae in Kansas April 19. CORN EARWORM larvae southern Missouri and Arkansas. YELLOW-STRIPED ARMYWORM in Pulaski County, Arkansas and at Gainesville, Florida.







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*Cooperative*  
**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL BRANCH**

**AGRICULTURAL RESEARCH SERVICE**

**UNITED STATES DEPARTMENT OF AGRICULTURE**

# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Economic Insect Survey Section  
Plant Pest Control Branch  
Agricultural Research Service  
United States Department of Agriculture  
Washington 25, D. C.

## COOPERATIVE ECONOMIC INSECT REPORT

## Highlights of Insect Conditions

ARMYWORM outbreaks in areas of Louisiana, Alabama, Georgia, Tennessee, South and North Carolina. Economic infestations appearing in southern Missouri. Moth flights in Kansas, Illinois, Delaware and other areas. (pages 375, 395). Also see LIGHT TRAP COLLECTIONS. (page 392 ).

EUROPEAN CORN BORER mortality 19 percent in Minnesota. (page 376 ).

GRASSHOPPERS hatching in Arkansas, Missouri, Kansas and New Mexico. Threatening populations in southern Clark County, Kansas. Numbers appear above normal for time of year in Arkansas. (page 377 ).

CUTWORMS causing damage over wide areas of Alabama, Kentucky, Tennessee and Missouri. Several other states also report damage. (pages 377, 384).

ALFALFA WEEVIL continues to spread in Virginia; now found in several southernmost counties. (page 395). Heavy damage in Maryland and Delaware. (page 380 ).

COLORADO POTATO BEETLE unusually abundant in Alabama and moderate at Charleston, South Carolina. Also active in Delaware and Virginia. (pages 386, 395).

VEGETABLE WEEVIL damaging crucifers in Alabama and Mississippi. Infesting tobacco in areas of North and South Carolina. (page 385).

THRIPS light to medium on cotton in several Texas counties. Appearing on seedling cotton in Mississippi and Louisiana. (page 389).

Status of HALL SCALE in the United States. (page 382).

Request for COTTON STEM MOTH survey. (page 396).

NOTES received too late for inclusion in the body of this issue. (p. 395).

First reported records of season. (Page 395).  
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Reports in this issue are for the week ending April 29, 1955 unless otherwise designated.

WEATHER BUREAU'S 30-DAY OUTLOOK  
May 1955

The Weather Bureau's 30-day outlook for May calls for temperatures to average below seasonal normals west of the Continental Divide, along the Atlantic Seaboard, and in the Northern Plains. Above normal temperatures are predicted over the remainder of the nation with greatest departures over Texas and adjacent states.

Precipitation is expected to exceed normal over most of the northern third of the nation. Subnormal amounts are anticipated over the Southern Plains and in the Southeast. In areas not specified near normal rains are in prospect.

This report released by the Weather Bureau on April 29, 1955.

Weather forecast given here is based on the official 30-day "Resume and Outlook", published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price: \$4.80 a year, \$2.40 for six months.

WEATHER FOR THE WEEK ENDING MAY 2, 1955

The week was unusually cool west of the Continental Divide, in the Ohio Valley and along the Atlantic Coast, and abnormally warm in the Mississippi Valley and Great Plains. General precipitation occurred in the Northwest and along the Pacific Coast at the beginning and end of the period, scattered showers fell in the Mississippi Valley about mid-period, and over the Northeast during the first 4 days of the period, while the week was warm and sunny in most of the South. West of the Continental Divide temperatures for the week averaged from 6° to 12° below normal. Subfreezing minima overspread all of this area except extreme southern portions on the 27th when a low of 31° was recorded at Fresno, Calif., and minima of 28°, 32° and 37° were at record low levels for so late in the season at Medford, Oreg., Red Bluff, and Bakersfield, Calif., respectively. Some snow fell over the northern Rockies and northern portions of the Great Basin on the 26th; Salt Lake City, Utah reported 5 inches. The past month has been one of the coldest Aprils on record in the Pacific Northwest.

(Weather continued on page 396). ).

CEREAL AND FORAGE INSECTS

ARMYWORM (Pseudaletia unipuncta) - LOUISIANA - Infestation becoming very severe in oat fields where soil completely shaded. Up to 22 per square foot in several fields in Madison Parish. Twelve to 16 per square foot in two large oat fields in Red River Parish. Three to 5 per square foot in 10 parishes in northern part of State, with occasional armyworm found in oats and barley in several other parishes. (Oliver). ARKANSAS - Remains relatively low in east central area. Light infestation in grain in Prairie, St. Francis, Cross and Poinsett Counties. Larvae in third instar or above indicating recently-deposited eggs from heavy moth flights not yet hatching. Heavy flights in northeastern counties during last two weeks. (Warren). ALABAMA - Reports of outbreaks continue from parts of western and northern Alabama. Specific information on damaging numbers in Perry, Dallas, Lowndes, Montgomery, Greene, and Limestone Counties. (Arant). GEORGIA - Severe damage to oats in Sumter and Houston Counties. Some fields completely destroyed before damage noted. (Jordan). TENNESSEE - Reports indicate armyworm occurring in outbreak numbers in middle Tennessee May 2. Larvae small. (Stanley, Telegraphic Report). NORTH CAROLINA - Infesting oats and fescue in Carteret County, 200 larvae per square yard in some areas, with oats destroyed and fescue cut back severely. (Weisman). DELAWARE - Numerous moths, including gravid females, in flight at Newark April 21. (Milliron). ILLINOIS - Flight moderate in eastern area, occasional moth in northern counties. One larval infestation in extreme southern Illinois. Total of 153 moths collected in light trap in eastern area April 23. (Petty et al). MISSOURI - Economic infestations of first and second instars appearing in rank small grains in southeast and southwest corners of State. Moderate moth flight continues over State. (Kyd, Thomas). KANSAS - Moths in fields of barley and wheat in central counties. Also light to moderate flights at lights in this area. No spring-generation larvae observed. (Matthew).

The following may be of interest as a comparison with armyworm infestation for the same period during past two years: 1954 - Armyworm was serious and widespread over Tennessee; seriously infesting grains at Stoneville, Mississippi; extremely severe in upper Mississippi delta of Louisiana, and heavy, 6-50 per square foot, in some areas of Arkansas. The infestation was general and widespread in southern Missouri and small larvae were appearing in southern Illinois. 1953 - Large numbers of moths were active in middle and west Tennessee, central Ohio, southern Indiana and in Illinois. Moths were also active in Delaware and a few small larvae were appearing in grain in middle Tennessee.

EUROPEAN CORN BORER (Pyrausta nubilalis) - ILLINOIS - Casual observations show 10 percent pupation at Carbondale. (Petty et al). MINNESOTA - Recent mortality survey in 28 counties in southern two-thirds of State showed average of 19 percent of borers examined were dead. This compares with 25 percent mortality in spring of 1954 and 20 percent in 1953. Mortality by State crop reporting districts is as follows: southwest 29 percent, south central 28, southeast 13, west central 8, central 15, east central 28. The surviving borers appear in very good condition and there are sufficient numbers to cause damaging infestations, especially in southwest and west central districts. (Minn. Ins. Rept. Serv.).

PEA APHID (Macrosiphum pisi) - DELAWARE - Very abundant on alfalfa and clovers. Increasing in New Castle County. (Milliron). PENNSYLVANIA - Abundant in some alfalfa fields in southern area. (Pepper). NORTH CAROLINA - Damaging alfalfa in Yadkin County. (Smith). TENNESSEE - Very abundant in alfalfa fields (all badly injured by late frost); however, fungus diseases, lady beetles and syrphids have reduced infestations. (Mullett). LOUISIANA - Over 200 per sweep in hairy vetch and Singletary peas in Tensas Parish. (Oliver). ILLINOIS - Average population for State on alfalfa and clover is 26 per 100 sweeps, highest in northeastern area with average of 52 per 100 sweeps. (Petty et al). MISSOURI - Numerous parasites and predators and above normal temperatures have kept infestations on alfalfa along Mississippi River to minimum, from 5-21 aphids per sweep. (Kyd, Thomas). KANSAS - Beginning to increase in northern area; however, infestations still considered light and remain below 200 aphids per 25 sweeps of 15-inch net. (Matthew). Populations have increased in several local areas of southwestern counties and beginning to require control. Counts of 100-200 per sweep in a few fields. (Gates). UTAH - Appearing in some alfalfa fields in northern area. (Knowlton). MARYLAND - Infestation general on alfalfa, light to heavy from Worcester to Washington County. Fungus disease high in some fields on lower Eastern Shore and appearing in central and western areas. Many winged forms noted. (U. Md., Ent. Dept.).

LEAFHOPPERS - ILLINOIS - Three specimens of Empoasca sp. collected in northeastern area. (Petty et al). DELAWARE - Aceratagallia sanguinolenta very abundant on red clover and alfalfa in some areas. (Milliron). LOUISIANA - Five potato leafhoppers (Empoasca fabae) taken at Natchitoches, 4 at Benton on alfalfa and 1 at Alexandria on burclover April 26. (Oliver).

GREEN CLOVERWORM (Plathypena scabra) - ARKANSAS - Infestations in northwestern area continue relatively heavy on alfalfa and other legumes. One to 5 per sweep of 12-inch net. Total of 70 first-generation adults collected at light trap at Fayetteville April 28. (Warren).

GRASSHOPPERS - ARIZONA - From 50 to 100 per square yard by middle of April in spots on San Carlos Indian Reservation in Graham County. Dominant species Aulocara ellioti, Melanoplus mexicanus, and M. cuneatus. Trimerotropis pallidipennis causing concern in Scottsdale area, Maricopa County, moving into borders of irrigated crops. SOUTH DAKOTA - Eggs in southeastern counties in good condition, development normal. TEXAS - First and second instar Melanoplus differentialis in southern and south-central areas by April 18. As high as 50 per square yard in Falls, McLennan and Robertson Counties. (Grasshopper Cont. Proj.). NEW MEXICO - Beginning to hatch April 23 in lower half of State. Only non-economic species involved. (Dobson). KANSAS - Infestations, range species, building up to threatening populations in rangeland in Cimmaron River Valley, southern Clark County. From 2-10 first to third instars per square yard. Spring hatch not noticeable in central Clark County. (Gates). Melanoplus spp. now found in most fields. Spring hatch progressing as predicted from last fall's surveys. Newly-hatched nymphs in all fields surveyed in 12 central and north central counties. From 1-8 nymphs per square yard in infested fields. Eggs of M. differentialis and M. bivittatus still found in abundance, indicating hatching of these species not started. (Matthew). MINNESOTA - M. femur-rubrum showing no development but eggs of M. bivittatus in coagulated stage. (Minn. Ins. Rept. Serv.). MISSOURI - M. femur-rubrum, M. mexicanus and M. bivittatus hatch continues slowly in southern half of State. From 1-12 per square yard in fence rows and field margins and 0-6 per square yard in pastures and alfalfa. Hatch of 5-10 percent of M. bivittatus eggs occurred in west central area during week. (Kyd, Thomas). ARKANSAS - Hatching of Melanoplus sp. well underway over State. (Warren). Began first week in April in south Arkansas. First and second instars in alfalfa and other forage crops in northwestern area. Numbers appear above normal for time of year. (Warren).

CUTWORMS - FLORIDA - Some heavy infestation of black cutworm (Agrotis ypsilon) and granulate cutworm (Feltia subterranea) in Everglades area, about 13 cutworms per square yard in one weedy field. (Genung, Questel). ALABAMA - Granulate cutworm reported from many sections. Damage to cotton, corn, peanuts, vegetables and other plants. (Arant). KENTUCKY - Clay-backed cutworm has been especially destructive to small grains, lespedeza, clover and alfalfa in western and south central areas. In some fields as many as 40 per square yard. (Price). GEORGIA - Moderate infestation on young peanuts following small grain stubble in Seminole County. (McGill). TENNESSEE - Feltia spp. still doing damage in scattered pasture fields over most of State. (Mullett). OHIO - Moths common in light traps at Athens. (Stehr). MISSOURI - Feltia subgothica and A. gladiaria larvae largely in last instar and damage increasing on alfalfa, clovers and pastures. Early-planted corn heavily damaged in fields where vegetation plowed under. Counts

from 0-2 per square foot in legumes and 0-3 per yard of corn row. Parasitism, mainly by Apanteles sp., from 5 to 20 percent. Light numbers of small larvae of A. ypsilon in extreme southeast; light moth flight continues over much of State. From 0-2 Peridroma margaritosa larvae per square foot in alfalfa in southern third of State. From 0-1 bronzed cutworm, nearly mature, per square yard in pastures and other grassy areas in southwest. (Kyd, Thomas). MICHIGAN - Cutworms abundant at Paw Paw. (Hutson). NEW MEXICO - Large numbers of moths in flight. (Dobson, Apr. 23). UTAH - Severely damaging alfalfa in Millard County. (Rickenbach, Knowlton). CALIFORNIA - Glassy cutworm (Crymodes devastator) found severely injuring Merion blue grass in mountainous area of Kern County and in Yolo County. Damage by this species rare in California. (Cal. Coop. Ins. Rept. Apr. 22.).

AN ARMYWORM (Leucania latiuscula) - FLORIDA - Considerable numbers on grasses at Belle Glade. Many parasitized and diseased. (Genung, Questel).

ARMY CUTWORM (Chorizagrotis auxiliaris) - UTAH - Severe injury in Promontory area of Box Elder County. (Allred).

CORN EARWORM (Heliothis armigera) - FLORIDA - Two larvae per ear on sweet corn at Vero Beach. (Burnett). LOUISIANA - Larvae per 100 sweeps in crimson clover: 27 in Lincoln Parish, 11 in Claiborne Parish and 42 in Natchitoches Parish. Three to 5 in white clover in Acadia Parish. (Oliver). ARKANSAS - Light in alfalfa. Larvae all sizes. (Warren).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - OKLAHOMA - Pupation of overwintered borers as follows: Payne County 7 percent, Pontotoc County 14 percent, Tulsa County 4 percent. Pupation also noted in Choctaw and Creek Counties. (Arbuthnot).

FALL ARMYWORM (Laphygma frugiperana) - FLORIDA - Spotty infestations on corn in Everglades area. (Genung, Questel).

A WEBWORM (probably Nomophila noctuella) - MISSOURI - Half to full-grown larvae migrating into margins of spring oats and causing moderate to heavy damage in southwest area. (Kyd, Thomas).

SUGARCANE BORER (Diatraea saccharalis) - LOUISIANA - Beginning to show increased activity in some varieties of sugarcane. Four egg masses found per man hour and 22 stalks per 200 feet of row showing feeding in Assumption and Iberville Parishes. Two to 4 stalks per 200 feet showing feeding in West Baton Rouge Parish. (Oliver).

A SEED-CORN BEETLE (Agonoderus comma) - MINNESOTA - Large numbers of adults on warm days since April 10 in Twin Cities area. (Minn. Ins. Rept. Serv.).

SUGARCANE BEETLE (Euetheola rugiceps) - LOUISIANA - Three to 6 stalks showing feeding per 200 feet of row in St. Mary, Assumption, and Iberville Parishes. (Oliver). MISSISSIPPI - Damaging corn on several farms in Webster County. Specimens from Scott County. (Hutchins). ALABAMA - Adults attacking corn in Baldwin County. (Zimmer). NORTH CAROLINA - Four percent of corn plants wilted from activity in Hyde County. (Weisman). Adults numerous in light trap in Duplin County. (Mitchell).

TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus) - CALIFORNIA - Very numerous on lower leaves of sweet corn in Orange County fields. (Campbell).

SEED-CORN MAGGOT (Hylemya cilicrura) - MISSOURI - Heavy damage to germinating corn and garden seeds in scattered localities over southern half of State. (Kyd, Thomas).

FALSE WIREWORMS (Eleodes spp.) - KANSAS - From 1-5 larvae per square foot in wheat and 1-9 larvae per square yard in corn land. Nearly all larvae full grown. (Matthew).

CHINCH BUG (Blissus leucopterus) - MISSISSIPPI - Infesting corn plants in Webster County. (Hutchins). NORTH CAROLINA - Heavy local infestation in wheat in Pender County. (Honeycutt). Adults in flight in Raleigh. (Jones). ILLINOIS - Flying generally throughout eastern area but have not become established in grain fields. (Petty et al). MISSOURI - Scattered heavy infestations, up to 22 per foot of drill row, in scattered fields of small grains in west central area. (Kyd, Thomas).

CORN ROOT WEBWORM (Crambus caliginosellus) - MISSISSIPPI - Adults swarming at lights in Forrest County. (Broome).

CORN FLEA BEETLE (Chaetocnema pulicaria) - NEW JERSEY - Noted on sweet corn in Burlington County April 23. (Merrill). ILLINOIS - Fifteen adults per 100 sweeps in bluegrass beside old corn fields in northeastern area, 19 per 100 in eastern area. (Petty et al).

GREEN JUNE BEETLE (Cotinis nitida) - FLORIDA - Two to 6 larvae per square foot damaging grass at Gainesville. (Kerr).

GREENBUG (Toxoptera graminum) - TEXAS - Light to medium widespread on wheat in Swisher, Deaf Smith and Castro Counties. Population has declined considerably in last two weeks. Hardly any in Swisher County, 50-300 still in spots in Deaf Smith and Castro Counties. (Daniels). KANSAS - Found in one field in southern Marshall County. Three aphids per 25 sweeps. (Matthew).

ENGLISH GRAIN APHID (Macrosiphum granarium) - KANSAS - Non-economic infestation found in 12 counties in north central area. From 5-12 aphids per 25 sweeps of 15-inch net in wheat and barley. (Matthew).

APHIDS - ARIZONA - Heavy infestation in wheat and other small grains in Casa Grande area, controls applied. (Ariz. Coop. Rept.). TEXAS - Medium to heavy widespread infestations of Aphis sp. on grain sorghum in Nueces County. (Cooper).

YELLOW SUGARCANE APHID (Sipha flava) - FLORIDA - Lower population in cane than a year ago at Belle Glade; only a few fields show infestation. (Genung, Questel).

ALFALFA WEEVIL (Hypera postica) - DELAWARE - Widespread moderately severe to very heavy at Middletown. Very heavy some fields between Smyrna and Bridgeville. (Milliron). PENNSYLVANIA - Adults fairly abundant in southern Franklin County. Adults and larvae in Delaware and Chester Counties. (Pepper, Menusan). UTAH - Moderately numerous throughout Box Elder County. (Knowlton, Allred). MARYLAND - From 1-15 adults per 10 sweeps in 11 fields in Frederick County. Most larvae small but damage beginning in this area. In southern Maryland and Eastern Shore damage to most unsprayed fields is heavy. From 4-20 adults per 10 sweeps and 3-17 larvae per sweep in Talbot and Worcester Counties. (U. Md., Ent. Dept.).

CLOVER LEAF WEEVIL (Hypera punctata) - ILLINOIS - Population continues to decrease, primarily due to fungus disease. Highest population, 17 per square foot, in red clover in northeastern area. Cocoon formation in central, eastern and northwestern areas. In general, forage crops growing away from the damage. (Petty et al). MISSOURI - Economic infestations now only in a few fields of alfalfa and red clover in central area. Fifty to 70 percent mortality from fungus and 5-10 percent pupation. (Kyd, Thomas). KANSAS - Light in red clover in Jackson and Nemaha Counties, 1-5 larvae per crown in infested fields. Few larvae appear infected with fungus. (Matthew).

CLOVER WEEVILS (Sitona sp.) - ILLINOIS - From 0-120 adults per 100 sweeps over State, highest in eastern area where 41 per 100 sweeps were found. (Petty et al).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - DELAWARE - Damaging red clover throughout the State. (Milliron). PENNSYLVANIA - General in southeastern area on legume hay. (Menusan). Adults abundant and mating in Warren County. (Adams). ILLINOIS - Average of 18 percent of stems infested over state, high of 28 percent in west-southwest and 25 percent in eastern area. (Petty et al).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - DELAWARE - Adults common and injurious to sweetclover at Harrington and Greenwood. (Milliron).

BEANLEAF BEETLE (Cerotoma trifurcata) - ILLINOIS - Adults in clover and alfalfa in southern half of State, 8 per 100 sweeps in eastern area. (Petty et al).

CLOVER-ROOT CURCULIO (Sitona hispidula) - KANSAS - Light infestation, 1-3 per 25 sweeps of 15-inch net, in nearly all alfalfa in central and northern Kansas. (Matthew). MARYLAND - Adults numerous in alfalfa and clover over most of State. (U. Md., Ent. Dept.).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - FLORIDA - Fairly high population at Belle Glade. Some fields of young sugarcane have 50 percent or more shoots showing dead hearts. Moths numerous. (Genung, Questel).

MEADOW SPITTLEBUG (Philaenus leucophthalmus) - DELAWARE - Conspicuous on alfalfa in Kent County, but weather has retarded development generally. (Milliron). MARYLAND - Remains generally light on alfalfa and clover in central and southern Maryland and lower Eastern Shore. Infestations heavy, from 2-42 nymphs per 10 stems, in Frederick and Washington Counties. \* MICHIGAN - Abundant at Paw Paw and Benton Harbor. (Hutson). NEW YORK - First nymphs of season in Cayuga County April 26, Wayne County April 27. (Wkly. News Lett.).

APHID

YELLOW CLOVER (Myzocallis trifolii) - OKLAHOMA - Infestation very heavy in north central area, April 30. (Bryan). Most alfalfa fields in Grady and Stephens Counties heavily infested April 16. Some fields in Grady County need replanting. (Stiles). Killing some alfalfa stands in Johnston County April 16. Also heavy in northern Marshall County. (Bower). TEXAS - Heavy widespread infestation on alfalfa in El Paso County. Considerable damage. (O'Donnell). ARIZONA - Still increasing on alfalfa in all southern areas. Difficulty in control causing concern in some areas. Reported from Wickieup, Mohave County, for first time. (Ariz. Coop. Rept.).

\* (U. Md., Ent. Dept.)

TARNISHED PLANT BUG (Lygus lineolaris) - LOUISIANA - Bugs per 100 sweeps in crimson clover: Claiborne Parish 209 nymphs and 47 adults, Natchitoches Parish 118 nymphs and 21 adults. (Oliver)  
ILLINOIS - From 0 to 100 per 100 sweeps with highest average 49 per 100 in northwestern area. (Petty et al).

A GROUND PEARL (Margarodes meridionalis) - FLORIDA - Average 300-500 per 100 cc. of soil on centipede grass at Orlando. (Kuitert); 75 nymphs per cubic inch on centipede grass at Gainesville. (Kerr).

A LEAF ROLLER (Amelia pallorana) - ILLINOIS - Average population in alfalfa for State is from 2-7 per 100 sweeps. For the past two years this insect has been found in alfalfa. (Petty et al).

### FRUIT INSECTS

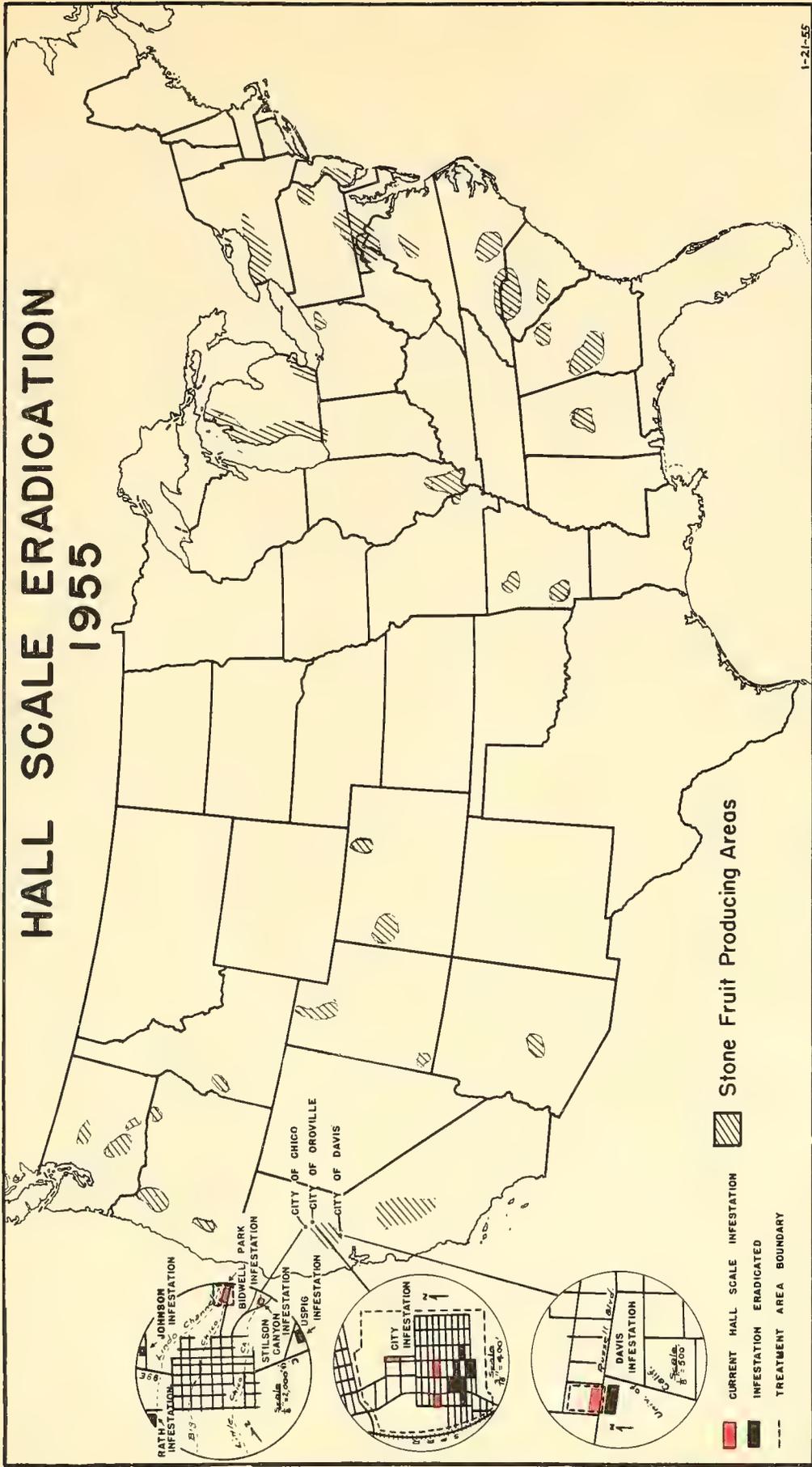
TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus) - PENNSYLVANIA - A few adults still in rough bark of apple in Adams, Franklin, and southeastern area. (Pepper, Menusan). NORTH CAROLINA - Light on apple in Alexander and Henderson Counties, Both adults and eggs present. (Turnipseed).

CODLING MOTH (Carpocapsa pomonella) - NEW YORK - Pupation under tree bands increased slightly in eastern area. (Dean). DELAWARE - First moths emerged April 20 at Woodside. (Late News). NORTH CAROLINA - First adult taken in bait pail on April 19 in Wilkes County (Turnipseed). IND. - Carryover of larvae in Vincennes area from 1954 is high and it is anticipated that first brood larval activity will be high. (Hamilton).

### STATUS OF HALL SCALE IN THE UNITED STATES

Hall scale (Nilotaspis halli) was first found in North America in 1934 at the United States Plant Introduction Gardens, Chico, California. In the old world it is found commonly all over lower Egypt and throughout the Middle East. Food plants in the United States include stone fruits and one ornamental shrub (Spirea veitchii). Preferred hosts appear to be almonds and peaches. The scale attacks both the twigs and fruit. The map on the opposite page shows the distribution of this scale in the United States.

# HALL SCALE ERADICATION 1955





OYSTERSHELL SCALE (Lepidosaphes ulmi) - NORTH CAROLINA - Light on apple in Henderson County. First crawling young appeared week of April 8-15. (Turnipseed).

EUROPEAN RED MITE (Metatetranychus ulmi) - NEW YORK - Newly-hatched larvae at Poughkeepsie April 27. Probably less than 1 percent of overwintering eggs had hatched. (Dean). Hatching in Orange County April 27 (Zaharchuk); in Niagara County April 30. (McNicholas). NEW JERSEY - On April 25, immature stages on apple foliage in several orchards from Burlington County southward. As many as 40-50 young mites per leaf in southern area even in orchards which had delayed dormant oils. (Merrill). PENNSYLVANIA - Overwintering eggs 50 percent hatched on apple in Adams, Franklin and Berks. (Pepper, Menusan). DELAWARE - Hatching commenced April 14. Generally, populations still light by April 28. Eggs in small numbers on apple foliage at Georgetown, April 26. (Late News). NORTH CAROLINA - A rather heavy infestation on apple in Alexander County. First eggs found April 13. (Turnipseed). INDIANA - In the Vincennes area counts made April 22 showed average of 183 mobile forms per 100 leaves and 28 eggs where dormant sprays not applied; in contrast to 14 mobile forms and 1 egg per 100 leaves where dormant spray applied. (Hamilton). CALIFORNIA - Showing in deciduous fruit orchards in Sacramento County, in some instances several mites per leaf. (Cal. Coop. Ins. Pest Rpt.)

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - NEW YORK - In eastern area moth flight considerably reduced by weather (Dean); egg masses April 27 in Orange County (Zaharchuk); very few eggs found April 29, Dutchess County (O'Leary); adult and egg mass in Columbia County (Poray); egg masses in Onondaga County (Vuillemot). INDIANA - Eggs began hatching April 19, in Vincennes area. First brood hatch about complete. (Hamilton). PENNSYLVANIA - Eggs hatching and larvae starting to feed on apple in Adams, Franklin, Berks and southern area. (Pepper, Menusan).

APHIDS - DELAWARE - All 3 species of aphids on apple scarce to April 21. (Late News). ILLINOIS - Small numbers of Aphis pomi in Centralia area. (Chandler).

PEAR PSYLLA (Psylla pyricola) - WASHINGTON - Eggs starting to hatch in Wenatchee area, April 24. (O'Neill). OREGON - First nymphs found April 27 at Hood River. (Ellertson). NEW YORK - Nymphs found April 29 in unsprayed trees, Niagara County (McNicholas); adults out and first eggs observed April 23, many eggs found few days later in orchards near the lake, Oswego County. (Lum).

PEAR MIDGE (Contarinia pyrivora) - NEW YORK - Flies swarming in large numbers, evening of April 20, Wayne County (Small); flies abundant on April 23 in one orchard of Oswego County. (Lum).

DUSKY STINK BUG (Euschistus tristigmus) - DELAWARE - Common at Camden on peach trees. (Late News).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - ILLINOIS - One emerged in cage at Villa Ridge. No wilted peach twigs as yet. (Chandler).

PLUM CURCULIO (Conotrachelus nenuphar) - DELAWARE - Very abundant; 46 collected by jarring 10 peach trees at Camden on April 25 compared with 9 on the 18th and 1 on the 11th. (Late News). - GEORGIA - First matured larvae left wild plum drops for pupation April 25, Fort Valley area. (Snapp). ILLINOIS - Apparently increasing. Egg laying cuts on apples in Villa Ridge area. (Chandler). MISSOURI - Activity noted in most sections of State. (Wkly Rept. Fr. Grow.).

MEXICAN FRUIT FLY (Anastrepha ludens) - TEXAS - In the Rio Grande Valley area 21 adults were trapped and 6 larval infestations were found April 1-15. These insects now being taken in practically all properties trapped regardless of the presence or absence of fruit. All larval infestations were considered light; however, on one property 192 infested grapefruit were found under 6 trees. (Mex. Fruit Fly Cont. Proj.

### TRUCK CROP INSECTS

CUTWORMS - MASSACHUSETTS - Activity started. (Crop Pest Cont. Mess.) MARYLAND - Damaged tomatoes planted after sod in Wicomico County. (U. Md., Ent. Dept.). NORTH CAROLINA - Light infestations in tobacco plant beds in Northampton, Jones, and Onslow Counties. (Scott, Jackson). FLORIDA - Feltia probably subterranea averaging up to 35 larvae per hill of watermelons at Coleman, Sumter County. - Migration apparently from lupine windbreaks. (Crall). ALABAMA - In large numbers in Monroe and Wilcox Counties. (Stanford). MISSOURI - Widespread damage to gardens in southeastern area. (Wkly. Rept. Fr. Grow.). OKLAHOMA - Numerous in truck farms, gardens and flower beds. (Bower). TEXAS - Heavy widespread on tomatoes in Shelby County. This is the heaviest attack in several years. (Wharton).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - SOUTH CAROLINA - Heavy local infestation on tobacco in Horry County. As high as 20 weevils around one newly-set plant. (Johnston). ALABAMA - Caused rather severe damage to crucifers in many areas. (Arant). In large numbers in Monroe and Wilcox Counties. (Stanford). NORTH CAROLINA - Light to moderate infestations in tobacco plant beds in Hertford, Jones, Wilson, Wayne and Onslow Counties. (Scott). MISSISSIPPI - Adults feeding on cabbage, turnips and cotton plants in Leake and Webster Counties. (Hutchins).

PEA APHID (Macrosiphum pisi) - DELAWARE - Appearing on peas in scattered areas. (Milliron). VIRGINIA - Increasing on garden peas in eastern area, and severe on alfalfa. (Brubaker, Greenwood, Hofmaster).

MEXICAN BEAN BEETLE (Epilachna varivestis) - SOUTH CAROLINA - First adults April 18 in Charleston area, 1 to 3 weeks later than in recent years. (Cuthbert, Dean).

BEAN LEAF ROLLER (Urbanus proteus) - FLORIDA - Very light populations even on untreated beans in the Everglades area. (Genung, Questel).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - FLORIDA - Infesting lima beans in Hernando County. (Brinkley).

FLEA BEETLES - MARYLAND - On potatoes in Wicomico County. " (U. of Md., Ent. Dept.). VIRGINIA - Attacking potatoes, tomatoes and cucumbers on Eastern Shore. (Brubaker, Greenwood, Hofmaster). DELAWARE - Phyllotreta cruciferae in large numbers and causing damage throughout State on young cabbage, kale and radish. (Milliron). PENN.- Phyllotreta striolata general on cabbage in southeastern area. (Menusan).

CABBAGE CATERPILLARS - NEW JERSEY - Flight of Pieris rapae continues to be heavy. Eggs common on cabbage. (Merrill). SOUTH CAROLINA - Infestations high enough to justify controls in Charleston area. Diamondback moth most prevalent. (Cuthbert, Deen).

A DARKLING BEETLE (Blapstinus sp.) - ARIZONA - Moderate damage to 60 acres of honeydew melons northeast of Mesa, April 18. (Ariz. Coop. Rept.).

CUCUMBER BEETLES - VIRGINIA - Severe on cucumbers on Eastern Shore. (Brubaker, Greenwood, Hofmaster).

SEED-CORN MAGGOT (Hylemya cilicrura) - CALIFORNIA - Infestation of squash field in Orange County, planted in trashy ground, was so severe that the field had to be replanted. Light infestations also occurred on early-planted lima beans. (Campbell).

BEEF LEAFHOPPER (Circulifer tenellus) - ARIZONA - In all fields in Salt River Valley to a greater or lesser degree and some curly top symptoms beginning to appear on cantaloup. (Ariz. Coop. Rept.)

SUGAR-BEET WIREWORM (Limonius californicus) - CALIFORNIA - Populations range from 1 to 5 per foot of bean row in untreated fields in Orange County. In a field of parsnips in Los Angeles County 5 percent of roots damaged. (Campbell).

SPIDER MITES - ARIZONA - Showing up in some fields of sugar beets grown for seed in Salt River Valley, severe in spots. (Ariz. Coop. Rept.).

POTATO FLEA BEETLE (Epitrix cucumeris) - DELAWARE - On early potatoes at Rising Sun and Bridgeville. (Milliron).

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - DELAWARE - Adults feeding on early potatoes at Ellendale and Georgetown (Milliron). SO. CAROLINA - All stages moderately abundant in most potato plantings in Charleston area. Controls underway. (Cuthbert, Deen). ALABAMA - Unusually abundant. (Arant).

GREEN PEACH APHID (Myzus persicae) - NORTH CAROLINA - Infesting tobacco plant beds in Jackson. Infestations light to moderate in Northampton and Onslow Counties. (Scott). FLORIDA - Averaging 300 per tobacco plant at Greensboro, Gadsden County. One shade tobacco field heavily infested on April 22 now under control. (May).

A MOLE CRICKET - NORTH CAROLINA - Light to moderate infestations in tobacco plant beds in Jackson, Northampton and Onslow Counties. (Scott).

CABBAGE LOOPER (Trichoplusia ni) - FLORIDA - Averaging 1 to 200 larvae per acre of tobacco in Gadsden County. Control used. (Rhoades, May). Populations appear below normal in the Everglades area. (Genung, Questel).

A CATERPILLAR (probably Apantesis sp.) - FLORIDA - Averaging 1 to 100 per square foot, attacking tobacco at Jasper. (Andrews).

HORNWORMS (Protoparce spp.) - FLORIDA - Occasional eggs and early-instar larvae collected from flue-cured tobacco at Gainesville. This is first report of season. (Kuitert).

GRUBS (Probably Cotinis nitida)- NORTH CAROLINA-Light to moderate in tobacco plant beds in Hertford, Northampton and Onslow Counties. (Scott).

CRANE FLIES - NORTH CAROLINA - Moderate to light infestations of tobacco plant beds in Onslow County. (Allgood).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - NORTH CAROLINA - Light to moderate infestation in tobacco plant beds in Warren, Hertford, Onslow and Northampton Counties, severe infestation in Jones and Wilson Counties. (Scott).

FULLER ROSE BEETLE (Pantomorus godmani) - FLORIDA - Averaging 2 adults per plant of garden crops in Santa Rosa County. (McCall).

ASPARAGUS BEETLES (Crioceris spp.) - VIRGINIA - Both asparagus and spotted asparagus beetles present and ovipositing freely on asparagus spears in the eastern area. (Brubaker, Greenwood, Hofmaster).  
DELAWARE - Few adults of C. duodecimpunctata at Smyrna. (Milliron).  
NEW JERSEY - C. asparagi continues to infest plantings heavily. (Merrill).

CARROT WEEVIL (Listronotus oregonensis) - NEW JERSEY - Active on muck-grown celery. Worse in northern than southern counties. (Merrill).

APHIDS - INDIANA - Very few found on strawberries in Orleans area in comparison with those of recent years. (Marshall). SOUTH CAROLINA - Generally light on potatoes in Charleston area. Green peach aphid most abundant. (Cuthbert, Deen).

MITES - INDIANA - Very few found on strawberries in Vincennes area in comparison with those of recent years. (Marshall). TEXAS - Medium to heavy widespread infestation of Erythraeus sp. reported on onions in Brazos Co. 4/15. (Davis, Gregg). According to available records, mites of this genus are known as predators usually.

STRAWBERRY WEEVIL (Anthonomus signatus) - DELAWARE - Noticeable injury at Thompsonville and Georgetown. (Milliron).

STRAWBERRY LEAF ROLLER (Ancylis comptana fragariae) - MICHIGAN - Abundant at Keeler, April 22. (Hutson). KANSAS - Few moths emerged in Wathena-Blair, Doniphan County, area by April 15. This is 10 to 15 days earlier than normal emergence dates for this area of the State. (Eshbaugh).

STRAWBERRY ROOT APHID (Aphis forbesi) - MICHIGAN - Abundant at Keeler, April 22. (Hutson).

STRAWBERRY APHID (Capitophorus fragaefolii) - CALIFORNIA - Still numerous in most strawberry fields in Orange and Los Angeles Counties. (Campbell).

SPITTLEBUGS - NORTH CAROLINA - A 5-10 percent infestation on strawberry in Wake County. (Jones). MARYLAND - Infesting strawberries in Baltimore County. (U. Md., Ent. Dept.)

A NITIDULID (Lobiopa insularis) - LOUISIANA - Increased activity over the entire strawberry belt. Up to 30 adults caught in trap. Up to 5 per ripe strawberry fruit in Tangipahoa Parish. (Oliver).

TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus) - CALIFORNIA - Populations on the increase in strawberry fields in Orange County. (Campbell).

THRIPS (Frankliniella sp.) - LOUISIANA - Infestations continue severe in strawberry blossoms, Tangipahoa Parish. (Oliver)

### COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Populations increasing in entire valley area. As high as 8 percent punctured squares in a few early fields. (Wene, Dean, Fuller). One weevil found on 3200 linear feet of row or at rate of 5 per acre in fifteen fields in McLennan and Falls Counties. For corresponding week in 1954 weevils found at rate of 15 per acre in 27 fields. (Parenica et al). SOUTH CAROLINA - Total of 112 weevils active in 10 hibernation cages at Florence during March and 471 in April. This compares with 15 active in March and 32 in April 1954. (Walker et al).

BOLLWORMS - TEXAS - Infestations building up throughout the lower Rio Grande Valley area. One report shows 16 percent of plants infested in Rio Hondo area. Other areas have as much as 10 percent square damage. (Wene, Dean, Fuller).

COTTON FLEAHOPPER (Psallus seriatus) - TEXAS - Seasonal emergence from hibernation cages in Waco area to April 30 was 22,486. At this time in 1954, 1953, 1952, 1951 and 1950, totals of 3,965, 7,623, 10,647, 38 and 341, respectively, had emerged from cages which contained the same host plants collected from same location. (Parenchia et al).

BROWN COTTON LEAFWORM (Acontia dacia) - TEXAS - Eight per 50 linear feet of row on seedling cotton in Burleson County. One also collected on seedling cotton in Brazos County. (Lloyd).

PINK BOLLWORM (Pectinophora gossypiella) - TEXAS - A few collected from oldest cotton in Willacy County and in the Brownsville area. (Wene, Dean, Fuller).

SALT-MARSH CATERPILLAR and CUTWORMS - TEXAS - Widespread on cotton in Matagorda County. (Pfannstiel).

THRIPS - TEXAS - Light to medium infestations in Matagorda, Ft. Bend, Nueces, San Patricio, Calhoun, Dimmit, Maverick, Williamson Counties. (Hurta, Richardson, Zieschang, Abercrombie, Massey, Cook, Kelly, Cooper). Damaging numbers in a few fields of late-planted cotton in Willacy County. (Wene, Dean, Fuller). Of 15 fields inspected in McLennan and Falls Counties the following degrees of infestation found: 8 fields, none; 6 fields, light; 1 field, medium. (Parenchia et al).

LOUISIANA - Three adult Frankliniella fusca per seedling cotton plant in Tensas Parish. (Oliver). Thrips, mainly F. fusca, in many fields in Tallulah area, 6.4 adult thrips per 20 plants in 5 fields sampled. (Gaines et al). MISSISSIPPI - Appearing in seedling cotton in some fields in Washington County. (Merkl).

SPIDER MITES - TEXAS - Medium to heavy infestation in Calhoun, Ft. Bend and Nueces Counties. (Cook, Abercrombie, Cooper). Damage in a few fields in lower valley. (Wene, Dean, Fuller).

ARIZONA - Moderately severe damage on 40 acres cotton in Eloy area. (Ariz. Coop. Rept.)

APHIDS - TEXAS - Light to heavy infestations in Calhoun, Ft. Bend and Nueces Counties. (Cooper, Zieschang, Kelly, Massey). Increasing in Willacy County, but in remaining valley area about same or decreasing due to natural control. (Wene, Dean, Fuller).

LEAF MINERS - TEXAS - Numerous on cotton and may become serious in Winter Haven area. (Richardson).

SEED-CORN MAGGOT (Hylemya cilicrura) - ALABAMA - Infesting germinating cotton seed and destroying stands of cotton in Morgan County. (Arant).

A DARKLING BEETLE (Blapstinus sp.) - ARIZONA - Severe damage on 13 acres of cotton at Tucson. (Ariz. Coop. Rept.)

#### FOREST, ORNAMENTAL AND SHADE TREE INSECTS

CALIFORNIA OAKWORM (Phryganidia californica) - CALIFORNIA - Spring brood damaging oaks in Marin County. (Cal. Coop. Ins. Rept.).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - KANSAS - Infested elms continue to be found in Riley, Clay, Morris and Wabaunsee Counties. (Matthew).

TENT CATERPILLARS - OREGON - Malacosoma disstria and M. pluviale emerging in Willamette Valley April 25. (Roth).

FOREST TENT CATERPILLAR (Malacosoma disstria) - MINNESOTA - About 50 percent hatched in Hinckley area and about 1 percent at Duluth. Problem expected to be largely confined to portions of Carlton, Pine and Chisago Counties. (Minn. Ins. Rept. Serv.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - DELAWARE - Nests numerous over State on wild cherry, sweetgum and other trees. (Milliron). MARYLAND - Infestations heaviest in recent years, especially severe in Prince Georges and Montgomery Counties. (U. Md., Ent. Dept.). MICHIGAN - Abundant at Battle Creek, Lansing, Kalamazoo and South Haven. (Hutson).

AN APHID (Cinara tujafilina) - NEW MEXICO - Causing considerable concern on arborvitae in some areas of the southern half of the State. (Dobson, Apr. 23).

SPIDER MITES (Tetranychus sp.) - ARKANSAS - Infestations general on nursery stock, heavy some instances. (Warren).

INSECTS AFFECTING MAN AND ANIMALS, ETC.

HORN FLY (Siphona irritans) - OKLAHOMA - From 300-400 per animal in southeast to 200 in northwest part of State. (Howell).  
ARKANSAS - Active and about normal, 15-30 per animal in untreated herds. (Warren). KANSAS - On cattle in Hodgeman County, average of 30 flies per animal. (Gates).

A HORSE FLY (Tabanus carolinensis) - MISSOURI - Horse flies reported in CEIR 5(17): 366 have been identified as the above species. (Kyd, Thomas).

HOUSE FLIES - SOUTH CAROLINA - Some increase in widely-scattered areas. (Nettles).

MOSQUITOES - FLORIDA - Psorophora ciliata averaging 100 adults per animal at Milton, Santa Rosa County. Has been a nuisance to man, horses, and cattle. (McCall). MINNESOTA - Aedes spencerii began emerging about April 20; A. implicatus about April 24, A. excrucians just emerging. (Minn. Ins. Rept. Serv.).

COMMON CATTLE GRUB (Hypoderma lineatum) - FLORIDA - Active in the Everglades and on lower east coast near Lake Worth. (Genung, Questel).

AMERICAN DOG TICK (Dermacentor variabilis) - DELAWARE - Adults common along roadside and in wooded areas throughout State. (Milliron). MARYLAND - In Prince Georges and Frederick Counties. (U. Md., Ent. Dept.).

A BAT BUG (Cimex adjunctus) - RHODE ISLAND - Heavy infestation in a building in South Kingstown. (Mathewson).

CORRECTION: The record of A MANGE MITE in Clearfield County, Pennsylvania, in CEIR 5(12):255 has been found to be incorrect. (Pepper).

STORED PRODUCTS INSECTS

MEALWORMS - GEORGIA - Unusually abundant in bins in which seed corn had been stored at Fort Valley. (Snapp).

LIGHT TRAP COLLECTIONS

		Pseudal. unip.	Prod. ornith.	Perid. marg.	Agrotis ypsilon	Feltia subter.	Heliopsis armig.	Proto. quin. sex.
TEXAS (County)	4/23-29	87	25	34	6	11	5	
McLennan								
L.A.	4/13-29*	13	170	12	21	180	6 (1 sp.)	
Baton Rouge	4/21-27	2	7	2	7	13	5	
Franklin	4/5-27	54	7	12	26	29	9	
St. Joseph	4/20-25	6	15	1	10	2	2	
Bunkie	4/23-29*	77	149	60	290	28	11	1
Tallahah							2	1
MISS. (Counties)	4/23-29	268	9	6	24	5	2	
Coahoma		57	57	7	64	16	7	
Humphreys		109	68	2	13	11	5	1
Oktibbeha		14	13	5	8	10	9	
Pearl River		183	36	12	45		4	
Washington								
ALA.	4/23-29	9	32			3	6	
Auburn								
GA. (County)	4/18-23	2					47	35
Tift								
S. C. (County)	4/18-24	11			21	16	5	1
Charleston	4/24-30	17					1 sp.	
Oconee	4/24-29						224	
Florence								

\* Two traps at Baton Rouge. Three at Tallulah.

LIGHT TRAP COLLECTIONS (Continued)

Pseudal. unip. Prod. ornith. marg. Agrotis ypsilon subter. Feltia armig. Heliiothis vires. Proto. quin. sex.

ARKANSAS

Hope	4/22-28	35	7	23	
Stuttgart	4/21-27	7		4	
Van Buren	4/22-28	32	3	22	
Fayetteville	4/22-28	271	20	22	8

TENN. (Counties)

Shelby	4/21-27	125		15	
Madison		84		24	
Lawrence		136		12	
Mauzy		224		20	
Robertson		64		12	
Cumberland		34		3	
Knox		13			
Green		180	2	6	

MISSOURI

Steele	4/19-25	44	17	9	
Columbia		78	5		
Stark City		336	7	1	

Other light trap collections of interest: TEXAS - McLennan County, Pectinophora gossypiella 3, A. malefida 16, LOUISIANA - Baton Rouge, Empoasca fabae 10, Euethela rugiceps 11; St. Joseph, E. rugiceps 665; Bunkie, E. rugiceps 21; Tallulah, A. malefida 20; Laphygma exigua 22; Loxostege similalis 364; Udea rubigalis 91. MISSISSIPPI - Washington County, A. malefida 24; Diacrisia virginica 31; Caenurgina erechtea 192. ALABAMA - Auburn, Agrotis malefida 17. SOUTH CAROLINA - Charleston, Laphygma frugiperda 3. TENNESSEE - C. erechtea 258; Agonoderus lecontei 1974. MISSOURI - Protoleucania albilinea 36, webworms 140.

### BENEFICIAL INSECTS

A PARASITE (Aphytis maculicornis) - CALIFORNIA - This introduced parasite is reported reducing the infestation of olive scale on privet hedges in Placer County. (Cal. Coop. Ins. Pest Rpt.)

LADY BEETLES - ILLINOIS - Adults still plentiful and highest average population is 44 per 100 sweeps in eastern area. (Petty et al).

### RECENT INTERCEPTIONS AT PORTS OF ENTRY

Of interest recently was the interception of a living adult tingid, Stephanitis pyri (F.), on Pyracantha twigs in airplane baggage from Greece at New York, N. Y. (Burnham, Petfield.) This insect has been reported injurious to apple and pear in Southern Europe, the Near East and parts of the Soviet Union. Injury is due to the feeding of the nymphs and adults on the lower surfaces of the leaves, resulting in a loss of sap and a destruction of leaf tissue. In addition, proper respiration of the leaves is hindered by the coating of insect excreta that accumulates after insect feeding. Leaf drop and a reduction in the quality and yield of the fruit occurs. In addition to apple and pear a wide variety of plants are attacked, usually Rosaceae, but occasionally others, like currant and chestnut. Hawthorn is said to be the native host plant.

Observations on the bionomics of the insect in Italy indicate that the adults hibernate under fallen leaves or in cracks in the bark of hawthorn, start feeding in April, then migrate to apple and pear. Mating then occurs, oviposition beginning in 4 or 5 days. Eggs are deposited in tissue of lower surfaces of the leaves where injured patches appear. On hatching nymphs start feeding underneath leaves. Adults appear in May and June. A second generation develops in late July and a third in September. Considerable migration occurs with adults of the third generation returning to hawthorn prior to hibernation.

S. pyri has been intercepted on previous occasions on orange, persimmon and quince from Italy and Cotoneaster from Greece. It is not known to occur in the United States. (Compiled by - Plant Quarantine Branch).

### MISCELLANEOUS

CLOVER MITE (Bryobia praetiosa) - KANSAS - Infestation in houses continues to be reported from most areas of the State. (Matthew). MINNESOTA - Large numbers in many dwellings. (Minn. Ins. Rept. Serv.).

ADDITIONAL NOTES

SOUTH CAROLINA - ARMYWORM infesting small grains over 10 square mile area in Calhoun County, April 28. (Cain, Nettles).

MAINE - Rhopalosiphum fitchii eggs hatching on apple in Kennebec County April 25. (Boulanger). Stem mothers of Macrosiphum solanifolii on swamp rose found hatched in Aroostook County April 21. (Shands, Simpson, Wave).

VIRGINIA - PEA APHIDS and ALFALFA WEEVILS are still doing heavy damage to alfalfa in many counties. Pea aphid infestations are general all over the State, some unusually heavy. Natural enemies and disease are beginning to bring some pea aphid infestations under control. ALFALFA WEEVIL infestations have been found in several additional counties. The insect has been found in most of the counties bordering North Carolina from Halifax County east. Also, infestations have been found as far west as Amherst County in the central area. Infestation in southern counties light. (Grayson, Muka, Morris). STRAWBERRY LEAF ROLLER larvae are just starting to roll leaves in the Churchland area of Norfolk County. Infestations spotted and damage medium. (Hofmaster). EASTERN TENT CATERPILLAR infestations medium on wild cherry trees in the Norfolk area. (Hofmaster). SOUTHERN PINE BEETLES and IPS BEETLES heavily damaged a stand of red pines in Rappahannock County. (Muka and Morris). COLORADO POTATO BEETLE heavy on newly-set tomato plants in Northumberland County. (Saville). SEED-CORN MAGGOT destroying corn seedlings in Lunenburg County. (Morris). In the eastern area CABBAGE APHID numerous on remnants of overwintering crucifers, also larvae of DIAMONDBACK MOTH in fair numbers on these crops; a good many IMPORTED CABBAGE WORM larvae and well distributed infestations of TURNIP APHIDS on young cabbage plants; GREEN PEACH APHID light to moderate on spinach; newly-set tomato plants on Eastern Shore had to be treated to protect them from COLORADO POTATO BEETLES. (Brubaker, Greenwood, Hofmaster). TOBACCO FLEA BEETLE severely damaging tobacco plants in beds in Louisa County. Infestations scattered but spotty over County. (Lancaster).

First Reported Records of Season (By Areas)

ARMYWORM moths, April 21, Newark, Delaware; MEADOW SPITTLEBUG nymphs, April 26 and 27, New York; CODLING MOTH adults April 20, Delaware; OYSTERSHELL SCALE first crawling young, April 8-15, North Carolina; EUROPEAN RED MITE hatching April 27 and 30, New York; PEAR MIDGE adults April 20 and 23, New York; ORIENTAL FRUIT MOTH emerged in cage, Illinois; MEXICAN BEAN BEETLE adults

April 18, South Carolina; COLORADO POTATO BEETLE adults feeding, Delaware; HORNWORMS eggs and larvae, Florida; STRAWBERRY LEAF ROLLER moths, April 15, Kansas; TENT CATERPILLARS emerging April 25, Oregon; and APPLE GRAIN APHID hatching, April 25, Maine.

Weather continued:

Warm, south winds kept temperatures above normal most of the week in the central portions of the Country. Maximum temperatures were in the 90's on several days in Texas, and during the weekend exceeded the 80° level northward to the Dakotas. In the western portions of the Great Plains strong winds during frontal passages at the beginning and end of the period caused additional soil erosion.

Rains in the northwest during the first part of the week left many fields too wet to work, despite sunny weather after the 29th. Wet soil resulting from previous rain was also reported in some sections of the Midwest. Dry, sunny weather in the South favored rapid crop growth and outside activities, but soils were drying rapidly and moisture is becoming deficient in the South and Gulf Coastal Plains. (Summary Supplied by U.S. Weather Bureau).

Request for Survey on Cotton Stem Moth

Cotton stem moth (Platyedra vilella) was first recorded in the United States in 1951 when specimens were collected at Mineola, Long Island, New York. Principal host plants are reported to be hollyhock, cotton, marsh mallow and other mallows. In the United States, however, it has been recorded only from hollyhock. In 1953, light to very heavy infestations were found at 19 locations in New York, two in Connecticut, and two in Massachusetts. In 1954, infestations were found at 14 locations in New Jersey. Damage to hollyhocks has varied from slight to almost total destruction to fruiting portions, with stems being heavily damaged at times. Tests to determine susceptibility of cotton and okra to the cotton stem moth in this Country will be made this season by ARS personnel at Farmingdale, Long Island, New York. It is hoped that voluntary survey for this insect will continue and it would be appreciated if agricultural workers in states not known to be infested would collect specimens suspected of being this species. If identification facilities are not available locally, specimens may be sent to the Economic Insect Survey Section, Plant Pest Control Branch, ARS, U.S. Department of Agriculture, Washington 25, D.C. The plate on the opposite page will help to separate larvae and pupae of P. vilella from those of other similar species associated with malvaceous plants.

Structural Characters for Recognition of Cotton Stem Moth (*Platyedra vilella* (Zell.))

The following combination of characters will separate the larvae and pupae of *Platyedra vilella* (Zell.) from those of other species associated with hollyhock and other malvaceous plants. Treatment of the adult has been omitted because characters for ready recognition in the field are not known.

LARVA:

Head - with anterior puncture  $A_2$  between anterior setae  $A_1$  and  $A_2$ , near  $A_2$ .

Prothorax (TI) - with 3 setae on the prespiracular shield.

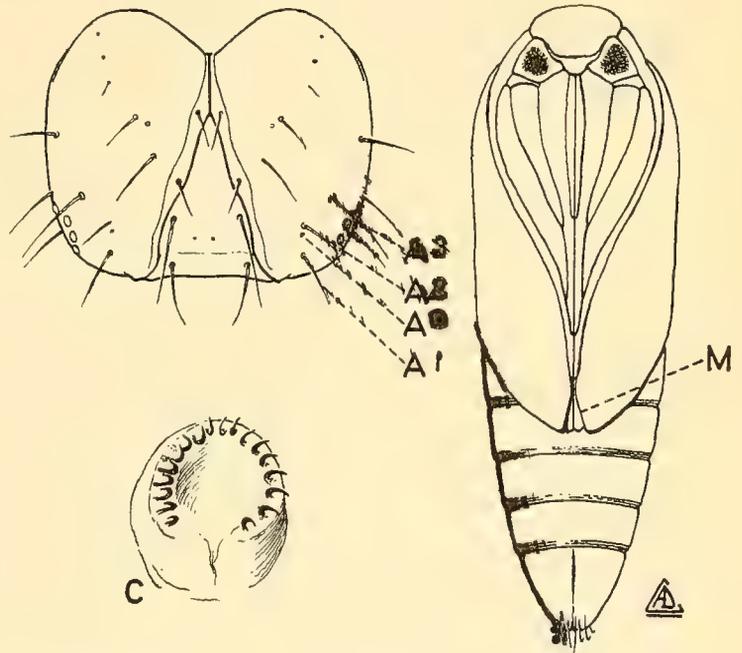
Abdominal proleg-bearing segments ( $A_{3-6}$ ) - with seta iv approximate to seta v, both on same pinaculum.

Eighth abdominal segment ( $A_8$ ) - with group vii composed of 2 setae.

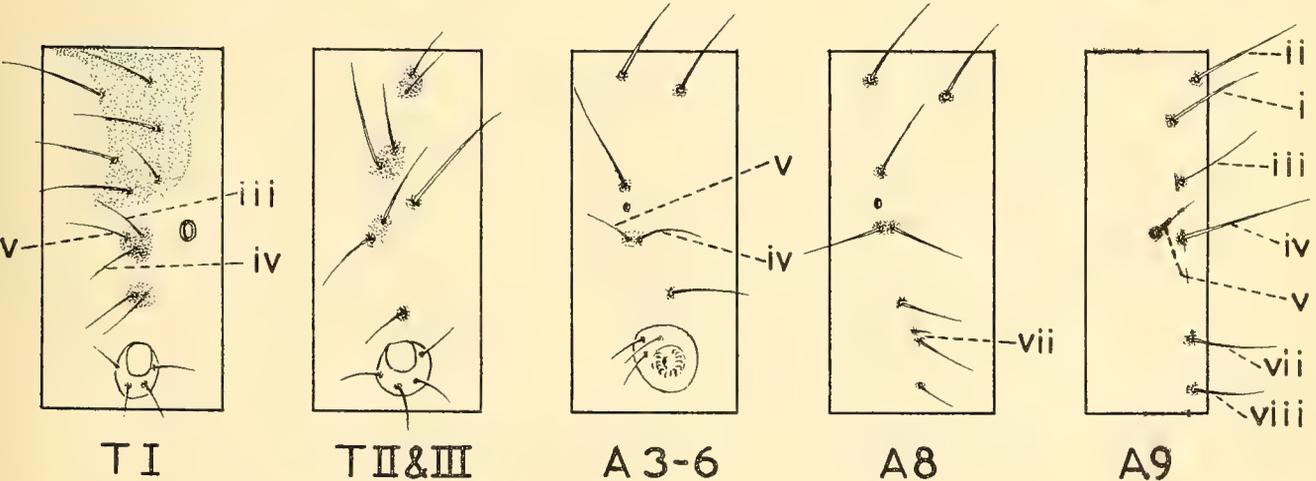
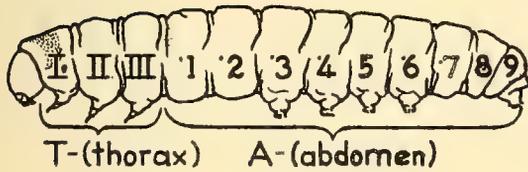
Ninth abdominal segment ( $A_9$ ) - with seta iii more slender than setae i or ii; seta vi absent.

Crochets (C) - on abdominal prolegs ( $A_{3-6}$ ) uniordinal in length, arranged in a penellipse.

PUPA: clothed with short, fine, pubescent-like hairs; anterior margins of fore wings (M) contiguous at a point near end of labial palpi, from which they are divergent (never parallel) to apices of wings. Length 8 to 10 mm.



H. W. Capps









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*Cooperative*

**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL BRANCH**

**AGRICULTURAL RESEARCH SERVICE**

**UNITED STATES DEPARTMENT OF AGRICULTURE**



# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Economic Insect Survey Section  
Plant Pest Control Branch  
Agricultural Research Service  
United States Department of Agriculture  
Washington 25, D. C.

## COOPERATIVE ECONOMIC INSECT REPORT

## Highlights of Insect Conditions

ARMYWORM infestations continue in Georgia, Louisiana and Tennessee. Infestations developing in Illinois and Missouri. Moths taken as far north as Duluth, Minnesota and Scarborough, Maine. (page 399). Also see Iowa's report (page 421) and LIGHT TRAP COLLECTIONS (page 418).

EUROPEAN CORN BORER surveys in Iowa show heavy populations. (page 421). Pupation underway in Illinois and development ahead of last year in Minnesota. (page 400).

CUTWORMS - Damage continues on several crops in many states. (pages 400, 412, 415).

ARMY CUTWORM causing extensive damage in Utah, Montana, Colorado and Nebraska also report infestations. (page 400).

YELLOW CLOVER APHID outbreaks continue in New Mexico. Heavy in several counties of Oklahoma. (page 405).

PLUM CURCULIO adults active in many fruit areas. (page 408).

WEEVIL damage to eggplant in Dade County, Florida, unusual. (page 411).

BOLL WEEVIL survival counts low in McNairy County, Tennessee. (page 414).

BROWN COTTON LEAFWORM infesting seedling cotton in eastern and south central Texas and in some fields in Natchitoches and Bossier Parishes, Louisiana. (page 415).

POTATO LEAFHOPPER survey, spring 1955. (page 406).

GYPSY MOTH hatching in New York, Connecticut, Maine and Michigan. (page 416).

Notes received too late for inclusion in body of this issue. (page 421).

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Reports in this issue are for the week ending May 6, 1955, unless otherwise designated.

WEATHER FOR THE WEEK ENDING MAY 9, 1955, . . .

Last week's weather was mostly fair with temperatures averaging above normal east of the Rocky Mountains and below normal in the far West. In the central and northern Great Plains unseasonably high temperatures for the sixth straight week and high winds for the third consecutive week intensified the drought situation.

A low pressure system centered over the northern Great Plains at the beginning of the period was responsible for light showers near the Canadian Border and maxima of 80° or above to the upper Great Lakes. On the 3d Chicago, Illinois and Detroit, Michigan, recorded early-season highs of 92° and 88° respectively. As a weak front associated with this low pressure system moved eastward temperatures rose to 87° in New York City and 90° at some nearby stations on the 5th. On the 6th as another low pressure system moved eastward along the North-Central Border on the 6th, strong southerly winds and clear skies resulted in maximum temperatures of 94° at Omaha, Nebraska, and 92° at Sioux, City, Iowa.

In the South temperatures remained at summer levels most of the week. On the 5th Augusta, Georgia, and Memphis, Tennessee, reported seasonal highs of 94°.

Cold polar air overspread the eastern third of the Country on the 8th and 9th reducing temperatures to subfreezing levels in the upper Mississippi Valley and Great Lakes region.

Severe local storms in Delaware and Dubuque Counties, Iowa, damaged buildings and utilities to the extent of \$300,000 on the 3d. On the same date tornadoes were reported in east-central and northeastern Wisconsin.

Total rainfall for the week exceeded one-half inch only in a few widely scattered localities. Rain was entirely absent in much of the Southeast, the Gulf Coastal Plains, the Rio Grande Valley, and several scattered areas in the remainder of the Country. (Summary Supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

ARMYWORM (*Pseudaletia unipuncta*) - LOUISIANA - Thirty per 100 sweeps of wheat, Acadia Parish; 4-16 per 100 sweeps of grass and clover, Claiborne Parish. (Oliver). TEXAS - Heavy on small grain and vetch in Kaufman County. (Simmons). Medium local infestation on corn in Matagorda County, extensive damage some fields. (Pfannstiel). MISSISSIPPI - Found in 3,000 acres of oats in Stoneville area, up to 23 per square foot. (Young). Many fields in delta and other locations being treated by plane. (Hutchins, May 2). GEORGIA - Moderate to heavy in small grain in Macon, Peach and Houston Counties. (J. Alden). Light to heavy in practically every county south and west of Macon, May 3. (Maxwell). Reports show infestations in corn, small grains, grasses in Terrell, Grady, Sumter, Lee, Macon, Houston, Peach, Bibb and Spalding Counties. Parasitism by braconids heavy in Sumter County, *Calosoma* larvae fairly abundant also. (Jordan). Moderate to heavy in oats over Spalding County, May 4. (Beckham). ARKANSAS - Low in all fields examined along Arkansas River to Little Rock and south to Dallas and Clark Counties. Not more than 1-2 per square foot or 5 per 20 sweeps of 12-inch net. (Warren). TENNESSEE - Widespread in grain fields and pastures throughout middle Tennessee, ranging from 1 to 6 per 10 sweeps of 12-inch net. Most larvae first and second instars. Since considerable hatching still occurring, too early to evaluate infestation. (Dozier). Found from Fayette County to Washington County. Damaging numbers some fields. Controls will be required in many areas. (Mullett). MISSOURI - Light to moderate moth flights continue over much of State. Four to 10 first to fourth instars per square foot of small grains in extreme southeast. One to 4 first and second instar larvae per square foot of barley in southwest area. (Kyd, Thomas). INDIANA - Adults have been coming to bait traps at Vincennes since April 17. Capture of adults higher than 1954 - 169 adults in 5 traps May 2. An outbreak similar to last year's seems likely. (Hamilton). ILLINOIS - Moth flight continues with occasional fields of small grains developing larval infestation, more trouble in winter oats, barley and rye than wheat. (Petty et al). MINNESOTA - One moth collected in light trap at Duluth, May 1. First record of season. (Minn. Ins. Rept. Serv.). MAINE - Flying to light at Scarborough May 2-3. (Hawkins). KANSAS - Light to moderate flights of moths at lights in east central and southeast areas. Moths in grains and grasses in this area also. Larvae, very small, resembling armyworm in a few fields in Crawford County. (Matthew).

EUROPEAN CORN BORER (Pyrausta nubilalis) - ILLINOIS - Pupating throughout State. Eighty percent pupation at Carbondale, about 25 percent in west area, 3-12 in eastern area and 0-3 in northern section. (Petty et al). MINNESOTA - Development approximately two weeks farther along than a year ago at this time. Prepupae in southeastern section. (Minn. Ins. Rept. Serv.). INDIANA - Ten percent pupation Lafayette, May 3. (Gould).

CORN EARWORM (Heliothis armigera) - ARKANSAS - Increasing in legumes, as high as 20 per 20 sweeps of net. Larvae first to third instars. (Warren). LOUISIANA - Number per 100 sweeps in crimson clover by parishes: Claiborne 100-200, West Feliciana 38, Tangipahoa 15, Washington 8. (Oliver). TEXAS - Medium widespread infestation on corn in Zavale and Dimmit Counties. (Richardson).

CUTWORMS - WASHINGTON - Euxoa ochrogaster damaging alfalfa grown for seed near Prosser. (Klostermeyer). NEW MEXICO - Considerable concern in lower Pecos Valley. (Ins. Lett., Apr. 30). TEXAS - Light general infestations on all crops in San Augustine County. (Sowell). MISSOURI - Feltia subgothica and Agrotis gladiaria continue to cause heavy damage to early-planted corn in central area. Two per square foot of grassland in southwest quarter. An Apanteles wasp has reduced population from 55-70 percent in many pastures in central and southwest areas. From 1-3 Peridroma margaritosa per square foot of alfalfa in extreme southeast area. (Kyd, Thomas). KANSAS - From 2-10 larvae, mostly full grown, per square foot in some pastures in eastern area where large areas of some pastures have been damaged. Associated with this cutworm were soil webworms (prob. Nomophila noctuella), 10-15 per square foot. (Matthew). ARKANSAS - Peridroma margaritosa infestations range from light to heavy. One field of clover in Crawford County had average of 10 per square foot. Many larvae being killed in Clark County area by virus disease. (Warren). ILLINOIS - General population in alfalfa and red clover ranges from 0-3 per square foot. (Petty et al). LOUISIANA - From 76-178 Peridroma margaritosa per 100 sweeps of crimson clover in Claiborne Parish. (Oliver). NORTH CAROLINA - Agrotis ypsilon injuring about 1.5 to 2.0 percent of corn plants in some fields in Hyde County. (Weisman). FLORIDA - Infesting crops following oats in Washington County, some crops practically wiped out. (Davis). PENNSYLVANIA - A few w-marked cutworm (Spaelotis clandestina) collected in legumes in Bedford County. (Udine). DELAWARE - Agrotis gladiaria causing conspicuous injury to red clover generally. (Milliron).

ARMY CUTWORM (Chorizagrotis auxiliaris) - UTAH - Extensive damage to small grains and alfalfa in Millard, Juab, Salt Lake, and to a lesser extent in some other counties. (Rickenbach, Parrish, Knowlton). Also damaging crops in Washington County. (Hughes).

Several hundred acres of alfalfa and small grains being severely held back by army cutworm in an area of Box Elder County. (Knowlton, Allred). Outbreaks in Sanpete County. (Funk, Grimshaw). MONTANA - Heavy infestation in Fergus County; moderate in Cascade, Chouteau, Toole, Custer Counties. (Roemhild, Apr. 26). COLORADO - Light infestation, 1 per square foot, in wheat in Cheyenne and Kiowa Counties and in alfalfa in Prowers and Bent Counties, April 25. Adults in numbers at Fort Collins, May 4. (Colo. Ins. Det. Comm.) NEBRASKA - Survey in 24 counties shows 0-16 per square foot, mostly in alfalfa or alfalfa and oats. Most larvae in fourth or fifth instars and feeding should cease by May 15 if warm weather continues. Infestations have been greater and longer this year due to prolonged egg-laying last fall. (Andersen, Apr. 29).

PALE WESTERN CUTWORM (Agrotis orthogonia) - WYOMING - Light infestation in winter wheat in Laramie County, Apr. 29. (Spackman). NEBRASKA - Second and third instars infesting wheat in Kimball County. (Andersen, Apr. 29). COLORADO - Damaging numbers requiring control in wheat in Logan County, April 25. (Colo. Ins. Det. Comm.).

ALFALFA CATERPILLAR (Colias philodice eurythema) - NEBRASKA - Averaging 5 per 25 sweeps in alfalfa, mainly full-grown larvae but a few first and second instars. Adults in all fields. (Connin).

BEEF ARMYWORM (Laphygma exigua) - TEXAS - Medium widespread infestation on corn in Fayette and Bastrop Counties. (Wipprecht).

CLOVER STEM BORER (Lancuria mozardi) - DELAWARE - Adults prevalent in clovers at Rising Sun. (Milliron).

GREEN CLOVERWORM (Plathypena scabra) - ARKANSAS - Continues predominant lepidopterous insect in legumes. Up to 35-50 per 20 sweeps of 12-inch net. (Warren). LOUISIANA - From 84-124 per 100 sweeps of clover in Claiborne Parish. (Oliver).

CHINCH BUG (Blissus leucopterus) - KANSAS - Found in several wheat and barley fields of southeast area. Fifty adults per linear foot of row in one wheat field in Bourbon County, eggs numerous and a few nymphs. About 5 adults per foot of row in other fields in this area. (Matthew). NEBRASKA - Reported in barley and oats in several east-central counties. Two to 3 per 25 sweeps on oats and alfalfa in Nuckolls and Thayer Counties. (Roselle, Andersen). ILLINOIS - Becoming established in oats and wheat. First eggs May 6. (Petty et al).

GRASSHOPPERS - KANSAS - Hatch of Melanoplus spp. continued over State. M. differentialis still to hatch. Nymphs, probably M. mexicanus, M. femur-rubrum, and a few M. bivittatus becoming numerous along fence rows, alfalfa fields and pastures in southeast area. Non-economic to light in many fields, heavier counts of 30-40 nymphs per square yard in localized areas at several stops. From second to third instars. (Matthew). NEBRASKA - First and second instar Melanoplus sp. averaging 20 per 25 sweeps in alfalfa. (Andersen). MINNESOTA - Cool wet weather slowing development in northwestern area, but a few eggs of M. bivittatus in eye spot stage and a few exposed eggs of M. femur-rubrum coagulating. (Minn. Ins. Rept. Serv.) MISSOURI - Melanoplus spp. hatch continues over southern two-thirds of State. M. mexicanus hatch practically complete in southwest while M. bivittatus and M. differentialis hatch about 45 and 5 percent complete in southern half of State. Infestation not general throughout croplands. From 3-24 nymphs per square yard. (Kyd, Thomas). TENNESSEE - Nymphs numerous in alfalfa in Maury County, 5 per sweep of 12-inch net. (Dozier).

BROWN WHEAT MITE (Petrobia latens) - NEBRASKA - Light infestation appearing in volunteer wheat in southeastern area. (Staples, Apr. 29). OKLAHOMA - Much lower in most areas. (Henderson). UTAH - Still damaging some fields of small grains in Washington County. (Hughes). Some damage in Tooele County. (Biggs). COLORADO - Light in Prowers County, medium in Bent County, Apr. 25. (Colo. Ins. Det. Comm.).

FALL ARMYWORM - (Laphygma frugiperda) - LOUISIANA - One per plant in experimental hybrid corn in East Baton Rouge Parish. (Oliver).

A GRASS JOINTWORM (Harmolita sp.) - DELAWARE - Adults exceedingly numerous in grasslands and clover fields in Kent and Sussex Counties. (Milliron).

EUROPEAN WHEAT STEM SAWFLY (Cephus pygmaeus) - DELAWARE - Adults common in cereal fields at several locations. (Milliron).

RICE STINK BUG (Solubea pugnax) - LOUISIANA - Ten to 20 per 100 sweeps of heading oats in East Feliciana and Acadia Parishes. (Oliver).

SEED-CORN MAGGOT (Hylemya cilicrura) - TENNESSEE - Causing damage in Morgan, Greene, and Knox Counties. (Dozier).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - LOUISIANA - Sixteen adults per 100 sweeps in oats East Feliciana Parish. Seriously damaging seedling corn at Calhoun. (Oliver).

MAIZE BILLBUG (Calendra maidis) - FLORIDA - Has destroyed approximately 90 percent of 20-acre corn field at Bristol, Liberty County, in past month. (Woodham).

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - FLORIDA - Averaging 10 larvae per square foot in corn at Lee, Madison County. Several fields completely destroyed. (Hamrick).

WHEAT CURL MITE (Aceria tulipae) - NEBRASKA - Population low in southeastern area. (Staples, Apr. 29).

WIREWORMS - MISSOURI - Widely-scattered fields of early-planted corn heavily damaged in central area. From 0.5 to 1.5 per yard of row in one field in Clay County. (Kyd, Thomas). WASHINGTON - Limoni spp. damaging irrigated spring wheat and barley near Prosser. (Telford).

ENGLISH GRAIN APHID (Macrosiphum granarium) - ARIZONA - Light to heavy on small grains in Maricopa and Pinal Counties, more abundant than last year. Also found in several fields of barley at Yuma. (Ariz. Coop. Rept.). OKLAHOMA - Infestation from light to very heavy in barley in McIntosh County, April 28. (Stiles). DELAWARE - Numerous isolated colonies on barley. (Milliron).

CORN LEAF APHID (Rhopalosiphum maidis) - TEXAS - Medium to heavy infestation on grain and forage sorghums in Calhoun, Matagorda, Victoria and Jackson Counties. (Bales, May, Pfannstiel).

APHIDS - TENNESSEE - Sharp decrease on small grains in central area. Syrphids numerous in most infested fields. Aphids numerous in alfalfa, from 50-100 per sweep of 12-inch net. No damage noticeable. (Dozier). INDIANA - Showing up in unusual numbers on alfalfa in southwestern area. (Davis). KANSAS - No economic infestation of Macrosiphum granarium or Toxoptera graminum observed in 15 east central and southeast counties. (Matthew). WASHINGTON - Rather abundant on fall-planted vetch near Harrah. Average of 11 coccinellids per 25 sweeps. (Landis, Schopp).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - DELAWARE - Larvae very destructive to red clover throughout State. (Milliron). PENNSYLVANIA - Adults abundant in clover in Lancaster County; first larvae in York County May 4, fairly abundant. (Pepper). ILLINOIS - From 0-30 adults per 100 sweeps in alfalfa and red clover fields. Average by section of larval infestation of stems ranged from 20-60 percent with occasional individual fields showing 100 percent infestation. (Petty et al).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - UTAH - Damaging sweetclover in Utah, Salt Lake, Davis and Weber Counties. (Knowlton, May 2.) NEBRASKA - From 3 to 5 per 25 sweeps in east-central and southern areas. (Connin, Andersen). MINNESOTA - Small numbers of adults in some fields in St. Paul area. (Minn. Ins. Rept. Serv.)

ALFALFA WEEVIL (Hypera postica) - NEW JERSEY - Very high larval and adult populations in most unsprayed alfalfa fields from Camden County south to Cape May. (Filmer). DELAWARE - First-growth alfalfa in some neglected fields almost completely ruined. (Milliron). MARYLAND - Heavy damage to unsprayed alfalfa fields, Wicomico to Montgomery Counties. Some pupae found on Eastern Shore. (U. Md., Ent. Dept.). PENNSYLVANIA - Small infestation found in Perry County. (Negley). Highest numbers of adults this year in Lancaster and York Counties, large numbers newly-hatched to half-grown larvae in untreated fields. (Pepper). COLORADO - Very little activity to April 25. (Colo. Ins. Det. Comm.). MONTANA - Active during warm spells for past month. This pest continues to spread. (Roemhild, Apr. 26). WYOMING - Adults active in Converse County. Some damage by larvae in Goshen County. (Spackman, Apr. 29).

A CLOVER HEAD WEEVIL (Hypera meles) - DELAWARE - Adults common in red clover some areas. (Milliron).

CLOVER LEAF WEEVIL (Hypera punctata) - INDIANA - Were very abundant about April 15, but nearly 100 percent were diseased. Chemical control not necessary. (Davis). ILLINOIS - From 2-12 per square foot. Prepupae and pupae throughout State. Fungus greatly reduced population. (Petty et al).

CLOVER ROOT CURCULIO (Sitona hispidula) - NEBRASKA - Increasing in alfalfa in east-central area, from 2 to 6 per 25 sweeps. (Andersen, Connin). PENNSYLVANIA - Adults collected abundantly in alfalfa and clover in Lancaster and York Counties. (Pepper).

CLOVER WEEVILS (Sitona spp.) - ILLINOIS - Average range of population 10-50 per 100 sweeps. (Petty et al).

BEAN LEAF BEETLE (Cerotoma trifurcata) - ILLINOIS - From 1 to 20 per 100 sweeps in red clover and alfalfa. (Petty et al).

LYGUS BUGS - WASHINGTON - Five adults per 25 sweeps in alfalfa and 18 per 25 on peppergrass at Wapato. Nymphs, mostly very small, on latter host. (Landis, Schopp). MINNESOTA - Adults active in alfalfa in St. Paul vicinity, 1.3 to 0.5 per sweep of 12-inch net. (Minn. Ins. Rept. Serv.).

YELLOW CLOVER APHID (Myzocallis trifolii) - ARIZONA - Generally low on alfalfa in Yuma area, but severe in Chandler-Mesa area, Maricopa County, and severe on 90 acres in Yavapai County, April 29. Light infestation 50 acres in Tonto Basin, Gila County, a new area according to reports. (Ariz. Coop. Rept.). NEW MEXICO - Continues the major insect pest of New Mexico. Epidemic proportions continuing in the Pecos and the insect is becoming more numerous in Mesilla Valley. Epidemic has appeared also in the Hatch Valley. (Ins. Lett., Apr. 30). OKLAHOMA - Large numbers in all fields in Okfuskee, McIntosh, Tulsa, Okmulgee, and Creek Counties. (Stiles). KANSAS - Infestation in Reno and McPherson Counties of central area where near-destructive population levels in localized areas in a few alfalfa fields. (Painter, Burkhardt).

PEA APHID (Macrosiphum pisi) - PENNSYLVANIA - Decreasing, parasites and predators effective. (Pepper). DELAWARE - Destructive numbers generally on alfalfa and clovers. As much as 10-15 percent control by fungus in some fields. (Milliron). MARYLAND - Light to heavy on alfalfa in central and western areas. Light on Eastern Shore due to fungus. (U. Md., Ent. Dept.). VIRGINIA - Still seriously injuring alfalfa in Norfolk area. (Brubaker, Greenwood, Hofmaster). ILLINOIS - Showing noticeable increase. Average by sections 44 to 350 per 100 sweeps. Highest population 1,280 per 100 sweeps. (Petty et al). LOUISIANA - Several moderate infestations on legumes in East and West Feliciana, Tangipahoa and St. Landry Parishes. (Oliver). MINNESOTA - From 0.1 to 1.0 per sweep in alfalfa in central and east-central areas. (Minn. Ins. Rept. Serv.). TEXAS - Widespread damage to vetch in Kaufman County. Controls applied. (Simmons). NEBRASKA - Beginning to increase in central and southern areas, from 30-60 per 25 sweeps. From 5-10 lady beetles on alfalfa. (Andersen). KANSAS - Light populations, 20-140 per 25 sweeps of 12-inch net, in nearly all fields of alfalfa in southeastern counties. No controls warranted. (Matthew). UTAH - Damage abundant in some alfalfa fields in Washington County. (Hughes, Knowlton). WASHINGTON - Five per 25 sweeps on alfalfa near Parker. One winged aphid collected. (Landis, Schopp).

TARNISHED PLANT BUG (Lygus lineolaris) - LOUISIANA - Average of 96 nymphs and 12 adults per 100 sweeps in clovers in East Baton Rouge Parish; 57 nymphs, 11 adults per 100 sweeps in clover in Tangipahoa Parish; 62-250 adults, 80-140 nymphs per 100 sweeps of clover Claiborne Parish. (Oliver). ARKANSAS - Above normal in crimson clover in Clark County, up to 30 adults and 50 nymphs per 20 sweeps with 12-inch net. (Warren). MISSOURI - From 0.5 to 1.5 per sweep on alfalfa in southeast area. (Kyd, Thomas). ILLINOIS - Highest infestation 90 per 100 sweeps, range by sections 10-56 per 100 sweeps. (Petty et al).

RAPID PLANT BUG (Adelphocoris rapidus) - DELAWARE - Nymphs abundant in clovers at Harrington. (Milliron).

MEADOW PLANT BUG (Miris dolabratus) - DELAWARE - Becoming abundant in legumes and meadows from Dover southward. (Milliron).

MEADOW SPITTLEBUG (Philaenus leucophthalmus) - DELAWARE - Prevalent in red clover generally; increasing in alfalfa in some areas. (Milliron). MARYLAND - Heavy on red clover in Queen Annes and Caroline Counties. (U. Md., Ent. Dept.). ILLINOIS - Average by sections shows range from 9 to 60 per 100 stems. (Petty et al).

SPITTLEBUGS - INDIANA - Hatching general in central area April 15. Infestations in southwestern area heavier than usual. (Davis).

A SOD WEBWORM (probably Nomophila noctuella) - MISSOURI - Large areas of drought injured pastures in southwest quarter of State killed by nearly mature larvae averaging from 6-22 per square foot. (Kyd, Thomas).

THRIPS - TEXAS - Heavy, widespread infestations on corn in Bowie County. (Lucy).

LEAFHOPPERS - NEBRASKA - Six-spotted leafhopper (Macrosteles fascifrons) increasing, mainly on wheat and oats, some on alfalfa. (Andersen). Endria inimica ranging from 20-25 per 25 sweeps on alfalfa. (Connin). ILLINOIS - Highest population of Empoasca species encountered was 22 per 20 sweeps in a field in southeastern Illinois. (Petty et al). LOUISIANA - Empoasca sp. - 111 nymphs, 58 adults per 100 sweeps on burclover in East Baton Rouge Parish. (Oliver). MISSOURI - Empoasca sp. very light, 2-4 per 10 sweeps, in alfalfa in extreme southeast. (Thomas).

POTATO LEAFHOPPER (Empoasca fabae) - MISSOURI - One specimen taken in alfalfa Pemiscot County, April 29. (Brown).

#### POTATO LEAFHOPPER SURVEY, SPRING 1955

In a survey of the Gulf States from April 6 to May 2, to check results obtained in 1954, the overwintering area for Empoasca fabae was found to be within an area bounded roughly on the north by a line drawn between Texarkana, Texas, and Fairfax, S. C. In general, males were taken at more northerly points in river valleys than in areas between rivers. These results confirm conclusions drawn from a similar survey in 1954. The western limit of the overwintering range is bounded approximately by the Brazos River Valley. As found in last year's survey, populations were very spotty and not widespread in the overwintering area, a

fact which raises the problem of why more of the apparently available breeding area is not utilized by the species.

Populations including large numbers of nymphs were found as far north as Shreveport and Monroe, La., as late as April 28. The most northern record was in the Mississippi Valley near Clarksdale, Miss., on May 1. (Young).

## FRUIT INSECTS

CODLING MOTH (Carpocapsa pomonella) - NEW JERSEY - Emergence started in some southern areas. (Merrill). PENNSYLVANIA - At Snyder 65 percent pupated on apple. (Gesell). DELAWARE - Emergence continuing. (Late News). NORTH CAROLINA - Adults now in flight in western counties. (Turnipseed). OHIO - First moth emerged May 4. (Cuthright). INDIANA - Adults began emerging at Vincennes April 26, and emergence increased daily. Weather conditions ideal for heavy oviposition. (Hamilton). ILLINOIS - Moths began emerging in cages from Villa Ridge to Carbondale about May 1. Moths increasing at Carbondale and Anna. First hatch of eggs expected May 9 or 10. (Chandler). MISSOURI - Egg-laying may soon be underway in Independence area. (Wkly, Rpt. Fr. Grow.)

APHIDS ON APPLE - PENNSYLVANIA - Aphis pomi, Anuraphis roseus and Rhopalosiphum fitchii showing wing pads in south central area, and R. fitchii abundant at Huntingdon. A. roseus tightly curling leaves. Eriosoma lanigerum fairly abundant and aerial forms on pruning cuts in south central area. (Pepper, Udine).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - RHODE ISLAND - Found April 28 on apple trees in Washington County. (Kantack). MASSACHUSETTS - Active at Amherst and eggs found on bark. (Crop Pest Cont. Mess.). NEW JERSEY - Eggs present throughout the State. (Merrill). PENNSYLVANIA - Very numerous in some apple orchards in south central area. (Pepper). NORTH CAROLINA - First adults of season taken in bait pails, May 2, Wilkes County. (Turnipseed). INDIANA - Enough egg masses noted in the Covington-Indianapolis area to warrant control measures for first-brood larvae. Infestations in Vincennes area continue light. (Hamilton). MISSOURI - Larvae in moderate numbers in a few scattered spots in St. Joseph area. (Wkly. Rpt. Fr. Grow.).

SPRING CANKERWORM (Paleacrita vernata) - RHODE ISLAND - Light numbers observed April 30 on apple trees in Washington County. (Kantack). PENNSYLVANIA - Very abundant in an unsprayed apple orchard at Huntingdon. (Udine).

CLOVER MITES (Bryobia spp.) - ARIZONA - Bryobia sp. heavy on unsprayed apple trees in Oak Creek Canyon, Coconino County, Apr. 26, injuring tender shoots. (Ariz. Coop. Rept.). OHIO - B. praetiosa heavy on unsprayed peach orchard in Ottawa County. (Rings, Brooks).

EUROPEAN APPLE SAWFLY (Hoplocampa testudinea) - NEW JERSEY - Eggs on apple blossoms in Bergen County, May 2, in unsprayed orchards. (Merrill).

TENT CATERpillARS - NEW YORK - Abundant in orchards Oswego County, some more numerous than in past 2 years. (Lum). Quite general over Westchester County on roadside and non-commercial apples. (Androsko). Common in orchards, Clinton County. (Burrell). PENNSYLVANIA - Moderate to heavy and more abundant than usual on wild cherry in central area. (Udine, Adams, Gesell). WASHINGTON - Malacosoma disstria and M. pluviale began hatching before leaves out on apple in San Juan County; fed on buds, causing more blossom injury than previously seen. First larvae observed April 10. (Baker).

CUTWORMS - WASHINGTON - In about normal numbers on young apple, peach and apricot seedlings. (Luce).

EUROPEAN RED MITE (Metatetranychus ulmi) - MASSACHUSETTS - Hatched rapidly during the week at Amherst. (Crop Pest Cont. Mess.). NEW JERSEY - Active in many orchards. (Merrill). OHIO - Hatching of overwintering eggs completed April 27. Populations greater than for several seasons. (Cutright). INDIANA - Counts made May 3, Vincennes area, showed 56 mobile forms and 641 eggs per 100 leaves where no sprays applied in contrast to 13 mobile forms and 133 eggs where dormant oils applied. (Hamilton).

PLUM CURCULIO (Conotrachelus nenuphar) - NEW YORK - Adults taken in the field, May 4, in western area. First recovery of adults in 1954 was May 3. (Smith). Cuts found on plums, May 6, Westchester County. (Androsko). Feeding punctures in Greene County. (Buckley). PENNSYLVANIA - Present in numbers on peach in south central area. (Pepper). OHIO - Infestation in northern area somewhat lighter than in 1954. Oviposition not yet observed. (Rings). INDIANA - Number of adults in unsprayed peach orchards in the Vincennes area increased in past 2 weeks. Five trees jarred in an abandoned orchard May 2 yielded 73 adults in contrast to 30 for April 19. Egg laying punctures on apple light and no severe first brood damage anticipated in commercial orchards. (Hamilton). ILLINOIS - Marked increase of curculios coming out of winter quarters in Carbondale area. This may be important to the few blocks of apples, even though the carry-over from 1954 was light. (Chandler). MICHIGAN - Abundant at East Lansing, May 2. (Hutson). MISSOURI - Considerable activity noted in the Columbia

area, also active in Independence and St. Joseph areas. Peak of egg laying probably passed but activity expected to continue for some time. (Wkly. Rpt. Fr. Grow.).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - NEW YORK - In Monroe County first adults taken in bait jars May 2. (Corey). NORTH CAROLINA - Adults in flight in western counties. (Turnipseed). MISSOURI - Few reports of twig injury. First brood probably over in Independence area. (Wkly. Rept. Fr. Grow.).

BERTHA ARMYWORM (Mamestra configurata) - WASHINGTON - Attacking peach buds in orchards near Parker. Control applied. (Landis, Schopp).

GREEN PEACH APHID (Myzus persicae) - COLORADO - Eggs hatching April 25 and stem mothers reported showing up in most peach orchards. (Colo. Ins. Det. Comm.). UTAH - Hatching in peach orchard at Payson. Moderately numerous on peach at Hurricane and Santa Clara. (Knowlton).

CAT-FACING INSECTS - UTAH - Lygus spp. & L. elisus adults fairly numerous in peach, cherry and prune orchards examined in Utah and Salt Lake Counties. (Knowlton, Barlow). OHIO - Euschistus variolarius, E. servus, E. tristigmus, E. servus euschis-  
toides depositing eggs in large numbers. Euschistus tristigmus and E. variolarius eggs hatching. (Rings, Brooks).

PEAR PSYLLA (Psylla pyricola) - WASHINGTON - Eggs starting to hatch in Wenatchee area, April 24. (O'Neill).

FRUIT TREE LEAF ROLLER (Archips argyrospila) - INDIANA - Larvae more prevalent in southern area than during past 6 years. (Hamilton).

A CATERPILLAR (Basilarchia lorquini) - WASHINGTON - Unusually abundant on fruit seedlings. (Luce).

PECAN INSECTS - FLORIDA - At Monticello, Jefferson County, moderate to heavy infestation of larvae of Acrobasis caryae on pecans, also A. caryivorella and Gretchna bolliana moderately infesting pecan seedlings. (Phillips). GEORGIA - Overwintering larvae of A. juglandis feeding on pecan foliage in Mitchell County, April 28. (Osburn).

A MITE (Tetranychus yumensis) - ARIZONA - General on citrus on Yuma Mesa, causing noticeable damage in some groves. (Ariz. Coop. Rept.).

SIX-SPOTTED MITE (Tetranychus sexmaculatus) - FLORIDA - Infestations increased and peak not expected to be reached before the middle of May. (Pratt, Thompson, Johnson).

FLORIDA RED SCALE (Chrysomphalus aonidum) - FLORIDA - Increase in activity this week and expected to continue at moderately high level for several weeks. (Pratt, Thompson, Johnson).

BLACK-HEADED FIREWORM (Rhopobota naevana) - WASHINGTON - Emergence of first brood will be at least 3 weeks late. Large carryover of eggs could develop into severe infestations in Long Beach, Grayland and Westland bog areas. (Tidrick).

### TRUCK CROP INSECTS

PEA APHID (Macrosiphum pisi) - DELAWARE - Infesting peas in many places in Kent and Sussex Counties. (Milliron). NEW JERSEY - Winged forms appearing in large numbers in alfalfa fields in southern area but as early as April 27 some migration had taken place on peas. (Merrill). VIRGINIA - In sufficient numbers on peas on the Eastern Shore to require control. (Brubaker, Greenwood, Hofmaster).

BEAN LEAF BEETLE (Cerotoma trifurcata) - MARYLAND - Adults beginning to feed on snap and lima beans on lower Eastern Shore; damage is light as yet. (U. Md., Ent. Dept.). VIRGINIA - Several adults found in a bean field in Princess Anne County May 3, and light injury is showing up on early snap bean planting. (Brubaker, Greenwood, Hofmaster). TENNESSEE - Moderate injury to snap and lima beans in Clarksville area. (Scott). MISSOURI - Active in several sections of State. (Wkly. Rpt. Fr. Grow.). ARKANSAS - On garden beans in eastern area. (Warren).

MEXICAN BEAN BEETLE (Epilachna varivestis) - VIRGINIA - First adults of season noted in a bean field in Princess Anne County May 3. (Brubaker, Greenwood, Hofmaster).

CABBAGE SEEDPOD WEEVIL (Ceutorhynchus assimilis) - WASHINGTON - Adults moderately abundant on various wild crucifers in bloom near Parker. (Landis, Schopp).

IMPORTED CABBAGEWORM (Pieris rapae) - TENNESSEE - Damaging cabbage in Nashville area. (Scott). NEW YORK - Adults quite numerous in western area and laying eggs on cabbage recently set in field. Larvae found in Eden Valley. (Kriner).

CABBAGE MAGGOT (Hylemya brassicae) - RHODE ISLAND - Adults active in cultivated fields throughout the State. (Kantack). MASSACHUSETTS - Flies very active at Amherst. Eggs reported from all areas. (Crop Pest Cont. Mess.). NEW YORK - Flies active May 1 and

heavy oviposition underway in Niagara County. (Stevenson).

APHIDS - NEW YORK - Many on cabbage in Eden Valley. (Kriner).  
MARYLAND - Potato aphids light on tomatoes, Wicomico to Caroline Counties. Heavy infestations of CABBAGE APHID on cabbage in Caroline County. (U. Md., Ent. Dept.).

STRIPED CUCUMBER BEETLE (Acalymma vittata) - MISSOURI - Moderate to heavy populations and damage to commercial acreage of watermelons, cantaloups and cucumbers in extreme southeast counties. Counts ranged from 1 to 21 beetles per hill of plants. (Kyd, Thomas). MARYLAND - Adults found feeding on newly emerged squash in Wicomico County. (U. Md., Ent. Dept.).

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - DELAWARE - Adults injuring untreated potatoes at Georgetown. (Milliron). MARYLAND - Adults quite numerous on Eastern Shore in potato and tomato fields. Laying eggs on foliage. (U. Md., Ent. Dept.)  
TENNESSEE - Larvae and adults on Irish potato in Nashville area. (Scott). MISSOURI - Active in the Independence area. (Wkly. Rpt. Fr. Grow.). ARKANSAS - Infestations general and appear about normal for time of year. (Warren).

POTATO PSYLLID (Paratrioza cockerellii) - NEBRASKA - Occurring on sprouts in cull potato piles, April 27, which is one to two weeks earlier than normal. Eggs being deposited. (Wallis). UTAH - Scarce on matrimonyvine. One adult taken in 50 net sweeps at Sandy. (Knowlton).

POTATO FLEA BEETLE (Epitrix cucumeris) - DELAWARE - Injurious in some potato plantings at Brenford and Dover. (Milliron).

POTATO APHID (Macrosiphum solanifolii) - DELAWARE - Beginning to appear on potatoes near Smyrna and on tomatoes at Bridgeville. (Milliron). WASHINGTON - Unusually abundant on winter-hardy weeds, on which winter was passed, from Yakima to Toppenish. Winged spring migrants being produced. (Landis, Schopp).

GARDEN SPRINGTAIL (Bourletiella hortensis) - DELAWARE - Abundant on potatoes in Brenford area. (Milliron).

A WEEVIL (Anthonomus varipes) - FLORIDA - Adults infesting eggplants in Dade County, cut off the blossom buds and young fruit, also fed on leaves and prevented production of fruit on experimental plantings. Although collections of the species were made earlier, it is the first note of its seriousness to eggplant production. (Wolfenbarger).

AN EGGPLANT TORTOISE BEETLE (Gratiana pallidula) - TEXAS - Local medium infestation on native night shades in Crystal City area of Zavala County. (Richardson).

FLEA BEETLES - NEW YORK - Most all greens and plants recently set in field being injured in parts of western area. (Kriner). PENNSYLVANIA - Heavy feeding on radish leaves in Centre County. (Udine). MARYLAND - Abundant on potatoes, tomatoes, cabbage Wicomico to Caroline Counties. Heavy on broccoli in Montgomery County. (U. Md., Ent. Dept.). VIRGINIA - Seem to be causing the most concern to growers on the Eastern Shore on practically all crops, such as tomatoes, potatoes, cucumbers and corn. (Brubaker, Greenwood, Hofmaster).

CUTWORMS - MARYLAND - Serious damage to tomatoes and snap beans planted after sod in Wicomico County. (U. Md., Ent. Dept.). NORTH CAROLINA - Tobacco plants in some fields in Columbus County damaged about 8 to 10 percent. (Guthrie, Rabb). Peridroma margaritosa damaged cabbage in Carteret County, 8 to 10 percent of plants affected. (Weisman). SOUTH CAROLINA - Light local infestation of watermelons in Allendale County. (Rogers). Infesting watermelons in Barnwell County, April 27. (Shelley). TENNESSEE - Continue to severely injure legumes, pastures, corn and garden crops in the Clarksville area. Many larvae pupating. (Scott). MISSOURI - Continue to cause trouble in home gardens. (Wkly. Rpt. Fr. Grow.).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - ARKANSAS - Damage increased in southeastern area on truck crops. (Warren). MISSISSIPPI - About 15 adults per recently-set tomato plant in a field in Lowndes County, damaging vegetables in Monroe County, about 12 adults per square foot in an oat field in Bolivar County. (Miller, Goodgame). ALABAMA - Abundant in various parts of the State in cruciferous crops, clovers, and vetches. (Arant). SOUTH CAROLINA - Adults injuring tobacco plants in the field near Aynor. (Allen, Hodge, Creighton).

TOBACCO WIREWORM (Conoderus vespertinus) - NORTH CAROLINA - Injury to newly-set tobacco in several localities. Damage averaged about 25 percent in Columbus County, 20 to 60 percent in Robeson County, and 20 to 95 percent in Wilson County. (Guthrie, Rabb).

TOBACCO BUDWORM (Heliothis virescens) - FLORIDA - Averaging 3 larvae per 100 experimental tobacco plants in Alachua County. Larvae varied in size from newly hatched to nearly full grown. (Tissot, Kuitert). SOUTH CAROLINA - First larva on newly-set tobacco plants noted April 29. This is an unusually early appearance. (Allen, Hodge, Creighton).

HORNWORMS (Protoparce spp.) - TENNESSEE - First tobacco hornworm adult taken in light trap, May 2. (Scott). FLORIDA - Eggs found on sun tobacco at Quincy, Gadsden County. (May). P. sexta averaged 46 larvae per 100 experimental tobacco plants in Alachua County. Many eggs and some larvae up to 1-1/2 inches in length. (Tissot, Kuitert).

CABBAGE LOOPER (Trichoplusia ni) - FLORIDA - Increasing on shade tobacco fields. (May).

GREEN PEACH APHID (Myzus persicae) - SOUTH CAROLINA - Few infestations in tobacco plant beds. Winged and wingless individuals appearing on newly-set field plants in the Florence area. (Allen, Hodge, Creighton).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - TENNESSEE - Present in small numbers in the Clarksville area. Injury to tobacco seedlings light. (Scott). SOUTH CAROLINA - Appearing in large numbers on newly-set plants throughout most of tobacco-producing areas of the State. (Allen, Hodge, Creighton). DELAWARE - On potatoes in Dover and Bridgeville areas, and feeding on newly-set tomatoes near Hartly. (Milliron).

SEED-CORN MAGGOT (Hylemya cilicrura) - NORTH CAROLINA - Recently-set tobacco in fields planted in grain previously damaged about 50 percent in Hoke County. Where tobacco did not follow grain, no damage observed. (Williford, Jones). RHODE ISLAND - Adults active in cultivated fields throughout the State. (Kantack).

MAGGOTS ON SUGAR BEETS - COLORADO - Adults of Hylemya cilicrura observed April 26 in beet fields in sufficient numbers in Weld County to be of concern. First adults of Tetanops myopaeformis taken April 29 in same County. Numbers increased daily. Both maggots caused serious reduction in sugar beet stands in some areas in 1954. With the slow germination evident this spring, these insects can be serious. (Colo. Ins. Det. Comm).

ONION MAGGOT (Hylemya antiqua) - RHODE ISLAND - Adults active in cultivated fields throughout State. (Kantack). MINNESOTA - Adults began emerging in Twin Cities area May 3, at least 10 days earlier than in 1954. About 5 flies per 20 sweeps at Brooklyn Center, May 5. (Minn. Ins. Rpt. Serv.).

THRIPS - NEW MEXICO - Building up on onions in the Mesilla Valley and injuring tips of alfalfa in the Pecos. (Ins. Lett.).

RHUBARB CURCULIO (Lixus concavus) - MICHIGAN - Eggs in rhubarb at Quincy, April 25. (Hutson).

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) - MINNESOTA - Adults first noted in St. Paul area May 4. Few noticed on onions. Averaged 2 per 20 sweeps on alfalfa-grass mixture. (Minn. Ins. Rpt. Serv.).

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) - WASHINGTON - Very heavy infestations in many hop yards of Yakima Valley. Rots originating in larval tunnels have killed high percentage of hills in infested yards. (Keene).

ASPARAGUS BEETLE (Crioceris asparagi) - DELAWARE - Present generally. Injurious to untreated plantings at Canterbury and Georgetown. (Milliron). MINNESOTA - Damaging new asparagus shoots in St. Paul area. (Minn. Ins. Rpt. Serv.) WASHINGTON - Depositing eggs on asparagus near Toppenish. (Landis, Schopp).

EUROPEAN EARWIG (Forficula auricularia) - WASHINGTON - Adults unusually abundant in gardens at Union Gap. (Landis, Schopp).

STRAWBERRY WEEVIL (Anthonomus signatus) - DELAWARE - Moderate numbers occur throughout State on wild and cultivated plants, but not unusually destructive at any point. (Milliron). MARYLAND - Heavy clipping of blossoms in one large planting, Wicomico County. Ten adults taken by sweeping. (U. Md., Ent. Dept.).

SPIDER MITES - INDIANA - Increased rather rapidly on strawberries in the Orleans area. (Marshall).

### COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Overwintered weevils appearing on cotton in pre-square stage in some fields of south central, east, central and upper coastal areas. (Davis, Martin, May 3).

#### Boll Weevil Survival Counts, McNairy County, Tennessee:

Spring count of surviving boll weevil in McNairy County is considered to be very low with an average of only 62 live weevils per acre. An average of 311 live weevil per acre was found in hibernation last fall. No live weevils were found in spring examinations of 1954. The carry-over in McNairy County is considered representative for the cotton-growing area of west Tennessee. (Locke).

BOLLWORMS - TEXAS - Scattered eggs and small larvae on pre-squaring cotton in coastal bend, south central, and eastern areas. (Davis, Martin, May 3). Fourteen Heliothis armigera moths taken in light trap week ending May 6. (Walker, Hopkins, Jernigan).

CUTWORMS - GEORGIA - Heavy infestation in cotton in Worth County. (Westbrook). MISSISSIPPI - Appearing in many cotton fields in Washington County. (Merkl). FLORIDA - Spotted cutworm (Amathes c-nigrum) averaging 6 larvae per foot of row on cotton at Jasper, Hamilton County, one and one-half acre completely destroyed. (Miller). Porosagrotis vetusta and Feltia subterranea averaging 1-5 larvae/plant infested cotton, corn and peas in Holmes County. Serious outbreak in several fields. (Russell). TEXAS - Infesting cotton in most areas. (Davis, Martin, May 3). Climbing cutworms severely damaging some cotton fields in Edcouch and Mercedes areas. (Wene, Dean, Fuller).

BROWN COTTON LEAFWORM (Acontia dacia) - LOUISIANA - Two adults taken in light trap at Natchitoches April 27. Larvae taken in 6 of 11 fields checked in Natchitoches Parish. Considerable damage in one field, threatening stand. One field infested in Bossier Parish. (Oliver). TEXAS - Reported in most fields of seedling cotton in several eastern and south central areas. (Davis, Martin).

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - LOUISIANA - Considerable damage to seedling cotton Natchitoches Parish. (Oliver).

THRIPS - ARIZONA - From 4-6 thrips, mostly adults, per plant on seedling cotton at Yuma. (Ariz. Coop. Rept.). MISSISSIPPI - Damaging early cotton in Washington County. (Merkl). LOUISIANA - Frankliniella fusca heavy on cotton in Natchitoches and Bossier Parishes. (Oliver). Light to medium in nearly all fields in Tallulah area. (Parenica et al). TEXAS - Light to medium infestations general on young cotton in several areas. Heavy in some fields in Matagorda, Calhoun, Burleson and Brazos Counties. (Davis, Martin, May 3). Injurious infestations in 7 of 18 fields inspected in McLennan and Falls Counties. (Parenica et al).

COTTON FLEAHOPPER (Psallus seriatus) - TEXAS - Increasing in lower valley, moderate in some fields of Cameron and Willacy Counties. Light scattered infestations in other areas. (Davis, Martin, May 3).

APHIDS - TEXAS - Light to medium infestations in cotton in several areas. Heavy in San Patricio and Calhoun Counties. (Davis, Martin, May 3).

COTTON APHID (Aphis gossypii) - ARIZONA - Abundant on seedling cotton in Yuma area, 10-40 per plant in 2-4 leaf stage in six fields. Spotted light infestation in three fields in Eloy area. (Ariz. Coop. Rept.).

SEED-CORN MAGGOT (Hylemya cilicrura) - NEW MEXICO - Considerable injury to cottonseed in Lake Arthur area. This insect combined with some damping off is making replanting necessary in some fields. (Ins. Lett., Apr. 30).

AN ARCTID (Callarctia phyllira) - ALABAMA - Destroyed stands of young cotton in Barbour County. (Arant).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - GEORGIA - Moderate infestation damaging seedling cotton plants in Macon County, April 27. (J. Alden).

SPIDER MITES - TEXAS - Spotted light to medium infestations in several areas. Heavy in a few fields in Matagorda, Calhoun and Fort Bend Counties. Also in Burleson County. (Davis, Martin, May 3).

#### FOREST, ORNAMENTAL AND SHADE TREE INSECTS

GYPSY MOTH (Porthetria dispar) - First hatching of gypsy moth eggs was noted in Columbia County, NEW YORK, April 20, and in Ulster and Dutchess Counties, New York, April 22. The April 20 date of hatching was the earliest ever noted in this State. Gypsy moth larvae were noted on egg clusters in Fairfield County, CONNECTICUT, April 24, but evidence hatching had taken place a day or two earlier. Aerial spraying which will involve the treatment of approximately 150,000 acres of gypsy moth infested territory within and to the west of the barrier zone in New York, commenced May 4. It is anticipated that the spraying program will be completed on or before June 15. (Gypsy & Br. Tail Moths Cont. Proj.).

MICHIGAN - Eggs hatching at Lansing, May 1. (Hutson). MAINE - Egg mass hatching Fryeburg, May 4. (Russell).

CANKERWORMS - TEXAS - Medium to heavy local infestations on mesquite and ornamentals in Brazos, Goliad, and Bexar Counties. (Gaines). MINNESOTA - Alsophila pometaria and Paleacrita vernata feeding on susceptible trees in southern and central areas. (Minn. Ins. Rept. Serv.). MICHIGAN - A. pometaria and P. vernata abundant at East Lansing, April 28. (Hutson). NEBRASKA - Paleacrita vernata very light in scattered locations on elm trees. (Roselle, Andersen). ILLINOIS - Occasional reports of severe damage by P. vernata. (Petty et al).

TENT CATERPILLARS - OREGON - Malacosoma disstria and M. pluviale about 90 percent of egg masses hatched by May 6. (Torvend).  
MINNESOTA - Second instar M. disstria general in infested area in Pine County, May 4. Small amount of hatching at Duluth, May 5. (Minn. Ins. Rept. Serv.). TENNESSEE - Infestation of wild cherry much less severe than in 1954 in Clarksville area. (Scott).

A LOOPER (Lambdina athasaria pellucidaria) - DELAWARE - Adults very abundant in pine forests in Sussex County. (Milliron).

A BARK BEETLE - COLORADO - A severe outbreak of a bark beetle, tentatively identified as Ips clouderofti, reported on pinon pine in Fremont County April 30. Several thousand acres affected. Drought conditions have augmented seriousness of the problem. (Colo. Ins. Det. Comm.).

COOLEY SPRUCE GALL APHID (Chermes cooleyi) - WASHINGTON - Unusually abundant on Douglas fir in San Juan County. (Baker).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - DELAWARE - Pupation well over 50 percent. (Milliron).

WOOLLY APPLE APHID (Eriosoma lanigerum) - TEXAS - Medium to heavy infestations on elm trees in city of Dallas. (Milikien).

A WOOLLY LARCH APHID (Chermes strobilobius) - PENNSYLVANIA - Fairly abundant on larch, in Centre County. About 50 percent of eggs hatched. (Adams).

A PINE SAWFLY (Neodiprion sp.) - ARKANSAS - Additional infestation of loblolly pine sawfly reported from Calhoun County; damage light. (Warren).

ROSE APHID (Macrosiphum rosae) - PENNSYLVANIA - Appearing in numbers on rose in Centre County. (Pepper).

SCALE INSECTS - Eur. elm scale (Gossyparia spuria) and oystershell scale (Lepidosaphes sp.) heavy throughout Goshen County. (Spackman).

LIGHT TRAP COLLECTIONS

		Pseudal. unip.	Prod. ornith.	Agrotis ypsilon	Perid. marg.	Heliothis armig. vires.	Feltia subter.
TEXAS							
Waco	4/30-5/6	9	14	3	20	3	13
L.A.							
St. Joseph	4/28-5/2	3	21	5	2	1	50
Franklin	4/28-5/4		7		6	2	29
Baton Rouge	4/30-5/6	1	24	8	1		173
Bunkie	4/26-5/3	4	8	19	2	36	2
Crowley	4/29-5/5	5	8	4	1	4	19
Tallulah	4/30-5/6*	8	79	178	27	4	12
MISS. (Counties)							
Coahoma	4/30-5/6	56	19	28	2	2	4
Humphreys		8	15	11	6	2	10
Oktibbeha		32	10	2	2	2	
Pearl River		9	22	6	7	8	9
Washington		7		11	6	2	7
GA. (County)							
Tift	4/22-30	2				13	
ALA.							
Auburn	4/30-5/6	1	45			3	2
TENN. (Counties)							
Madison	4/28-5/4	76	28		12	8	
Lawrence		72	8		24		
Maury		244	12				
Robertson		112					
Cumberland		16	4				
Greene		44			3		

\*Three traps operated

LIGHT TRAP COLLECTIONS (Continued)

		Pseudal. unip.	Prod. ornith.	Agrotis ypsilon	Perid. marg.	Heliothis armig. vires. subter.	Feltia
S. C.							
Charleston	4/25-5/2	2	3	5		4	12
Clemson	5/1-7	4					2
MD. (County)							
Montgomery	4/30-5/5	19	3	1			
IND.							
Lafayette	4/19-30	11	4	4	4		

Other collections of importance: LOUISIANA (State totals) A. malefida 30, E. rugiceps 271; (Bunkie) Acontia dacia 1; (Tallah) L. exigua 32, L. frugiperda 1, Loxostege similalis 85, Udea rubigalis 67, P. sexta 1, P. quinquemaculata 1. MISSISSIPPI (State Totals) A. malefida 4, (Stoneville) E. rugiceps 2795. ALABAMA - A. malefida 7, E. rugiceps 16. TENNESSEE - A. lecontei 1335. SOUTH CAROLINA (Charleston) - Conoderus vagus 119, L. frugiperda 1, P. sexta 3; (Clemson) Heliothis sp. 4, Ligyrus gibbosus 237. MARYLAND - L. gibbosus 10. INDIANA - Protoleucania albilinea 1, Diacrisia virginica 32, L. gibbosus 5, A. lecontei many.

Notes: First catch of corn earworm moths in Tennessee. Tobacco hornworm moth taken 1 week earlier than during 1952-54 period at Charleston, S. C. During same trapping period in 1954 in Indiana 76 armyworm moths were taken.

## INSECTS AFFECTING MAN AND ANIMALS

HORN FLY (Siphona irritans) - TEXAS - Medium local infestation on cows and horses in Harrison County. (Rose). KANSAS - Populations in southeast area averaged about 60 per unsprayed dairy animal and from 40-60 flies per range animal. (Matthew). LOUISIANA - Increasing on cattle East Baton Rouge Parish; 60 per head on 72 dairy cattle and from 200-2500 per head on 16 steers. (Oliver). NEBRASKA - Occurring over the State. (Roselle).

HOUSE FLY (Musca domestica) - ARIZONA - Building up in Yuma area. Becoming household nuisance. (Ariz. Coop. Rept.). NEBRASKA - Emerging for several days. Should build up rapidly with favorable conditions. (Roselle).

STABLE FLY (Stomoxys calcitrans) - OKLAHOMA - Average 4-8 per animal in north central area. (Howell). LOUISIANA - Average 8-12 per head on 72 cattle in East Baton Rouge Parish. (Oliver).

CATTLE LICE - TEXAS - Heavy widespread on cattle in Houston County. (Monroe).

NORTHERN CATTLE GRUB (Hypoderma bovis) - PENNSYLVANIA - Up to 20 per animal on cattle, April 30, in Clearfield County. (Adams).

SHEEP KED (Melophagus ovinus) - WYOMING - Infestation general in Albany County. (Spackman).

## STORED PRODUCTS INSECTS

STORED-GRAIN INSECTS - MONTANA - Average infestations of Laemophloeus spp., Tribolium spp., Tenebrio molitor, Enicmus minutus and Oryzaephilus surinamensis during winter months. Only one infestation of Sitophilus granarius reported. (Roemhild, Apr. 26).

## MISCELLANEOUS

CLOVER MITE (Bryobia praetiosa) - MONTANA - Some inquiries, but much less abundant than last year. (Roemhild, Apr. 26). RHODE ISLAND - Heavy population throughout State invading houses during last of April. (Kantack).

TERMITES - INDIANA - Based on records of swarmers, termites unusually active throughout State. (Davis).

ADDITIONAL NOTES

WEST VIRGINIA - (Kearneysville area) - UNSPOTTED LEAF MINER (Callisto geminatella) - Most larvae in leaf mines young, about 2nd instar development. Infestation rather severe in orchards infested during the 1954 season. EUROPEAN RED MITE - Leaf samples showed up to 10 immature forms per leaf in some orchards. One rather severe infestation of ROSY APPLE APHID and several light infestations found. (Hamstead).

OREGON - MEADOW SPITTLEBUG - Eggs began to hatch April 26 in Marion and Washington Counties. Hatching was very scattered at that time. (Hanna, Every). FILBERT LEAFROLLER (Archips rosana) overwintering eggs began to hatch May 5 in the Willamette Valley. (Every). CURRANT FRUIT FLY - First emergence noted in Washington County April 26. (Torvend).

WYOMING - CUTWORMS - Two per square foot in alfalfa causing damage in Fremont County near Riverton. (Spackman).

IOWA - EUROPEAN CORN BORER winter survival and spring infestation survey discloses populations as follows, as compared with a similar survey a year ago. Live borers per acre of corn stubble planted to oats in 1955: state average - 14,209. This compares with 4,183 in 1954 and 1,759 in 1953. Lowest populations occurred in northeast Iowa and highest populations in southwest with live borers per acre of 4,253 and 27,451, respectively. Briefly, the infestation appears approximately three times as heavy at this time as a year ago. Pupation is underway and in central Iowa approximately 17 percent of the borers have pupated as of May 9. This is noticeably in advance of a year ago, but the season otherwise, including corn plantings, is comparably advanced. There have been heavy flights of SEED-CORN BEETLES throughout State. ARMYWORM moths appeared abundant in central Iowa during past week. GRASSHOPPERS (Melanoplus bivittatus and M. mexicanus) hatching in southwest area; noticeably earlier than in more normal years. CHINCH BUGS have been observed in flight and one small grain field was observed where the bugs averaged approximately 2 per square foot. Other fields appeared free of bugs. CANKERWORMS damaging elms in south central and Des Moines areas. CUTWORMS are damaging melons in the Muscatine Island trucking area, bean leaf beetle also present. HORN FLIES are becoming numerous in central counties. (Harris).







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MAY 20, 1955

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*Cooperative*  
**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL BRANCH**

**AGRICULTURAL RESEARCH SERVICE**

**UNITED STATES DEPARTMENT OF AGRICULTURE**

# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Economic Insect Survey Section  
Plant Pest Control Branch  
Agricultural Research Service  
United States Department of Agriculture  
Washington 25, D. C.

## COOPERATIVE ECONOMIC INSECT REPORT

## Highlights of Insect Conditions

EUROPEAN CORN BORER winter survival counts from Nebraska. Moths emerging in southern Illinois, pupation underway in most areas. (pages 425, 443).

ARMYWORM situation continues to develop in Tennessee but populations not as numerous in Missouri as last year. Larvae appearing in Maryland, Delaware and Pennsylvania. (page 426). Survey of infestations in Georgia. (page 443). Also see LIGHT TRAP COLLECTIONS. (page 444).

YELLOW CLOVER APHID reported from Nebraska. Damage continues in Arizona, New Mexico and other areas. (page 429).

POTATO LEAFHOPPER appearing in Illinois. (page 430).

ARMY CUTWORM infestation widespread in Utah and South Dakota. (page 426).

A GRASS APHID recorded in California for first time. (page 431).

MEXICAN BEAN BEETLE becoming active as far north as Pennsylvania. (page 434).

CUTWORM damage continues in many States. (pages 427, 436).

COTTON FLEAHOPPER migrating to cotton in several areas of Texas. Also reported from Arkansas. (page 439).

Distribution of OLD HOUSE BORER in the United States. (after page 446).

SURVEY METHOD for Ladino clover seed midge. (page 447).

Notes received too late for inclusion in body of this issue. (page 443).

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Reports in this issue are for the week ending May 13, 1955, unless otherwise designated.

WEATHER BUREAU'S 30-DAY OUTLOOK  
Mid-May to Mid-June 1955

The Weather Bureau's 30-day outlook for mid-May to mid-June calls for temperatures to average below seasonal normals over the northeastern and southwestern quarters of the nation. Above normal temperatures are predicted in the Pacific Northwest and in the Gulf States, the Southern Plains, and middle Mississippi Valley. Near normal values are expected in unspecified areas.

Precipitation is anticipated to be above normal from the Ohio Valley to New England and also over the Southern Plateau States and Southern Plains. Subnormal amounts are expected in West Coast States and in the Southeast. In unspecified areas near normal amounts are in prospect.

This report released by the Weather Bureau on May 17, 1955

Weather forecast given here is based on the official 30-day "Resume and Outlook", published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price: \$4.80 a year, \$2.40 for six months.

WEATHER FOR THE WEEK ENDING MAY 16, 1955

Last week's temperatures averaged below normal by 3° to 6° in the Pacific Northwest, above normal by 3° to 6° in the South and 3° to 9° in the northern Great Plains, and about normal in the remainder of the Country. Moderate to heavy precipitation fell over most of the area extending from Texas, Oklahoma, Kansas, and Iowa to the Atlantic Coast, and in scattered sections of the Rocky Mountain States, but was very light elsewhere. Severe thunderstorms and some tornadoes occurred in Texas and Oklahoma on the 10th. Cold snaps occurred in the Northeast on the 10th when widespread frost was reported in the lowlands of central and southern New England and in scattered localities of New York State and again on the 15th and 16th when Montpelier, Ohio and Emporium, Pa., reported lows of 28° and 29° respectively. Lowest temperatures in the Rocky Mountain and Pacific States occurred after the passage of a low pressure trough on the 15th and 16th, Maverick, Ariz., reporting 17° on the later date. (Weather continued on page 446 ).

CEREAL AND FORAGE INSECTS

GRASSHOPPERS - TENNESSEE - Building up in scattered alfalfa fields. (Dozier). TEXAS - First and second instars heavy on range land and edges of farm land in Ochiltree County. (Timmons). Medium in pastures and along fence rows in areas of Tarrant County. (Jones). NEW MEXICO - Approximately 75 sections infested east of Rio Grande River in southern area with counts from 1 to 100 per square yard. This is a new infestation. (Ins. Lett., May 7). OKLAHOMA - Very large numbers, mainly Melanoplus differentialis, hatching in southwestern area. Reported in fields, roadsides and pastures. (Stiles, Tomlinson). KANSAS - Melanoplus spp. continue to increase in alfalfa, pastures, fence rows and roadsides throughout most of State. Heaviest in eastern counties, where as high as 60 nymphs per square yard in some local areas. Early-hatched grasshoppers approaching last instar development. (Matthew). Counts of 15 per square yard in several central counties. (Gates). As high as 30 per square yard in north central areas. (Burkhardt). NEBRASKA - Melanoplus sp. infesting alfalfa and sweetclover in southeastern area. First and third instars. (Roselle, Connin). Twenty per 25 sweeps in alfalfa in Hamilton County. (Andersen). WYOMING - Eight to 10 per square yard (overwintering species) on range land in Johnson County. (Quade). UTAH - Hatching in Grand County. (Tibbetts).

MORMON CRICKET (Anabrus simplex) - WYOMING - Five to 100 second and third instars per square yard infesting approximately 5,000 acres southeast of Sundance (Crook County). (Spackman). NEVADA - Hatch in Diamond Range of Eureka County progressing rapidly. Infestations somewhat confined to canyons; however, continued hatching closely following receding snow line. Occasional fourth instar noted. (Del Curto).

EUROPEAN CORN BORER (Pyrausta nubilalis) - MASSACHUSETTS - No evidence of winter mortality. One pupa found May 11. (Bourne). RHODE ISLAND - About 25 percent pupation in a field in Washington County. (Kantack). ILLINOIS - Moth emergence from 4 to 12 percent in southern third of State. Pupation in southern section 75 percent, central 15-25 percent, and northern 4-15 percent. (Petty et al). NEBRASKA - Winter survival survey shows average number of live borers per acre as follows: northeastern area 22,667; central area 16,482; southeast area 4,840; and south central area 871. Pupae being found in several corn-growing areas. (Andersen). SOUTH DAKOTA - First pupae of season week of May 7 in Brookings County. (Halvorson).

ARMYWORMS - SOUTH CAROLINA - Damaging small grain in Richland County. Also reported from Calhoun and Dillon Counties. (Nettles).

ARMYWORM (Pseudaletia unipuncta) - LOUISIANA - Infestations spotty, up to 6 larvae per square foot in Red River and Bossier Parishes. (Oliver). ARKANSAS - Infestations remain static and relatively low in most sections. Only a few fields have required insecticides and it is likely that some unnecessary applications were made. Infestations from 0-2 per square foot with one report of 15 per square foot from northeastern area. (Warren). TENNESSEE - Armyworms are not blanketing usual areas, but moderately serious infestations requiring controls in scattered communities in southwest and northwest counties. Fairly serious infestations in central areas. Some infestations around Knoxville will require controls. Armyworms are present in eastern third of State, but not serious enough to require controls except in occasional field. Heavy damage, where it will occur, expected to begin week of May 16. (Mullett). Hatching continues, from 1-2 larvae per square foot in east Tennessee, 5-8 per square foot in areas of Jefferson, Loudon, Monroe and Blount Counties. Larvae from first to fourth instars. Moth flights declining. (Dozier). VIRGINIA - Larvae on oats reported from southeastern area May 10. (Davich, Muka). MARYLAND - Light numbers of small larvae in barley and wheat fields in St. Marys County May 11. No serious infestation reported. (U. Md., Ent. Dept.). DELAWARE - One small larva near Bridgeville; eggs found elsewhere in Sussex County. (Milliron). PENNSYLVANIA - A few one-half grown larvae in mixed hay in Lycoming County. (Gesell). ILLINOIS - Highest count average 4 larvae per linear foot in one wheat field in southern Illinois. (Petty et al). MISSOURI - Scattered infestations over State but not nearly as numerous as last year. Parasitic wasp population exceptionally high for time of year. (Kyd, Thomas). SOUTH DAKOTA - Adults appearing at lights. This is very early. (Severin, Lofgren).

ARMY CUTWORM (Chorizagrotis auxiliaris) - UTAH - Outbreaks exceed 12,000 acres in Juab County and 15,000 in Sanpete County. Total known infested acreage for Utah estimated at 185,000 acres. (Knowlton). SOUTH DAKOTA - Infestations in alfalfa in several counties. (Lofgren).

CORN EARWORM (Heliothis armigera) - SOUTH CAROLINA - Appearing on young corn in some fields at Myrtle Beach and Florence County. (Kirk). LOUISIANA - Average per 100 sweeps of 12-inch net in crimson clover: 100-120 in Red River Parish and 29 in Natchitoches Parish. (Oliver). TEXAS - Serious problem in all untreated sweet corn in lower Rio Grande Valley area. (Wene). ARIZONA - Eggs and young larvae abundant on very early field of sweet corn at Mesa, Maricopa County. (Ariz. Coop. Rept.).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - OKLAHOMA - Pupation and emergence percentages May 12-13 by county: Cleveland 88 and 20, Pontotoc 96 and 20, Seminole 84 and 16, Tulsa 68 and 4. Emergence also noted in Payne and Pottawatomie Counties. (Arbuthnot).

CUTWORMS - PENNSYLVANIA - Agrotis gladiaria destroyed 6-8 acres legume hay in Columbia County and attacking newly-planted corn in Lycoming County. (Gesell). One acre oats destroyed in Somerset County. (Udine). Cutworms destroyed one-half of 8-acre field of alfalfa in Cumberland County (Pepper) and 3 acres of oats in Dauphin County (Menusan). TENNESSEE - Infestation in north-central area decreasing; however, severe injury still occurring in corn and gardens. (Scott). FLORIDA - Feltia subterranea destroyed ten acres of young corn in Columbia County. (Dukes). Also heavy damage to 200 acres peanuts and 30 acres corn in same county. (Mayeux, Tissot). MISSISSIPPI - A. malefida damaging corn in Forrest County. (Broome). LOUISIANA - A. ypsilon severely damaging seedling corn in Bossier Parish. Up to 25 percent of stand infested in some fields in East Baton Rouge Parish. (Oliver). MISSOURI - Cutworm damage to corn continues. Variegated cutworm still relatively light but may build up somewhat in next few weeks. (Kyd, Thomas). ARKANSAS - Peridroma margaritosa light to heavy with counts of 10 per square foot some alfalfa fields. (Warren). NEBRASKA - A. orthogonia damaging wheat in Kimball, Cheyenne and Banner Counties. Populations lower than last year, one to three per linear foot. (Hill). COLORADO - A. orthogonia averaging 5-11 larvae per linear foot of wheat row some areas through Logan County east to Nebraska line. Some injury in spring barley. (Colo. Ins. Det. Comm.).

GARDEN WEBWORM (Loxostege similalis) - LOUISIANA - This species with corn earworm and beet armyworm severely infesting one field of corn in Rapides Parish. (Oliver).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - FLORIDA - Destroyed 80 acres of corn in Gilchrist County. (Cobb). Severe damage to cowpeas at Live Oak, Suwannee County. (Crews).

CHINCH BUG (Blissus leucopterus) - ILLINOIS - Have been ovipositing in thin stands of small grains. Individual oat plants have been killed by adult feeding. (Petty et al). OKLAHOMA - Adults numerous in some corn fields in Garvin County. (Arbuthnot).

SUGARCANE BORER (Diatraea saccharalis) - LOUISIANA - Number of sugarcane stalks infested per acre: Cheneyville, Rapides Parish, 356; West Baton Rouge Parish, 145; Plaquemine, Iberville, 242; Napoleonville, Assumption Parish, 570. (Oliver).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - MISSISSIPPI - Damage to corn in Forrest County. (Sheffield).

TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus) - CALIFORNIA - Very numerous on lower leaves of sweet corn in Orange County. (Cal. Coop. Rept., Apr. 30).

HESSIAN FLY (Phytophaga destructor) - MARYLAND - Pupae very abundant on wheat in Harford and Washington Counties. (U. Md., Ent. Dept.). NEBRASKA - No evidence of spring brood in Dundy, Chase, Perkins, Lincoln, Keith, Deuel, Cheyenne and Kimball Counties. (Hamilton).

BROWN WHEAT MITE (Petrobia latens) - UTAH - Has increased in some small grains in Juab and Salt Lake Counties. (Burtenshaw, Knowlton).

THRIPS - Very abundant in wheat, oats and alfalfa. (Andersen).

RICE STINK BUG (Solubea pugnax) - LOUISIANA - General light infestation in heading oats in several parishes. (Oliver).

EUROPEAN WHEAT STEM SAWFLY (Cephus pygmaeus) - PENNSYLVANIA - Adults very abundant on wheat and on mustard flowers in Fulton County. May be peak year for this insect. (Udine).

CORN LEAF APHID (Rhopalosiphum maidis) - TEXAS - Medium to heavy widespread on grain sorghums and corn in Calhoun and Victoria Counties. (May, McCombs).

CORN FLEA BEETLE (Chaetocnema pulicaria) - ILLINOIS - Population per 100 sweeps: (beside old corn fields) northeastern 13.7, eastern 4.6; (in grain) eastern 3.3, western 3.5. (Petty et al).

BILLBUGS - SOUTH CAROLINA - Not as serious on corn as in past several years. (Kirk). ARIZONA - Calendra phoeniciensis has caused some damage to seedling hegari on 40 acres in Yuma County. This insect has been regarded in Arizona principally as a pest of Bermuda grass. (Ariz. Coop. Rept.)

SUGARCANE BEETLE (Euetheola ruficeps) - LOUISIANA - Average of 164 stalks of sugarcane infested per acre in fields examined in Rapides, West Baton Rouge, Iberville, and Assumption Parishes. (Oliver). MISSISSIPPI - Damage to corn in Forrest County. Total of 800 adults caught in light trap in one night in Oktibbeha County. (Broome, Hunsucker). ARKANSAS - Attacking corn in southeastern area. Severe some fields in Ashley-Chicot Counties area. (Warren). TENNESSEE - About 4,000 beetles taken in light trap during week in Madison County, large flight in Shelby County. Damage to young corn in some areas of west Tennessee can be expected. (Dozier). SOUTH CAROLINA - Up to 80 percent loss in stand at Myrtle Beach. (Kirk).

WIREWORMS - NORTH DAKOTA - From 0-1.2 per square foot in some fields. One field of wheat in Cass County required reseeded. (Goodfellow). WASHINGTON - Very little damage by Great Basin wireworm (Ctenicera pruinina noxia) on early-planted winter wheat; 0-9 plants killed per 15

yards of drill row in 14 fields. Twenty percent of stand destroyed in untreated late-planted winter wheat in Adams County. Damage to spring wheat becoming apparent. (Harwood).

YELLOW CLOVER APHID (*Myzocallis trifolii*) - CALIFORNIA - Collected on alfalfa in Fresno County. First record north of Kern County. (Armitage). Reported heavy enough for first time to require treatment in Los Angeles County. Light to heavy San Bernardino County. (Coop. Ins. Pest Rept. Apr. 30). ARIZONA - Continues abundant on alfalfa in southern area except where controlled regularly. Has been abundant in Greenlee County area since last November. - Predators low in all areas. (Ariz. Coop. Rept.). NEW MEXICO - Continues major insect pest of New Mexico. (Ins. Lett.). KANSAS - Additional reports of infestation from south central counties. Some reports indicate populations of economic importance; however, in some cases first hay crop will be cut before insecticidal controls begin. No *M. trifolii* observed in eastern and north central areas. (Matthew). OKLAHOMA - Very much lower than last week in Stillwater area due to predators. (Fenton). Very severe in Garvin County, some hay baling being discontinued due to honeydew. (Stiles, Tomlinson). NEBRASKA - Averaging 50 per 25 sweeps in red clover and alsike clover in Johnson County. From 10-15 per 25 sweeps in sweetclover in Gage County and 2-3 per 25 sweeps in mixture of red clover, sweetclover and alfalfa in Lancaster County. (Connin, Roselle). Three to 6 per 25 sweeps in sweetclover in Logan County. (Andersen). TEXAS - Heavy widespread on alfalfa and clovers in Burleson and Brazos Counties. Some fields abandoned for hay production because of honeydew. (Wipprecht, Coad, Davis, Randolph).

PEA APHID (*Macrosiphum pisi*) - DELAWARE - Remains abundant on forage legumes, conspicuous damage some areas. (Milliron). MARYLAND - From light to heavy on alfalfa in central and western areas. Over 600 per sweep on one field in Baltimore County. (U. Md., Ent. Dept.). ILLINOIS - Maximum population in western section where average was 751 per 100 sweeps. (Petty et al). NEBRASKA - From 125-200 per 25 sweeps in east central and Platte Valley areas to 6-10 in Niobrara River area on alfalfa. (Andersen). KANSAS - Found in nearly all alfalfa in Washington and Republic Counties, up to 300-350 per sweep in a few local areas. (Burkhardt). TEXAS - Medium to heavy widespread on vetch and clover in Robertson County. Increasing despite large numbers of beneficial insects. (Wipprecht). CALIFORNIA - Heavy in San Bernardino alfalfa fields. (Cal. Ins. Rept., Apr. 30). UTAH - Damaging alfalfa in Kane County. (Rose, Knowlton). WYOMING - Thirty to 40 aphids per 10 sweeps on alfalfa in Goshen County. (Spackman).

COWPEA APHID (*Aphis medicaginis*) - ARKANSAS - Infestations have been general but light in alfalfa and clover fields. (Warren).

LEAFHOPPERS - RHODE ISLAND - Adults appearing on clover and alfalfa. (Kantack). NEBRASKA - From 20-25 Macrosteles fascifrons per 25 sweeps and 15-30 Aceratagallia uhleri per 25 sweeps on wheat and oats in Platte Valley and Niobrara River areas. (Andersen). From 20-25 Endria inimica per 25 sweeps in alfalfa in Lincoln area. (Connin).

MEADOW SPITTLEBUG (Philaenus leucophthalmus) - RHODE ISLAND - Few nymphs in alfalfa in southwest area. (Kantack). PENNSYLVANIA - Heavy infestation on oats Northumberland County. (Pepper). DELAWARE - Abundant on red clover in many places and increasing on alfalfa. (Milliron). ILLINOIS - Average infestation is 26 per 100 stems for State. Average for central and northeastern areas is 45 to 50 per 100 stems. (Petty et al).

ALFALFA WEEVIL (Hypera postica) - NEW JERSEY - Collected in Sussex and Warren Counties. (DeBlois, Merrill). DELAWARE - Injury increasing on all untreated older alfalfa. (Milliron). MARYLAND - Damage by larvae to unsprayed alfalfa continues heavy in most sections. New adults appearing. (U. Md., Ent. Dept.). PENNSYLVANIA - All stages in alfalfa in Chester and Delaware Counties. Heaviest infestations found in Berks County, a few in Dauphin and Lebanon Counties. (Menusan). COLORADO - Larvae appearing in alfalfa in Weld County May 5. Substantial population of the parasite, Bathyplectes curculionis, along with weevil larvae in western area. (Colo. Ins. Det. Comm.). UTAH - Control operations underway with substantial acreages being treated in most counties. (Knowlton).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - DELAWARE - Much injury to red clover at all locations. (Milliron). ILLINOIS - Maximum of 53 percent of stems found infested by larvae in northeastern section. (Petty et al).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - NORTH DAKOTA - Adults notching leaves of mature plants in many localities. (Goodfellow). NEBRASKA - Average per 25 sweeps in sweetclover: 20 in Gage County, 8 in Logan County. (Connin, Andersen).

POTATO LEAFHOPPER (Empoasca fabae) - ILLINOIS - Definitely collected from southwestern, southern and eastern areas. (Petty et al).

TARNISHED PLANT BUG (Lygus lineolaris) - NEBRASKA - Per 25 sweeps on alfalfa: 15-30 in east central and Platte Valley areas and 12-25 in Niobrara River area. (Andersen). WYOMING - Ten adults per 100 sweeps on alfalfa in Goshen County. (Spackman).

CLOVER MITE (Bryobia praetiosa) - NEVADA - Economic damage to field of alfalfa in Churchill County. (Lauderdale). UTAH - Infestation high on alfalfa in Long Valley, Kane County. (Rose).

VAGABOND CRAMBUS (Crambus vulgivagellus) - ARKANSAS - Fields of clover and fescue in north central area damaged heavily. (Warren).

A CLOVER HOPPER (Tortistilus inermis) - NEW MEXICO - Large numbers in alfalfa in Dona Ana County. (Ins. Lett., May 7).

BEAN LEAF BEETLE (Cerotoma trifurcata) - ILLINOIS - Becoming more abundant. Average population in clover fields in western area is 8.6 per 100 sweeps. (Petty et al). ARKANSAS - Infestations general over northern half of State. Severe in some soybean fields of north-eastern area. Up to 5 per foot of row in Mississippi County. (Warren).

A BLUEGRASS APHD (Rhopalosiphum poae) - CALIFORNIA - Heavy damaging infestation found on Merion bluegrass in Kern County March 8. First record of aphid in California. (Armitage).

SPITTLEBUGS - NEW YORK - Activity increasing considerably in Ulster County; controls underway on alfalfa and birdsfoot trefoil. (Palmer).

### FRUIT INSECTS

CODLING MOTH (Carpocapsa pomonella) - NEW YORK - Pupation under tree bands in eastern area increasing. (Dean). MARYLAND - Began to emerge from overwintering cages, May 10, at Hancock. (U. of Md., Ent. Dept.). OHIO - Light emergence with little or no egg laying to May 12. (Cutright). ILLINOIS - Heavy emergence May 5-7 at Anna and Carbondale indicates heavy hatch soon. (Chandler). First larvae May 9 on unsprayed apple in Carbondale area. (Chandler; Arnold). MISSOURI - Larvae in Columbia area, May 7. Additional reports of new entries from St. Joseph and Independence areas. (Wkly. Rpt. Fr. Grow.). KANSAS - Activity started for northeast section. First moths of 1955 season taken from cages May 4 Doniphan County. (Eshbaugh). COLORADO - First emergence May 5; last season April 22. Numbers low and scattered in western area. (Colo. Ins. Det. Comm.). OREGON - First moth of season found in bait pan May 9, Medford area. (Gentner).

EUROPEAN RED MITE (Metatetranychus ulmi) - WASHINGTON - Hatching May 4 to 9 in Wenatchee area. (O'Neill). OREGON - First larvae noted May 9 on apples at Hood River and on pear at Medford. (Ellertson, Gentner). CALIFORNIA - Some medium infestations on deciduous fruit orchards in Santa Cruz County. (Cal. Coop. Ins. Rpt. Apr. 30). OHIO - Oviposition by first generation nearing completion, May 12. Infestation varies widely in different orchards. (Cutright). PENNSYLVANIA - In Tioga County 300 mites per leaf in an unsprayed apple orchard. (Gesell). NEW YORK - First summer eggs at Poughkeepsie, May 14. Heavy oviposition may be expected for next several days. (Dean). MARYLAND - Heavy populations in some orchards reaching 50 mites per leaf, Hancock, May 10. (U. Md., Ent. Dept.). MAINE - First generation larvae found May 12 on apple foliage at Monmouth. (Boulanger).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - NEW JERSEY - Considerable activity in northern and southern areas. (Merrill). DELAWARE - First injury of the season to peaches. (Late News). CALIFORNIA - Large numbers of overwintering moths emerged during March and April in several small peach orchards south of Kingsburg. These infestations are in Fresno, Kings and Tulare Counties, and where damage for the State was heavy in 1954. (Cal. Coop. Ins. Pest Rpt.)

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - NEW YORK - Trap captures continued heavy but number of eggs remains small. Hatching occurred May 10 and 12 in eastern area. (Dean). Hatching in Niagara County May 12, Orleans County May 13 and May 11 in Monroe County. (Wkly. News Lett.). MARYLAND - Practically all first-brood eggs hatched, Hancock. (U. Md., Ent. Dept.). MISSOURI - Although practically nonexistent for last two years, is evidently appearing again. Damage occurred in an orchard in the northwestern area. Infestations appear to be more noticeable on apples with large leaves. (Wkly. Rpt. Fr. Grow.). COLORADO - Emerging in large numbers, May 5, western area. (Colo. Ins. Det. Comm.).

PLUM CURCULIO (Conotrachelus nenuphar) - MASSACHUSETTS - On May 12, 36 curculios collected and 35 on May 16, Amherst area. (Crop Pest Cont. Mess.). NEW YORK - Emerging for last 10 days in western area but cool weather has retarded activity. First oviposition scars May 13, Geneva. (Smith). PENNSYLVANIA - Light infestation generally on apple, cherry, plum in Snyder County. (Gesell). DELAWARE - First injury to peach recorded for season. (Late News). MISSOURI - Activity greater this year than in past 2 years. Adult activity dropped

off sharply in all areas. (Wkly Rpt. Fr. Grow.). OHIO - Ovipositing in plums on May 10. Insects much more numerous than in preceding weeks. (Rings). KANSAS - Considerable activity on peaches and apples in northeastern area. (Eshbaugh).

SPIDER MITES - NORTH CAROLINA - First eggs from overwintering adults of Tetranychus schoenei noted in Alexander County on apple trees. (Turnipseed, Farrier). UTAH - Brown mite hatching in numbers in many orchards throughout Utah. Most dominant species on most fruit trees. (Knowlton).

TARNISHED PLANT BUG (Lycus lineolaris) - MAINE - Attacking apple fruit buds at Monmouth, May 3. (Boulanger).

EYE-SPOTTED BUD MOTH (Spilonota ocellana) - PENNSYLVANIA - Moderate infestation of full-grown larvae on apple in Beaver County. (Adams).

FLATHEADED APPLE TREE BORER (Chrysobothris femorata) - OKLAHOMA - Active. (Bieberdorf).

GREEN PEACH APHID (Myzus persicae) - COLORADO - Populations building up in unsprayed orchards in western areas. (Colo. Ins. Det. Comm.). UTAH - Moderately numerous on peaches at Moab. (Tibbetts).

A LEAF MINER (Lithocolletis sp.) - OREGON - First eggs on apple leaves, May 9, Medford area. Adults very abundant this spring on trunks of apple trees. (Gentner).

AN UNSPOTTED TENTIFORM LEAF MINER (Callisto geminatella) - MARYLAND - Populations heavy in a few isolated orchards at Hancock. Up to 6 larvae per leaf in one orchard. (U. Md., Ent. Dept.).

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) - ARIZONA - Adults abundant around dooryard plantings of grape at Tucson, May 6. (Ariz. Coop. Rpt.).

GRAPE FLEA BEETLE (Altica chalybea) - PENNSYLVANIA - Large numbers of larvae on backyard grapes in Greene County. (Udine).

PECAN NUT CASEBEARER (Acrobasis caryae) - TEXAS - Medium widespread on pecans in Matagorda County. Attack on nuts beginning. (Pfannstiel).

A FILBERT APHID (Myzocallis coryli) - OREGON - Building up on filberts in Canby area. Untreated trees in 1954 now have average populations of 23 per leaf. (Ellertson).

CLIMBING CUTWORMS - UTAH - Extremely numerous and causing some damage in stone fruit orchards in North Ogden, May 7. (Gerber, Davis). Damaging orchards in some areas of Box Elder and Utah Counties. (Allred, Knowlton).

CAT-FACING INSECTS - OHIO - Stink bugs relatively inactive during most of week because of cool weather. Very few eggs deposited by Euschistus variolarius and E. tristigma. (Rings, Brooks).

CITRUS RED MITE (Metatetranychus citri) - CALIFORNIA - Light to heavy infestations in San Bernardino County, light to medium in Orange County citrus orchards. Control applied. In San Diego County infestations below normal. (Cal. Coop. Ins. Pest Rpt., Apr. 30).

CALIFORNIA RED SCALE (Aonidiella aurantii) - CALIFORNIA - Light to heavy in San Bernardino County, medium in Orange and Santa Barbara Counties on citrus. Control applied. (Cal. Coop. Ins. Pest Rpt., Apr. 30).

#### TRUCK CROP INSECTS

MEXICAN BEAN BEETLE (Epilachna varivestis) - PENNSYLVANIA - First adult noted May 12, Chester County, on beans. (Menusan). VIRGINIA - Not appearing in numbers yet, but a good rain will probably bring many of them out of hibernation quarters in the eastern area. (Brubaker, Greenwood, Hofmaster). SOUTH CAROLINA - Apparently much less abundant than normal in snap bean plantings observed in Charleston County. (Cuthbert).

PEA LEAF WEEVIL (Sitona lineata) - OREGON - Spread south in the Willamette Valley to Polk and Marion Counties. Collected by sweeping peas 8 miles north of Rickreall and 6 miles north of Salem. No damage noted. (Prescott).

PEA APHID (Macrosiphum pisi) - DELAWARE - Increasing in nearly all commercial peas from Middleton southward. Likely to become serious in Smyrna, Houston and Milton areas. (Milliron). WASH - First apterous female collected May 8 on alfalfa at Pullman; apparently had overwintered in that location. (Johansen).

BEAN LEAF BEETLE (Cerotoma trifurcata) - DELAWARE - Injuring beans at Bridgeville. (Milliron). VIRGINIA - Light to moderate injury by adults on most plantings of early snap beans in eastern area. (Brubaker, Greenwood, Hofmaster).

A WEEVIL (Aphrastus unicolor) - TEXAS - Heavy local infestation on black-eyed peas and melons in Wilson and Karnes Counties. (Loessin, Anderson, Griffin).

COWPEA CURCULIO (Chalcodermus aeneus) - TEXAS - Causing damage in limited acreage planted this year in lower Rio Grande Valley area. (Wene).

SEED CORN MAGGOT (Hylemya cilicrura) - DELAWARE - Adults numerous everywhere. Emerging in bean fields at Milford and Bridgeville. (Milliron).

HARLEQUIN BUG (Murgantia histrionica) - ARKANSAS - On crucifers in northwestern area. Infestations heavy in some instances. (Warren).

IMPORTED CABBAGEWORM (Pieris rapae) - RHODE ISLAND - Numerous adults in Washington County. (Kantack). DELAWARE - Eggs on cabbage and kale at most locations in Kent and Sussex Counties. Hatching in vicinity of Georgetown. (Milliron). MARYLAND - Larvae becoming numerous and damaging cabbage and broccoli from Kent to St. Marys Counties. (U. Md., Ent. Dept.). SOUTH DAKOTA - Eggs being deposited on cabbage and cauliflower. (Lofgren, May 7.)

DIAMONDBACK MOTH (Plutella maculipennis) - SOUTH CAROLINA - Considerable injury to unprotected plantings of cabbage in Charleston County. Infestations higher than any occurring during recent years. (Cuthbert).

CABBAGE APHID (Brevicoryne brassicae) - PENNSYLVANIA - Severe infestation in field of cabbage in Adams County. (Pepper). DELAWARE - Severe on cabbage near Slaughter Beach. (Milliron). MARYLAND - Light to heavy on garden cabbage in St. Marys County. (U. Md., Ent. Dept.).

BEET LEAFHOPPER (Circulifer tenellus) - ILLINOIS - Collected one specimen in 750 sweeps on horseradish, May 11. (Petty). NEVADA - Migrations from southern desert areas are passing through southern Nevada. Populations on tomatoes in Clark County have increased to 2-1/2 per square foot during the past 2 weeks. (Dorst, Goff).

SPIDER MITES - SOUTH CAROLINA - Light but general infestations in cucumber fields observed in Charleston County. Injurious populations in a few localized spots. (Cuthbert).

AN ARCTIID (Apantesis sp.) - FLORIDA - Averaging 2 to 3 larvae per watermelon plant. Corn and cotton also infested Madison County. (Hamrick).

TOMATO PINWORM (Keiferia lycopersicella) - FLORIDA - Averaging 50 larvae per plant completely destroyed foliage of Irish potatoes in a small patch in Gulf County. (Lamb).

TOMATO PSYLLID (Paratrioza cockerelli) - CALIFORNIA - Some damage to young tomato plants, still under caps, in San Diego County. Control applied. (Cal. Coop. Ins. Pest Rpt., Apr. 30). COLORADO - Averaging 50 per 100 sweeps on matrimonyvine at Fort Collins. Conditions favorable for breeding. Host plant conditions improved with recent rains. (Colo. Ins. Det. Comm.). WYOMING - Adults on Lycium in Goshen County, 10 per 100 sweeps. (Wallis).

CUTWORMS - NEW JERSEY - Reports of serious damage to tomato and other vegetable transplants. (Merrill). DELAWARE - Considerable damage to tomato plants at Newark and reported from other parts of State. (Milliron). MARYLAND - Numerous reports of damage to tomatoes, potatoes and corn, from Talbot to Kent Counties. (U. Md., Ent. Dept.).

CLAY-BACKED CUTWORM (Agrotis gladiaria) - PENNSYLVANIA - Considerable damage to commercial tomato plantings in Dauphin County (Menusan); in Adams County commercial tomato plantings two-thirds cut off in one night, also attacking cabbage; in York County heavy infestation and serious damage to tomato, cabbage and corn. (Pepper).

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - VIRGINIA - Moderate infestation of adults and larvae on potatoes in Chatham area. (Dominick, Muka). DELAWARE - Adults injurious and depositing numerous eggs on untreated potatoes in several areas. (Milliron). MARYLAND - Eggs numerous on potatoes and tomatoes in all sections. (U. Md., Ent. Dept.).

FLEA BEETLES - NEW YORK - Very severe on untreated cole crops in Orange County. (Zaharchuk). MARYLAND - Numbers increasing on cabbage, potatoes and tomatoes in all sections. (U. Md., Ent. Dept.). DELAWARE - Becoming more numerous on untreated potatoes from Middleton southward. Feeding heavily in several areas. (Milliron). VIRGINIA - Many growers in eastern area had to treat potatoes, tomatoes and other crops for beetles. (Brubaker, Greenwood, Hofmaster). WYOMING - Adults of Epitrix tuberis on Lycium in Goshen County, 2 per 100 sweeps. (Wallis).

ARTICHOKE PLUME MOTH (Platyptilia carduidactyla) - CALIFORNIA - Five to 20 percent of artichoke buds reported infested in Monterey County. Light to medium in Santa Barbara County. (Cal. Coop. Ins. Pest Rpt., Apr. 30).

SPINACH LEAF MINER (Pegomya hyoscyami) - MASSACHUSETTS - Early eggs found May 11 on overwintered spinach in Essex County. (Crop Pest Cont. Mess.).

ONION THRIPS (Thrips tabaci) - DELAWARE - Appearing on onions at Townsend and Georgetown, (Milliron). MARYLAND - Streaking onions in Kent and St. Marys Counties. (U. Md., Ent. Dept.).

ONION MAGGOT (Hylemya antiqua) - IDAHO - Flies coming out of hibernation about May 1. (Walz).

STRAWBERRY LEAF ROLLER (Ancylis comptana fragariae) - ILLINOIS - Heavy infestation in Union County strawberry beds. In new plantings percentage of leaves rolled was much greater than 15 percent. This is the first time in many years that the infestation has increased to noticeable proportions in the Carbondale area. (Chandler). MISSOURI - Widespread reports of activity. (Wkly. Rpt. Fr. Grow.).

TORTRICIDS - PENNSYLVANIA - Numbers of Amelia pallorana and possibly Platynota sp. in leaves of strawberry in Centre County, Apr. 21. Control necessary. Both species det. H. W. Capps. (Gesell).

APHIDS ON STRAWBERRIES - DELAWARE - Some plantings in Georgetown-Bridgeville area heavily infested with Capitophorus fragaefolii, Aphis forbesi numerous at Vandyke and present at Georgetown. (Milliron).

MEADOW SPITTLEBUG (Philaenus leucophthalmus) - DELAWARE - Moderately abundant on strawberries generally. (Milliron).

CYCLAMEN MITE (Tarsonemus pallidus) - CALIFORNIA - Medium on strawberry plants in San Joaquin, Orange and Santa Barbara Counties, light to heavy in Santa Cruz County but sufficiently serious in Sacramento County to warrant control. (Cal. Coop. Ins. Pest Rpt., Apr. 30).

TERMITES - OKLAHOMA - Reported damaging roots of drought-damaged blackberry plants. (Stiles, Tomlinson).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - MARYLAND - Damage to tobacco plants in beds by small to full-grown larvae is spotty in St. Marys County. (U. Md., Ent. Dept.). TENNESSEE - Light, very scattered infestations in most all tobacco counties. (Mullett). ARKANSAS - Infestations in southeastern area. Numbers heavy, 4-5 per plant, on melons, Ashley County. (Warren).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - NORTH CAROLINA - Light infestation in tobacco plant beds in Ashe County. (Daniel). MARYLAND - Light damage to tobacco in beds in St. Marys County. (U. Md., Ent. Dept.). DELAWARE - General on potatoes but not in unusual numbers. (Milliron).

WIREWORMS - NORTH CAROLINA - Ninety percent of newly-set tobacco on 1-1/2 acres and 70 percent on two acres damaged in Brunswick County. (Knowles).

GRASSHOPPERS - NORTH CAROLINA - Melanoplus femur-rubrum, M. mexicanus and Dissosteira carolina damaging newly-set tobacco plants in Columbus County, about 5 percent replanting. (Mitchell, Farrier).

HORNWORMS -(Protoparce spp.) - FLORIDA - One larva per 25 plants caused minor damage to tobacco on one farm in Union County. (Cowen). TENNESSEE - First P. sexta of season in light traps in Lawrence, Maury and Cumberland Counties. (Dozier).

A WOOLLYBEAR (Estigmene sp.) - FLORIDA - Averaging two larvae per square foot, destroyed acres of tobacco, lupine, velvetbeans, and corn at Pinetta, Madison County. (Hamrick).

#### COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis) - SOUTH CAROLINA - First weevils this year on cotton April 27 in Allendale County. (Rogers). Percent survival in cages at Florence to May 13 was 1.4 compared with .09 percent to same date in 1954. Eight weevils found in 1/5 acre trap plot during week. (Walker, Hopkins, Jernigan). LOUISIANA - Found in one of 33 fields examined in Tallulah area. Rate of 256 per acre in this field. Percent survival in cages at Tallulah from May 1-13 was .4 percent. (Gaines et al). TEXAS - A few heavy infestations in lower valley area. (Wene, Deer). Weevils increasing in young cotton, but numbers still much lower than last year at this time. Percentage survival in hibernation cages at Waco indicates higher carry-over than since 1950. (Martin, Davis, May 10).

BOLLWORMS - TEXAS - Still causing damage in a few fields in Rio Hondo area, lower Rio Grande Valley. (Wene, Deer). SOUTH CAROLINA - Total of 425 Heliothis armigera moths taken in light trap at Florence compared with 14 for previous week. One H. virescens also taken. (Walker, Hopkins, Jernigan).

PINK BOLLWORM (Pectinophora gossypiella) - TEXAS - Found in small numbers on cotton in lower Rio Grande Valley. (Wene, Deer). FLORIDA - Wild cotton eradication operations for the past season in southern Florida and surrounding islands may be summarized as follows: About 4 percent more acres were covered than in the previous season and 21 percent less plants were found. Approximately 2-1/2 times as many bolls were inspected, resulting in locating 8 infested plant colonies. In the previous season 29 colonies were infested. (Wild Cott. Erad. Proj.).

COTTON FLEAHOPPER (Psallus seriatus) - TEXAS - Hibernation studies at Waco and College Station indicate heaviest spring emergence since 1949. Marked increase in migration to cotton in coastal bend, upper coastal, south central, east and central areas, but infestations decreasing in lower valley. (Davis, Martin). Unusually large numbers in most fields in McLennan and Falls Counties for time of year, 10.3 per 100 linear feet of row in 11 fields. (Parencia et al). ARKANSAS - Adults and nymphs collected from roadside and field borders. (Warren).

GRASSHOPPERS - TEXAS - Have moved into several fields of cotton in river bottoms of Brazos and Burleson Counties. Controls in a few fields. Migration expected to increase in other areas also. (Martin, Davis, May 10).

THRIPS - ARIZONA - Large acreages being treated week ending May 6. Average .5 thrips per plant in unthinned cotton in Buckeye area, Maricopa County, and 1 thrips per plant at Continental, Pima County. (Ariz. Coop. Rept.). TEXAS - Increasing on cotton in most areas. (Davis, Martin, May 10). Injurious infestation in 10 of 14 fields examined in McLennan and Falls Counties. (Parencia et al). LOUISIANA - Frankliniella fusca infestations light to moderate in cotton in several parishes. (Oliver). Light in many fields in Tallulah area but severe in few. (Gaines et al). MISSISSIPPI - Light to medium in most fields in Stoneville area, with some heavy infestations requiring treatment. (Merkl et al). SOUTH CAROLINA - Infestations in cotton mostly light. (Walker, Hopkins, Jernigan).

APHIDS - MISSISSIPPI - Infestation general in Stoneville area. (Merkl et al). ARKANSAS - Light numbers of Aphis gossypii on cotton. (Warren). TEXAS - Have increased on cotton in east, central, south central, upper coastal and coastal bend areas. (Martin, Davis, May 10). ARIZONA - A. medicaginis causing concern in all areas, May 6. Treatment in many fields. (Ariz. Coop. Rept.).

SPIDER MITES - TEXAS - Light general infestation in lower Rio Grande Valley, but could increase to destructive numbers if weather becomes favorable. (Wene, Deer). Continue to increase in many fields in several areas; however, very few fields have infestations that justify treatment. (Davis, Martin, May 10). MISSISSIPPI - Infestations general in Stoneville area. (Merkl et al).

GARDEN WEBWORM (Loxostege similalis) - TEXAS - Destroying leaves in a few fields in the lower Rio Grande Valley. (Wene, Deer). LOUISIANA - Infestation noted in several cotton fields. (Oliver).

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - LOUISIANA - General light widespread infestation in several parishes. (Oliver).

BROWN COTTON LEAFWORM (Acontia dacia) - TEXAS - Scattered larvae, occasional egg and adult in several fields in McLennan and Falls Counties. (Parencia et al). LOUISIANA - Found in 4 of 12 fields examined in Natchitoches, Red River, Bossier and Bienville Parishes and in 3 fields in Avoyelles and Rapides Parishes. (Oliver).

WHITE-FRINGED BEETLES (Graphognathus spp.) - MISSISSIPPI - Damaging cotton and corn in Forrest County. (Sheffield).

VEGETABLE WEEVIL and SUGARCANE BEETLE - ARKANSAS - Damage to seedling cotton in Ashley and Chicot Counties. (Warren).

LEAFMINERS - TEXAS - Unusually heavy on seedling cotton in eastern and part of south central area. (Martin, Davis, May 10).

CUTWORMS - FLORIDA - Feltia subterranea destroyed small area of cotton at Jay, Santa Rosa County, 4-8 larvae per infested plant. (Hutton).

#### FOREST, ORNAMENTAL AND SHADE TREE INSECTS

GYPSY MOTH (Porthetria dispar) - RHODE ISLAND - First hatch of season at Johnson May 10. (Mathewson, Kantack).

JACK PINE BUDWORM (Choristoneura pinus) - MINNESOTA - Hatching in infested areas of central and north central districts. (Minn. Ins. Rept. Serv.)

FOREST TENT CATERPILLAR (Malacosoma disstria) - MINNESOTA - Third and fourth instars in Pine County and around Twin Cities. Hatch complete in Duluth area, but infestation still very light and spotty. (Minn. Ins. Rept. Serv.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - MASSACHUSETTS - Infestation general and very heavy in Amherst area, especially on wild cherry and old neglected apple trees. Much less evident in area directly sprayed for gypsy moth control last year. (Bourne). MINNESOTA - Larvae in third and fourth instars in east central area. Tents very abundant. (Minn. Ins. Rept. Serv.).

SPRUCE BUDWORM (Choristoneura fumiferana) - MINNESOTA - Third instar larvae already feeding in shoots of balsam in northeastern area by May 13. (Minn. Ins. Rept. Serv.).

SPRING CANKEPWORM (Paleacrita vernata) - ILLINOIS - Severely damaging elms in western area. (Petty et al).

PINE SAWFLIES - TEXAS - Causing defoliation of longleaf pine in Newton County. (Tex. For. Serv.). ARKANSAS - About 50 percent defoliation on 160 acres and scattered infestations on additional acreage in Drew County. (Ark. St. Forest. Comm.).

PINE LEAF APHID (Pineus pinifoliae) - MINNESOTA - Has caused considerable injury and some mortality to white pine in extreme north-eastern area. (Minn. Ins. Rept. Serv.).

PALES WEEVIL (Hylobius pales) - TEXAS - Mortality of seedlings for second year after planting on land where pine cut immediately before planting in Nacogdoches County. (Tex. For. Serv.). ARKANSAS - Found in several pine plantations in northwest Ashley County where stands were salvaged last fall because of fire kill. (Ark. St. Forest Comm.).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - RHODE ISLAND - Moderate infestation over State. (Kantack).

IPS BEETLES - TEXAS - Continue to cause minor mortality in central area of east Texas. (Tex. For. Serv.).

ARGENTINE ANT (Iridomyrmex humilis) - ARIZONA - Small colony found in a nursery at Phoenix. (Ariz. Coop. Rept.).

WHITE PINE APHID (Cinara strobi) - PENNSYLVANIA - Large clusters on new growth of white pine in Greene County. (Udine).

WILLOW SAWFLY (Nematus ventralis) - PENNSYLVANIA - Defoliating weeping willows in Greene County. (Udine).

A WEEVIL - PENNSYLVANIA - Probably BLACK VINE WEEVIL destroyed 10,000 three-year seedlings of black spruce in Somerset County; in Indiana County \$10,000 damage to three-year old Scotch pine and blue spruce in one nursery. (Udine).

SPRUCE SPIDER MITE (Paratetranychus ununquis) - PENNSYLVANIA - Abundant on Norway spruce in Centre County, May 7. (Udine).

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) - PENNSYLVANIA - Extensive infestation on red pine in Greene County. Beginning to pupate. (Udine).

APHIDS - NEW MEXICO - Continue serious problem on roses and chrysanthemums in southern area. (Ins. Lett., May 7).

PENNSYLVANIA - Macrosiphum rosae moderate and general on rose in Green County. (Udine).

#### INSECTS AFFECTING MAN AND ANIMALS

SCREW-WORM (Callitroga hominivorax) - SOUTH CAROLINA - Reported on cattle in Colleton County April 28. (Alford). FLORIDA - Because of continued cold weather the past winter there is lowest fly population in State since spring of 1951. (Skipper).

SHEEP-KED (Melophagus ovinus) - UTAH - Again abundant. Controls in several counties. (Funk, Grimshaw, Burtenshaw, Knowlton).

HORN FLY (Siphona irritans) - NEW MEXICO - Have appeared on cattle in southern half of State. Counts of 25-50 per cow in Dona Ana County. (Ins. Lett., May 7). PENNSYLVANIA - Very abundant on beef animals in field in Fulton County. (Udine).

CATTLE GRUBS - SOUTH CAROLINA - Heel flies causing cattle to stampede in Spartanburg. (Nettles).

A BLACK FLY (Simulium venustum) - NORTH DAKOTA - Abundant locally in Fargo, 17 collected in 20 minutes. Three weeks earlier than last reported invasion in 1950. (Post).

MOSQUITOES - UTAH - Larvae required control in Weber County. (Fronk). MINNESOTA - Emergence of early spring Aedes about complete. Breeding of A. fitchii exceptionally heavy, but species pestiferous only in wooded areas. Breeding of A. vexans has been light. (Minn. Ins. Rept. Serv.).

A MIDGE (Hydrobaenus sp.) - IDAHO - Collected from storage reservoir of Twin Falls city water supply. (Reinstein, Douglass).

TICKS - UTAH - Have appeared on cattle in Sevier and Millard Counties. (Guymon, Rickenbach).

LONE STAR TICK (Amblyomma americanum) - DELAWARE - One specimen taken at Greenville. (MacCreary). TEXAS - Medium infestations on cattle in untreated herds in Sabine County. (Thompson). OKLAHOMA - Averages 25 replete females per animal in Cherokee County. (Howell).

AMERICAN DOG TICK (Dermacentor variabilis) - RHODE ISLAND - Continues numerous over State. (Kantack). MARYLAND - Infestations of ticks; fever cases reported, Bethesda, Montgomery County. (U. Md., Ent. Dept.)

BENEFICIAL INSECTS

LADY BEETLES - ILLINOIS - Heavy population continues in clover and alfalfa fields. Average population by sections 15-150 per 100 sweeps. (Petty et al, May 6).

MISCELLANEOUS INSECTS

CLOVER MITE (Bryobia praetiosa) - IDAHO-Reports of nuisance in homes less than in past two years. (Walz). WASHINGTON - Very annoying around dwellings, however, good control obtained. (O'Neill).

ADDITIONAL NOTES

GEORGIA - ARMYWORM - Light on 3,000 acres oats in Washington County, May 9-10. (Turner). Light in 30 acres oats in Fayette County; wasp parasites active, May 9. (Beckham, Dupree). Survey as of May 6 shows heavy infestation in 27 counties, mostly between Jasper County in central and Seminole County in southwestern corner of the State; medium in 15 counties in the west, mainly between Barton and Stewart Counties; light in 11 counties scattered in western area. Eggs noted in Chattooga, Floyd, Barton and Polk Counties. (Maxwell). LESSER CORNSTALK BORER light to moderate in corn in Tift County. (McGill). Damaging corn in Bleckley County. (Jordan). Moderate adult VEGETABLE WEEVIL leaf feeding in pimiento pepper in Spalding County. (Beckham). Heavy infestation of mature HORNWORM larvae on tomatoes in Tift County. (Morgan).

MINNESOTA - GRASSHOPPERS - Large numbers of Melanoplus bivittatus hatched in Anoka County, up to 400 nymphs per square foot in grassy field margins, in alfalfa and oat stubble. Hatching lighter in Isanti and Pine Counties, some in Morrison County. EUROPEAN CORN BORER pupation well underway in southern area, from 5-7 percent in south central to 10-12 in southwestern district. Pupation not reported in 1954 until May 24-28. LYGUS BUGS average 0-5 adults per 10 sweeps in south central area. PEA APHID continues to increase, 2-15 per 10 sweeps in south central district. From 0-20 SWEETCLOVER WEEVIL per 20 sweeps in south central area. (Minn. Ins. Rept. Serv.).

LIGHT TRAP COLLECTIONS

		Pseudal unip.	Prod. ornith.	Agrotis ypsilon	Perid. marg.	Feltia subter.	Heliothis armig.	Protoparce sexta
TEXAS								
Waco	5/7-13	9	2		28	13	12	
L.A.								
Franklin	5/4-10		5			17	3	1
Baton Rouge*	5/7-13	6	74	9	15	206	6	
Crowley	5/6-11		7			15		1
Bunkie	5/4-11		3	4	5	12	61	
Tallahah*	5/7-13	24	77	65	62	52	35	2
ARK.								
Hope	4/29-5/12	13		71	40			
Stutt.	4/29-5/11	4		4				
Van Bur.	4/29-5/12	10		38	27		7	
Varn.	4/29-5/12	1		8	4		2	
Fayet.	4/29-5/12	218		116	54		85	1
Clarkv.	4/28-5/7	34	12	28	9	3		
MISS. (Counties)								
Coahoma	5/17-13	4		5		8		
Humphreys		3	7	10	2	10	5	
Oktibbeha		38	40	23	4	3	5	
Pearl River				1		6	2	
Washington		24	186	92	62	31	44	2
GA. (County)								34 spp.
Tift	5/2-7	1					1	
S. C.								
Charleston	5/9-16	3	17	9		11	23	41
Clemson	5/9-14	1	13					7

\* Two traps at Baton Rouge, 3 at Tallulah



Weather continued:

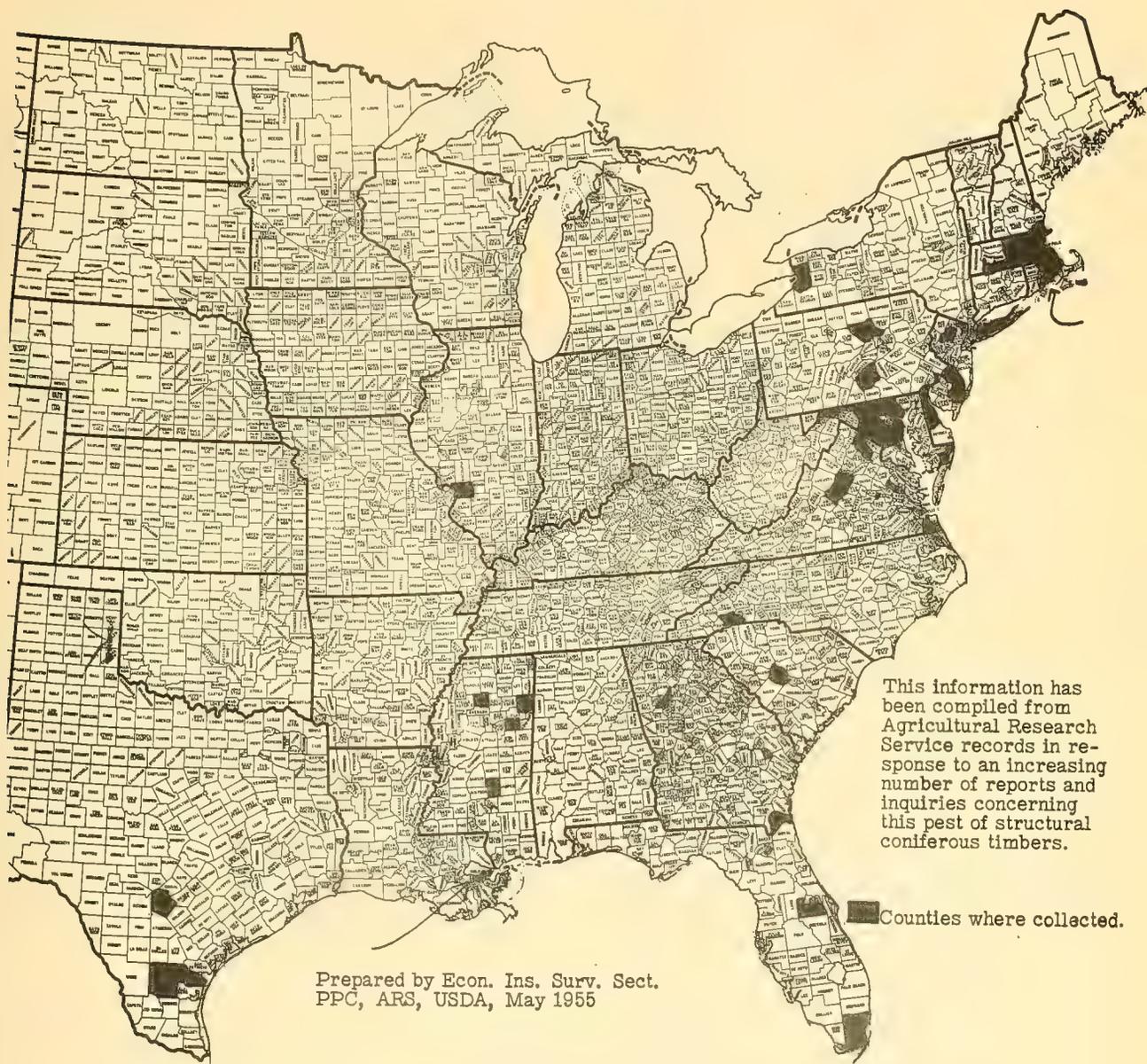
Maximum temperatures reached record high levels for the season in the Southeast during the first half of the period. On the 12th Jacksonville, Fla., Macon, Ga., and Charleston, S. C., reported record early season highs of 98°, 95°, and 96°, respectively. On the same date temperatures also were unusually high for the season in the northern Great Plains with Fargo and Bismarck, N. Dak., reporting 87° and 84°, respectively.

A belt of showers which extended from the lower Great Plains to the Great Lakes, the Ohio Valley and Middle Atlantic States at the beginning of the period moved slowly eastward and southward thereafter, covering all of the Southeast except Florida by the end of the period. Weekly totals ranged from 2 to 4 inches over most of the lower Great Plains, and 1/2 to 1 inch from the lower Mississippi Valley eastward except in Florida. In the latter State this was the fourth consecutive dry week.

Most of the precipitation in the Northwest fell during the passage of the low pressure trough on the 14th and 15th. Totals exceeding an inch were reported by many localities in Idaho and Montana. Considerable snow fell in the northern Rocky Mountain States. On the morning of the 16th Cut Bank, Mont., reported 6 inches of snow on the ground and Great Falls, Mont., 2 inches.

The week's precipitation entirely missed most of the Southwest, and was very light in the northern Great Plains. Drought continued in Nebraska, and moisture is short in all sections of South Dakota. (Summary Supplied by U. S. Weather Bureau).

DISTRIBUTION OF OLD HOUSE BORER (*HYLOTRUPES BAJULUS*)  
IN UNITED STATES





## SURVEY METHODS

### Detection of Ladino Clover Seed Midge Infestations

Serious losses to Ladino clover seed production in Oregon have resulted from attacks by the Ladino clover seed midge (*Dasyneura gentneri*). This insect is a new species with its distribution largely unknown. The detecting of infestations is, therefore, of concern wherever Ladino clover is grown for seed. White and alsike clovers may also be infested by the insect.

In new clover fields infestations build up gradually and may not reach peak until the second year of seed production. The presence of midge cocoons on the soil surface under vegetation and debris is a valuable indicator of infestation past or present. Even the empty cocoons or their recognizable fragments may be in evidence for a year or two after the adults have left them. While adult or immature stages infesting clover are present only at certain times of the year, the cocoons accumulate in infested fields. The cocoons will always be sufficiently abundant to be found readily in fields which have at any time within the previous two or three years carried infestations of economic intensity. The use of cocoons to indicate an infestation makes possible the inspection of fields for infestation at any time of year that the ground is not frozen or covered with snow. However, this method will often fail to reveal extremely light infestations such as occur in new clover plantings or those in heavily pastured clover.

The cocoons are oblong, light gray to white, slightly under 1/16 inch wide and only slightly longer. Though small, their light color makes them easily visible. They occur in greatest numbers in depressions in the ground where compacted vegetation trash has accumulated. Usually they are most abundant in the shallow irrigation trenches known as "corrugations," especially in older fields where protective layers of well compacted trash have had time to accumulate.

Detection of infestations in clover fields by sweeping with a net for the adults is rapid and convenient but the method has certain limitations. If no adults are taken in the net, it may mean that (1) there is no infestation, (2) the infestation is not in the adult stage, or (3) conditions are such that the net is not catching the adults when present. The first emergence of adults from overwintering cocoons coincides fairly closely with the appearance of bloom on the clover. In central Oregon, from early in June until the seed crop is harvested in early September, three broods of adults appear, each about a month apart. Emergence of each brood requires roughly two weeks. The emergence periods are separated by an interval of approximately two weeks during which few or no adults are present in the fields. Sweeps taken during these intervals may give

a negative indication, even where heavy infestations exist. Wind causes adults to go deep into the vegetation for shelter. Net sweeps on windy days, especially in deep vegetation, may give negative results. This is likely to be the case when moderate to low adult populations are present. Adults are most abundant on the upper surfaces of the plants around midday when the sun is highest.

In sweeps repeated at intervals throughout the day in a single field those taken during the midday (11:00 a. m. to 1:00 p. m. ) yielded approximately 4 times as many midges as sweeps made in the early morning (8 to 9 a. m. ) or late afternoon (4 to 5 p. m. ). Therefore, light infestations are most likely to show up if the sweeps are taken during the midday period.

The most reliable method of detecting Ladino clover seed midge infestations is to find the larvae in the clover heads. By picking heads in which 1/3 to 3/4 of the florets have turned down and are becoming brown, one can be assured that any mature larvae present will begin dropping out in a day or two. If the heads are placed in transparent cellophane bags they can be kept fresh for several days, and the orange-colored larvae, when they emerge, can be seen through the bags. It is best to leave several inches of stem on the heads. Then if the heads are placed in the bags with stems down, the emerging larvae will fall free of the heads to the bottom of the bags. Otherwise, in their attempt to hide, the larvae may crawl back into the heads to spin their cocoons and not be detected.

If the clover heads are to be taken to the laboratory, the bags are handy for keeping them fresh in transit. In the laboratory the clover stems are put in bottles of water, with the heads leaning free of the bottle mouths. Bottles containing the clover are then set in pans into which the emerging larvae drop and accumulate. By this method the clover heads can be kept fresh enough at room temperature to obtain daily larval emergence counts for 10 to 12 consecutive days. The pans can be checked at any convenient time, even days after they are set up. This method will reveal infestations too light to be evident by any of the other methods discussed. (H. W. Prescott).





Mahn W. Capps

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*Cooperative*  
**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL BRANCH**

**AGRICULTURAL RESEARCH SERVICE**

**UNITED STATES DEPARTMENT OF AGRICULTURE**



# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Economic Insect Survey Section  
Plant Pest Control Branch  
Agricultural Research Service  
United States Department of Agriculture  
Washington 25, D. C.

## COOPERATIVE ECONOMIC INSECT REPORT

## Highlights of Insect Conditions

GRASSHOPPER hatching continues in many States. Infestations heavier than usual in Arkansas and still building up in Kansas. Also heavy in areas of Texas, Utah, and Colorado. (page 451).

ARMYWORM outbreak in lower Piedmont area of North Carolina. (page 474). Populations light to heavy in scattered areas of Missouri and becoming active in Kansas where may have large numbers. First-generation moths out in Arkansas and Mississippi, very heavy at Stoneville, Mississippi. (pages 452, 470).

YELLOW CLOVER APHID reported from Louisiana, Utah, and Colorado for first time. Infestations continue in several States but decreasing in Arizona and Oklahoma. (pages 456, 475).

PEA APHID infestations on alfalfa continue in many areas. (page 456). Serious on peas in Delaware. (page 461).

PLANT BUGS building up in legumes over wide areas. (page 457).

ARMY CUTWORM outbreak in northern Idaho (page 475) and areas of Utah. (page 453).

EUROPEAN RED MITE heavy on apples in areas of Indiana and Pennsylvania. Many eggs in eastern New York. (page 459).

SOD WEBWORMS damaging young tobacco in Nash County, North Carolina. (page 465).

BOLL WEEVIL survival at Waco, Tex., unusually high. Weevils appearing cotton fields in most areas. (page 465).

Report on cotton bloom survey for PINK BOLLWORM in south Texas. (page 466).

PINE SAWFLIES in New Jersey, Maryland, Ohio, and Wisconsin. (page 467).

NOTES received too late for inclusion in the body of this issue. (pages 474, 475).

WEATHER FOR THE WEEK ENDING MAY 23, 1955

Heavy rains in the Great Plains and South featured the weather of the week. In the western portions of the central Great Plains these rains, totaling from 1 to over 10 inches, furnished beneficial soil moisture and replenished dwindling water supplies. Rainfall for the week totaled 5.61 inches at Dodge City, Kans., 5.47 at Oklahoma City, Okla., 3.02 at Pueblo, Colo., and 4.78 inches at Wichita Falls, Tex. Most of this rainfall occurred on the 17th, 18th, and 19th.

During the latter part of the week heavy rains fell over most of the South, furnishing much needed moisture in the Southeast. These rains totaled from 2 to over 3 inches in over virtually the entire South and up to an inch northward over southern Missouri, the Ohio Valley, and southern Virginia. Geneva, Ala., reported 12.58 inches; most of this fell on the 21st, and in parts of the town water was 4 to 5 feet deep.

In the remainder of the Country rainfall was light, although beneficial amounts of 1/4 to over 1/2 inch fell in the Montana-Idaho-Washington area. Southern Arizona, most of California, and scattered localities in the upper Mississippi Basin and Northeast received no rain at all. Some snow fell at higher elevations in the central and northern Rockies.

The week was unusually warm in the northern Great Plains and upper Mississippi Valley where maximum temperatures ranged in the middle and high 80's on the 19th and 20th and in the 70's on the 17th and 18th. At Fargo, N. Dak. the temperature for the week averaged 12° above the seasonal normal. In the remainder of the Country weekly averages were about seasonal, although the first part of the week was rather cool in the far West and in the Northeast. On the 18th subfreezing minima occurred in the central and northern Appalachians and frost was reported by many interior stations of the Atlantic Coastal States as far south as Virginia. (Summary Supplied by U. S. Weather Bureau).

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Reports in this issue are for the week ending May 20, 1955, unless otherwise designated.

CEREAL AND FORAGE INSECTS

GRASSHOPPERS - MINNESOTA - Considerable hatch and some spraying in Anoka, Sherburne and Morrison Counties. Hatch of Melanoplus bivittatus and M. mexicanus light in Todd County, central area, but expected to accelerate with warm weather. Eggs in all stages from coagulation to segmentation in west-central, northwestern and western areas. (Minn. Ins. Rept. Serv.) UTAH - Very heavy populations of Camnula pellucida hatching in meadow breeding areas of Uintah and Duchesne Counties. Mostly first and second instars. Grasshopper hatching becoming general in northern and central counties, more advanced in some southern counties. (Knowlton). TEXAS - Heavy general widespread infestations, mainly Melanoplus differentialis, on pastures and row crops in Kaufman, Rockwall and Dallas Counties. (Randolph). NEW MEXICO - From 25-150 per square yard, 60-70 percent adults, on College Ranch, Dona Ana County. Beginning to move in southwest direction May 12. Fairly large numbers of parasitic flies noted. (Ins. Lett.). NEBRASKA - Still hatching in southeastern area, from 7-72 per 100 sweeps on alfalfa and red clover. (Andersen, Roselle). COLORADO - First-instar rangeland grasshoppers reported in critical numbers in Los Animas County. (Colo. Ex. Sta.) MISSISSIPPI - Dissosteira carolina numerous in grassland near cotton, corn and vegetables, some damage in margins. (Bond). ARKANSAS - Infestations heavier than usual in southwest, southeast and east central counties. As high as 35-40 Melanoplus nymphs (second instar) per square yard in field margins. (Warren). MISSOURI - Hatch of M. differentialis and M. bivittatus accelerated over southern two-thirds of State. From 15-140 nymphs per square yard in field margins and pastures. M. confusus becoming adult over southern half of State. Nymphal control underway in all areas. (Skoog). OKLAHOMA - Twenty to 30 per square yard in many parts of western Oklahoma. (Howell). NORTH DAKOTA - Some grasshopper concentrations in southeastern area, first and second instars mainly. (Goodfellow). KANSAS - Threatening to severe Melanoplus spp. infestations continue to build up in most areas. Heaviest in eastern counties south of Kansas River, as high as 60 nymphs per square yard in some fence rows and roadside ditches. Major hatch of M. bivittatus, M. mexicanus, and M. femur-rubrum in progress in 6 northeast counties with M. differentialis still to hatch. From 8-30 nymphs per square yard in north central counties. Most grasshoppers in second to fourth instars but a few adult M. femur-rubrum in Leavenworth County and some M. mexicanus adults in Rooks, Osborne, and Cloud Counties. (Matthew). WISCONSIN - Hatching in many counties where light soils prevalent; mainly M. mexicanus and M. confusus. As many as 20 per square yard in Eau Claire County. Infestations developing in Shawano and Rock Counties. Some second and third instars observed. (Chambers).

EUROPEAN CORN BORER (Pyrausta nubilalis) - OHIO - First pupation at Wooster May 19. (C. R. Neiswander). MINNESOTA - Pupation 37 percent in southwest areas, 1 percent emergence; 39 percent pupation in southwest but no emergence. In west central counties pupation ranged from 0-13 percent. Pupation corresponding to these figures did not occur in 1954 until week of May 30. (Minn. Ins. Rept. Serv.). WISCONSIN - Apparently developing much earlier than normal with more than half of larvae pupated. (Chambers). ILLINOIS - Pupation 92-96 percent in southern third of State with 0-8 moth emergence, 12-37 percent in central with 0-8 percent emergence, and 4-12 percent in northern third with no emergence. Much of moth emergence may occur first two weeks in June. (Petty et al).

ARMYWORMS - VIRGINIA - Severe in parts of Scott County on meadows, gardens and other crops. (Delp).

ARMYWORM (Pseudaletia unipuncta) - OHIO - A few moths taken at lights each night at Athens but not abundantly. (Stehr). As many as 40-50 collected on warm nights in light trap at Wooster. (C. R. Neiswander). NORTH CAROLINA - Scattered local outbreaks in barley, oats, wheat, alfalfa and pastures reported from Cleveland, Union and Iredell Counties. (Jones). DELAWARE - Few small larvae and eggs collected in grassy meadows and roadsides from Canterbury southward, largest larvae about one-third grown. (Milliron). LOUISIANA - Occasional light, spotty infestation in oats in Natchitoches and Red River Parishes. (Oliver). TEXAS - Heavy infestations on corn in Caldwell County. (Brown). Heavy scattered infestation on grain sorghums and corn in Polk County. (O'Brien). Light locally on vetch and small grains in Kaufman County. (Randolph). SOUTH CAROLINA - Outbreaks in Greenville but severity not warranting control. (Jones). Damaging small grain in Anderson County (Marett) and found on small grains in Oconee and Spartanburg Counties. (Williams, Sparks, Nettles). MISSISSIPPI - Small grains being severely damaged in Clay County. (Hutchins). ARKANSAS - Larvae have matured and first-generation adults appearing. Infestation and damage reached economic status in only local areas even though generally distributed over State. Dipterous and hymenopterous parasites were effective in many fields. Carabid larvae likewise active. (Warren). ILLINOIS - Small numbers of first-instar larvae in small grain and grasses in central and western sections. (Petty et al). MISSOURI - Light to very heavy in barley and winter oats and other grains in scattered areas of southwest, west central, and central areas. From 3 to 44 larvae, largely second and third instars, per square foot in rank grain. Leaf feeding becoming very noticeable but very few heads cut. About 15-25 percent of larger larvae parasitized. Spraying underway in southwest and west central sections. Also see wheat head armyworm note. (Kyd, Thomas). VIRGINIA - Found in oats and barley in Henrico County. (Davis).

NORTH DAKOTA - Three moths taken in light trap at Fargo May 14. (Goodfellow). KANSAS - Becoming noticeable in brome, barley and wheat fields in east central and southeastern counties, from 6-10 larvae per square foot in some counties. Heavy moth flights have indicated large numbers of armyworms may be expected. Numerous braconid parasites noted in fields in eastern area. (Matthew). WISCONSIN - Adults reported in Rock and Dane Counties. (Chambers). OKLAHOMA - Infestation very heavy in oats and wheat in Nowata County. (Stiles).

CHINCH BUGS (Blissus leucopterus) - MISSISSIPPI - Damage to corn in George County. (Bond). ILLINOIS - Adults damaging oats in a few cases. Eggs being laid. (Petty et al). KANSAS - Numerous locally in wheat and barley in Lyon and Osage Counties, severe infestations. (Matthew).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - GEORGIA - Moderate infestation in late-planted corn in Tift County: 14 percent of stalks damaged May 5. (Blickenstaff). Moderate in corn in Ware County May 10. (Morgan). MISSISSIPPI - Damage to corn in 12-acre field in George County. (Bond). OKLAHOMA - Damage to corn in Choctaw County. (Arbuthnot).

ARMY CUTWORM (Chorizagrotis auxiliaris) - UTAH - Outbreaks in alfalfa and small grains in Uintah and Duchesne Counties, some spots in Wasatch County. Considerable extension of outbreak range previously known for Utah. (Knowlton). NEBRASKA - Light general infestation in most western counties. (Hamilton). Infestations reported earlier now inactive. (Andersen).

HESSIAN FLY (Phytophaga destructor) - PENNSYLVANIA - Many fields of wheat seriously damaged in York, Adams, and Cumberland Counties. (Pepper).

PALE WESTERN CUTWORM (Agrotis orthogonia) - NEBRASKA - Severe damage in southern Cheyenne, northern Kimball and southern Banner Counties. Up to 10 per linear foot of wheat in southern Morrill County. (Andersen).

GREENBUG (Toxoptera graminum) - NORTH CAROLINA - Countywide infestation on small grains in Forsyth County. (Mitchener). KANSAS - Non-economic infestation in wheat of northeast and north central areas, about 12 per 25 sweeps of 12-inch net. (Matthew).

FALSE WIREWORMS - KANSAS - First appearance this season of Eleodes opaca and E. suturalis in wheat and alfalfa of Osborne County May 19. Also reported from Sheridan County. (Matthew).

ENGLISH GRAIN APHID (Macrosiphum granarium) - NEBRASKA - Twenty per 100 sweeps on wheat in Gage County. (Andersen). MISSOURI - Infestation slowly building up in central and southwest areas in spite of numerous parasites and predators. (Kyd, Thomas). KANSAS - Non-economic infestation in practically all wheat and barley fields in northeast and north central areas. (Matthew).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - NEBRASKA - Becoming more abundant in southeastern and east central area, from 6 to 10 per 100 sweeps. (Andersen). OKLAHOMA - Damaging corn in Choctaw County. (Arbuthnot). LA. - Considerable damage to soybean foliage, Rapides Parish. (Oliver).

FLEA BEETLES-(Chaetocnema pulicaria) - OHIO - Abundant on early sweet corn at Marietta, Wooster, and Elyria. (C. R. Neiswander). ILLINOIS - Adults damaging early sweet corn in eastern, northeastern and central areas, highest number 6 per 25 plants. (Petty et al). MARYLAND - Light on corn in Worcester and Wicomico Counties. (U. Md. Ent. Dept.).

MORMON CRICKET (Anabus simplex) - A serious outbreak has developed on 8,000 to 12,000 acres in the Daggett-Uintah Counties area; first to third instar nymphs. In San Juan County between 2,000 and 3,000 acres infested with first and second instars, and more hatching will follow warm weather. (Thornley, Knowlton).

WHEAT HEAD ARMYWORM (Protoleucania albilinea) - MISSOURI - About 5-10 percent of field infestations of armyworms are larvae of this species. (Kyd, Thomas).

CUTWORMS - PENNSYLVANIA - Claybacked cutworm still a problem in many areas of York, Adams, and Cumberland Counties on corn and other crops. Controls effective. (Pepper). OHIO - Some reports of cutworms in alfalfa and brome grass meadows in western area. (Parks). ILLINOIS - First P. margaritosa larvae of season at Urbana May 18, 2 larvae per 25 sweeps in alfalfa. (Petty et al). MISSOURI - Peridroma margaritosa averaging one to 2 per square foot of alfalfa in southwest area and one to 3 per square foot of rank wheat in west central area, where light damage caused to legume seedlings in the wheat. Agrotis ypsilon and A. gladiaria continue to cause light to heavy damage to early-planted corn along Missouri River bottoms from central area northward. (Kyd, Thomas). KANSAS - Small numbers of P. margaritosa in most alfalfa fields of northeast area, from 3-5 larvae per 25 sweeps of 12-inch net. (Matthew). VIRGINIA - Severe damage to corn in Spottsylvania and Middlesex Counties. (Kask, DeBusk).

GRAIN SAWFLIES - DELAWARE - Cephus pygmaeus adults common on small grains some areas, ovipositing noted. C. tabidus unusually prevalent in Middletown area. (Milliron).

BR. WHITEMITE (Petrobia latens) - UTAH - Some damage on wheat and barley in southwestern Salt Lake and Juab Counties. (Lieberman, Burtenshaw, Knowlton).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - OKLAHOMA - Pupation and emergence percentages May 19-20: Cleveland County 100 and 68, Muscogee County 96 and 84, Pontotoc County 100 and 82, Seminole County 100 and 82. (Arbuthnot).

SUGARCANE BEETLE (Euetheola rugiceps) - NORTH CAROLINA - Considerable local injury to young corn in Perquimans County. (Mitchell). ALABAMA - Continues to damage corn, recent reports from Monroe, Wilcox, and Pickens Counties. (Arant).

SOD WEBWORMS (Crambus sp.) - OHIO - Severe in early-planted corn field in Fayette County. (Parks). TEXAS - Heavy local infestation corn in Robertson County. (Ellard).

SAY STINK BUG (Chlorochroa sayi) - NEW MEXICO - Building up on range weeds. Adults and advanced nymphs very numerous in northern Dona Ana County. (Ins. Lett.).

RICE WATER WEEVIL (Lissorhoptrus simplex) - ARKANSAS - Active in most fields of rice in east central area, adults feeding on seedlings. (Warren). LOUISIANA - Considerable feeding on rice in Acadia, Jefferson, Davis, and St. Landry Parishes. (Oliver).

WHITE GRUBS - TEXAS - Heavy widespread infestation in pastures in Caldwell County. (Brown). KANSAS - Some loss on barley in Neosho County. A few local infestations in brome pastures in Riley County. (Matthew). NEBRASKA - Twenty-one Phyllophaga sp. per square foot and 6 inches deep in corn ground, and 8 per square foot in bluegrass pasture in southeast area. (Roselle). WISCONSIN - Phyllophaga spp. of several broods appear troublesome in many south central areas. (Chambers).

WHITE-FRINGED BEETLES (Graphognathus spp.) - Larval populations in infested areas seemed light during April and at that time it appeared that reduced numbers of adults will occur this summer. No economic damage to crops or ornamentals by larvae reported to April 30. (WFB Cont. Proj.). MISSISSIPPI - Sorghum and cotton being damaged by white-fringed beetle in Lamar County. (Sheffield, May 20).

YELLOW CLOVER APHID (Myzocallis trifolii) - LOUISIANA - Found on white clover East Baton Rouge Parish and on red clover West Baton Rouge Parish. (Oliver). UTAH - M. trifolii has appeared in St. George and Ivins areas of Washington County. (Hughes, Knowlton). COLORADO - Surveys in southeastern area failed to show presence of this aphid; however, it was taken in Otero County in 1954. (Colo. Exp. Sta.). According to available files, these are first reports for this pest in Louisiana, Utah, and Colorado. TEXAS - Medium to heavy widespread infestations on alfalfa in El Paso County. Complete loss of cuttings and stands of young hay in some fields. (Cardwell). NEW MEXICO - Has appeared in large numbers in alfalfa throughout State. Reports from Artesia and Dexter indicate alfalfa 4-6 inches high in infested spots at first cutting compared with non-infested alfalfa of 20-24 inches same fields. Heavily infested fields in Hatch Valley three weeks behind non-infested. Aphids are moving from stands being cut to spring seedings. (Ins. Lett.). ARIZONA - Reports of decrease in populations on alfalfa at Yuma and in Avra Valley, Pima County. Sudden decrease correlated with development of high populations of convergent lady beetle (Hippodamia convergens). Decrease seems to be mainly in fields not treated with insecticides recently. (Ariz. Coop. Rept.). KANSAS - Light to moderate infestation continues in southern counties. Heavier infestation in triangular area from Wilson County northwest to McPherson County and southwest to Meade County. Non-economic infestation on red clover in Brown, Doniphan, and Jefferson Counties. Aphids easily found in red clover but seldom found in adjacent alfalfa fields. Non-economic infestation in alfalfa in Saline County also. (Matthew). OKLAHOMA - Very scarce in previously heavy fields. Coccinellids numerous. (Howell). NEBRASKA - Average of 23 per 25 sweeps in sweetclover and 60 per 25 sweeps in red clover in southeast counties of Lancaster, Otoe, Nemaha, Richardson, Johnson and Gage. Only two collections on alfalfa in Otoe and Johnson Counties, where 2 and 1 per 100 sweeps taken. Infestations also found on red clover and sweetclover in Cass and Saunders Counties, 15-35 per 25 sweeps with over 200 per 25 sweeps in one field. (Connin, Andersen).

PEA APHID (Macrosiphum pisi) - RHODE ISLAND - Increasing in alfalfa fields, 20-30 aphids per sweep of 15-inch net in South Kingstown area. (Kantack). DELAWARE - Destructive populations generally on alfalfa and clovers. Stunting and yellowing common some areas. Severe infestations prompting harvest at many locations. (Milliron). PENNSYLVANIA - Decreasing in alfalfa in York, Adams, and Cumberland Counties. (Pepper). MARYLAND - Light to moderate in central and western areas. (U. Md., Ent. Dept.). LOUISIANA - Moderate to heavy in alfalfa in Bossier, Red River, Natchitoches, and Rapides Parishes. (Oliver). TEXAS - Light to medium on vetch in Kaufman County. (Randolph). OHIO - Very light or absent on alfalfa. (Parks). ILLINOIS - Gradually building up in clover and

alfalfa but probably will not reach damaging numbers before hay harvest. From 12-2,000 per 100 sweeps. (Petty et al). WISCONSIN - Present in alfalfa in southern area but no heavy infestations. (Chambers). NEBRASKA - Very abundant in alfalfa and red clover southeastern area, from 82 to over 200 per 25 sweeps. (Andersen, Connin). KANSAS - Requiring controls in several central and north central areas. Most fields have only 40-300 aphids per 25 sweeps of 12-inch net but few have counts of 200-300 per sweep. (Matthew). WASHINGTON - Five per 100 sweeps in alfalfa at Pullman. All mature overwintered stem mothers. (Johansen). From 0-213 per tip sample in alfalfa in Garfield and Whitman Counties, heaviest at Penawawa. (Brannon, Peterson). VA. - Decreasing because of natural control. (Morris).

MEADOW SPITTLEBUG (Philaenus leucophthalmus) - DELAWARE - Most prevalent on red clover throughout State. Substantial loss near Hartly. Abundant generally on alfalfa, grasses, and weeds. Adults observed near Kenton. (Milliron). MARYLAND - First adults of season on alfalfa on lower Eastern Shore. (U. Md., Ent. Dept.). ILLINOIS - From 0-12 nymphs per 10 clover or alfalfa stems, heaviest in northeast with average of 5.4 per 10 sweeps. (Petty et al).\*

LEAFHOPPERS - NEBRASKA - Empoasca sp. collected Seward County May 3 and Johnson County May 5. Average of 35 Endria inimica per 25 sweeps on alfalfa and from 25-35 Macrosteles fascifrons per 25 sweeps on alfalfa and wheat. (Andersen).

PLANT BUGS - DELAWARE - Adelphocoris rapidus nymphs very abundant in meadows and clover near Farmington. Trigonotylus brevipes in unusually large numbers in orchard grass at Middletown and in oats at Clayton. (Milliron). ILLINOIS - From 2-32 Lygus lineolaris adults per 100 sweeps in different fields. (Petty et al). Plant bug nymphs very abundant. Average per 100 sweeps by sections: northeast 152, central 185, east 183. (P. et al). LA. - From 14 L. lineolaris adults and 6 nymphs to 38 adults and 22 nymphs per 100 sweeps in alfalfa in Red River, Bossier, and Natchitoches Parishes. (Oliver). MINNESOTA - Lygus spp. from 0-0.5 per sweep in legumes in south central area. Heavy numbers hatching in St. Paul area, 4-5 per sweep on alfalfa. (Minn. Ins. Rept. Serv.). NEBRASKA - New generation of L. lineolaris appearing, 55-482 nymphs per 100 sweeps in legumes in southeastern area. Many nymphs of L. elisus also, 20-56 per 100 sweeps. (Andersen, Connin). KANSAS - L. lineolaris light to moderate in nearly all alfalfa fields in northeast, central, and north central counties. From 20 to 300 nymphs per 25 sweeps of 12-inch net. (Matthew). MISSOURI - Up to 1.5 L. lineolaris adults per sweep in red clover and alfalfa in central area. (Kyd, Thomas). NEW MEXICO - Lygus building up rapidly in alfalfa with some injury. (Ins. Lett. May 14). WASHINGTON - Lygus sp. per 100 sweeps at Pullman: alfalfa 16, red clover 4, white clover 3. (Johansen).

\* VA. - Heavy damage to clover in areas of Washington and Bland Counties, medium in Carroll. (Gorsline, Morris, Price).

ALFALFA WEEVIL (Hypera postica) - PENNSYLVANIA - Larvae very abundant and injuring plant tops of alfalfa in York, Adams, Cumberland Counties. Adults scarce. (Pepper). MARYLAND - Larvae and first-generation adults infesting second growth alfalfa many sections. Damage has been severe from Worcester to Frederick Counties. (U. Md., Ent. Dept.). DELAWARE - Severe injury has hastened cutting of first-growth alfalfa at some places in Kent and Sussex Counties. Sweetclover heavily infested west of Dover. (Milliron). UTAH - Hatching of larvae continues over most northern and central areas. Many larvae one-half grown. (Know.) VA. - Found in two more counties, Green and Norfolk. (Morris).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - PENNSYLVANIA - Larvae fairly abundant in clover in Cumberland County. Injury beginning to show. (Pepper). DELAWARE - Severe reduction of red clover buds and blossoms most areas. (Milliron). MARYLAND - Light to moderate larval damage on red clover in many sections. (U. Md. Ent. Dept.). ILLINOIS - From 0-20 adults per 100 sweeps. From 8-100 percent of stems of red clover and alfalfa infested by larvae throughout State. Percent stems infested by sections: northeast 70, central 77, east 84, west-southwest 33, and east-southeast 36. (Petty et al). MISSOURI - Infestations on red clover in central area show up to 35 percent of buds and blossoms damaged by larvae. (Kyd, Thomas).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - OHIO - Severe damage from this pest on new seedlings in small grains. (Parks). NORTH DAKOTA - Heavy feeding on second-year sweetclover in many localities. (Goodfellow).

CLOVER ROOT CURCULIO (Sitona hispidula) - COLORADO - Heavy damage to sweetclover in Larimer County. (Colo. Exp. Sta.) WASHINGTON - Per 100 sweeps: alfalfa 8, red clover 2, white clover 3. (Johansen).

BLISTER BEETLES - KANSAS - First adults (Epicauta spp.) of season on alfalfa, from 1-5 per 25 sweeps. (Matthew).

THRIPS - NORTH CAROLINA - Average of 6.8 Frankliniella fusca per 10 terminals on peanuts in Edgecombe County. (Dogger). GEORGIA - Damaging peanuts in Irwin County. (Geiger). TEXAS - Thrips tabaci very heavy and widespread on vetch in bloom in Kaufman, Rockwall, Hunt and Van Zandt Counties. (Randolph). NEW MEXICO - Large numbers in alfalfa. (Ins. Lett. May 14).

CLOVER HEAD CATERPILLAR (Grapholitha interstinctana) - ILLINOIS - From 0-48 moths per 100 sweeps in northern half of State. (Petty et al).

SALT MARSH CATERPILLAR (Estigmene acrea) - TEXAS - Light widespread infestations on vetch and small grains in Kaufman and Navarro Counties. (Randolph).

GREEN CLOVERWORM (Plathypena scabra) - RHODE ISLAND - Five to ten larvae per sweep of 15-inch net in clover-alfalfa field. (Kantack).

WHITE-LINED SPHINX (Celerio lineata) - NEW MEXICO - Very abundant on range in northern Dona Ana County. (Ins. Lett., May 14).

### FRUIT INSECTS

CODLING MOTH (Carpocapsa pomonella) - RHODE ISLAND - First adult from apple tree in South Kingstown. (Kantack). NEW YORK - First moths in bait traps, May 16, in eastern area, indicating flight started May 14 or 15. (Dean). PENNSYLVANIA - Emergence slow due to cold weather. On apple in York, Adams, and Cumberland Counties. Eggs not abundant. (Pepper). OHIO - No entire found in Cincinnati area, May 19. (Cutright). INDIANA - Eggs in red ring stage at Vincennes, indicating a decided increase in number of larval entries in fruit soon. As of May 16 about 50 percent of moths in cages had emerged. (Hamilton). ILLINOIS - Emergence dropping off but many newly-hatched larvae entering fruit in Jackson, Union, Johnson, Marion and Jefferson Counties. (Chandler). MINNESOTA - Adults emerged in large numbers in southeastern area May 18-20. (Minn. Ins. Rpt. Serv.). KANSAS - Activity continues in northeastern area. (Eshbaugh).

SPRING CANKERWORM (Paleacrita vernata) - RHODE ISLAND - Light, one to 2 per small limb of apples in several areas. (Kantack). DELAWARE - Partially defoliating unsprayed apple trees from Newark to Felton. (Milliron).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - RHODE ISLAND - Increasing throughout State. About 50 percent of unsprayed apple trees with one to 2 colonies. (Kantack). CONNECTICUT - Practically full-grown caterpillars leaving defoliated abandoned apple orchard in Fairfield County, May 17. (Johnson).

EUROPEAN RED MITE (Metatetranychus ulmi) - NEW YORK - Large numbers of eggs in eastern area. Hatching expected shortly. (Dean). PENNSYLVANIA - Heaviest infestation on apple for time of year than for years. General in York, Adams, and Cumberland Counties. (Pepper). INDIANA - In Vincennes area comparably heavy infestations on untreated apples will likely increase rapidly. (Hamilton).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - PENNSYLVANIA - First-generation eggs nearly all hatched, some larvae nearly mature on water sprouts of apple in York, Adams, and Cumberland Counties. (Pepper). INDIANA - A few orchards in the Vincennes area have enough larvae to warrant control measures. (Hamilton). MICHIGAN - Eggs and larvae abundant on apples at St. Joseph. (Hutson). WISCONSIN - More abundant than normal in some Door County neglected orchards. (Chambers). MISSOURI - Larvae reported in small numbers from all areas north of Missouri River. (Wkly. Rpt. Fr. Grow.). KANSAS - Larvae more noticeable in some orchards of northeastern area. (Eshbaugh).

FRUIT TREE LEAF ROLLER (Archips argyrospila) - NEW YORK - Unusually abundant and widespread in the Hudson Valley. (Dean).

PEAR PSYLLA (Psylla pyricola) - OREGON - Adults of first brood, May 17, Medford area. (Gentner).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - NEW JERSEY - Some evidence of first-generation twig activity. (Merrill).

PLUM CURCULIO (Conotrachelus nenuphar) - MASSACHUSETTS - Sufficient numbers in apple and peach orchards in Amherst area to cause some damage when temperatures become favorable. Much activity in Waltham area. (Crop Pest Cont. Mess.). RHODE ISLAND - First adult of season taken from plum tree in Kingston, May 19. (Kantack). NEW JERSEY - Active in some blueberry fields in Atlantic and Burlington Counties. Egg laying well underway. (Merrill). OHIO - First injuries on apple at Wooster, May 14. (Cutright). INDIANA - Cool, moist weather has prolonged activity on apples in the Vincennes area. (Hamilton). MICHIGAN - Numerous at Paw Paw. (Hutson). ILLINOIS - Fresh adults coming out of hibernation in Carbondale area. In several orchards in southern Illinois fresh egg-laying cuts and feeding punctures noted. (Chandler). WISCONSIN - Abundant in southeastern area. (Chambers). MINNESOTA - Adults found in Twin Cities area and southeastern area. (Minn. Ins. Rpt. Serv.).

FORBES SCALE (Aspidiotus forbesi) - ILLINOIS - First crawling young of season in moderate numbers in Johnson County, May 18. (Chandler).

APHIDS - NEW YORK - Apple aphids building up on apples and prunes, Orleans County (West), increasing in Monroe County (Corey), building up rapidly in Wayne County (Small), more abundant than usual in Columbia County and may give much trouble later (Poray), and in light to moderate numbers in numerous blocks in Onondaga County (Vuillemot). TEXAS - Medium widespread infestation on fruit trees in Polk County. (O'Brien). OREGON - Rhopalosiphum fitchii winged

migrants leaving pear trees in numbers for grains and grasses, Medford area. (Gentner).

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) - ARIZONA - Adults abundant on one 5-acre field of grapes at Tucson. (Ariz. Coop. Rpt.).

PERIODICAL CICADA (Macrocicada septendecim) - INDIANA - Adult male in Orleans area, May 17. (Marshall). MISSOURI - Few adults emerged at Columbia. No brood of any consequence due this year. (Wkly. Rpt. Fr. Grow.).

APHIDS ON CITRUS - ARIZONA - Green peach aphid light to very heavy on citrus at Mesa, May 13, causing moderate damage. Total infestation of this species and several other aphids on citrus in the area appears to be worse than for past several years. Many trees covered with honeydew. (Ariz. Coop. Rpt.).

#### TRUCK CROP INSECTS

BEET LEAFHOPPER (Circulifer tenellus) - UTAH - Population on sugar beets in Sevier Valley (Joseph to Salina) averaged 1.2 per square foot of row the second week of May compared with 0.77 in 1954. (Dorst). COLORADO - In western area adults at rate of 0.5 per linear foot of beet row, while in 1954 it was 0.7. Considerable loss from curly top resulted from infestation in 1954 in western and southeastern areas. Tansy mustard, an alternate host, is very common in southeastern area this spring. (ARS and Colo. Exp. Sta.).

BEET WEBWORM (Loxostege sticticalis) - COLORADO - Spring emergence began in Prowers and Bent Counties May 12. (Colo. Expt. Sta.).

A SUGAR BEET ROOT MAGGOT (Tetanops myopaeformis) - COLORADO - Adults continue to emerge in areas heavily infested last season, Weld County. (Colo. Expt. Sta.).

PEA APHID (Macrosiphum pisi) - DELAWARE - Serious problem on commercial peas at most places from Middletown southward. Heaviest population near Houston and Milton. Control being applied. (Milliron).

BEAN LEAF BEETLE (Cerotoma trifurcata) - ARKANSAS - Infestations increased on snap beans in east central counties. Damage severe in many instances. (Warren). MARYLAND - Light to heavy feeding by adults on snap beans from Worcester to Talbot Counties. (U. Md., Ent. Dept.).

PEA WEEVIL (Bruchus pisorum) - OREGON - First adults noted active in pea fields in Washington County, May 10. (Roth, Hanna).

IMPORTED CABBAGEWORM (Pieris rapae) - DELAWARE - Feeding conspicuous on cabbage at several locations in Sussex County. (Milliron). MARYLAND - Heavy damage to home plantings in Worcester and Wicomico Counties. (U. Md., Ent. Dept.). WISCONSIN - Moths appearing in considerable numbers in cabbage-growing areas of State. (Chambers).

DIAMONDBACK MOTH (Plutella maculipennis) - ALABAMA - Extremely abundant on cabbage and related crops. (Arant). GA. - Heavy 35 acres of kale Macon County, May 12. (J. Alden).

CABBAGE LOOPER (Trichoplusia ni) - SOUTH CAROLINA - Causing damage to extensive acreage of headed cabbage at Gilbert. (Shelley, May 11). ARIZONA - On lettuce in Maricopa County. (Ariz. Coop. Rpt.).

CABBAGE MAGGOT (Hylemya brassicae) - NEW JERSEY - Locally serious damage to cabbage and related plants in northern and central areas. (Merrill). PENNSYLVANIA - In Luzerne County 5 to 25 percent of cabbage plants killed or badly damaged. (Gesell). OREGON - Heavy but normal adult populations in Washington and Columbia Counties, May 3, on overwintering broccoli. (Hanna).

CABBAGE APHID (Brevicoryne brassicae) - DELAWARE - Heavy on cabbage at Georgetown and Ellendale. (Milliron).

HARLEQUIN BUG (Murgantia histrionica) - NORTH CAROLINA - Many bugs on mustard in Duplin County. (Brett).

MELON APHID (Aphis gossypii) - ARIZONA - In scattered spots on 1,000 acres of cantaloup at Yuma. Still using control in Maricopa County. (Ariz. Coop. Rpt.).

STRIPED CUCUMBER BEETLE (Acalymma vittata) - RHODE ISLAND - One adult collected at Tiverton, May 18. (Kantack). SOUTH CAROLINA - Heavily infesting and damaging cantaloup, Barnwell County. Control applied. (Shelley, May 11).

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - DELAWARE - Adults feeding noticeably on potatoes in several areas and attacking tomatoes in Kent County. (Milliron). MARYLAND - Larvae damaging tomatoes in Caroline County. (U. Md., Ent. Dept.). NORTH CAROLINA - Numerous adults and few larvae in Duplin County. (Brett). COLORADO - Adults out of hibernation, May 13. (Colo. Expt. Sta.).

FLEA BEETLES - NEW YORK - Activity continues high in field and plant beds on tomatoes, Westchester County (Androsko), and quite plentiful on most vegetables, Nassau County (Smith). MASSACHUSETTS - Active on tomatoes and early potatoes. (Crop Pest Cont. Mess.). PENNSYLVANIA - Injury, fairly abundant to potato, tomato, radish in York County. (Pepper). MARYLAND - Light to heavy numbers of Chaetocnema confinis on sweetpotato in Wicomico County. (U. Md., Ent. Dept.). NORTH CAROLINA - Flea beetles, probably Epitrix fuscula, severely damaging eggplant in Duplin County. (Brett). MISSOURI - Causing much injury to untreated eggplant in central area. (Wkly. Rpt. Fr. Grow.). NEBRASKA - E. tuberis emerging from hibernation. Small numbers on non-economic host plants. (Wallis). WASHINGTON - Emergence of Epitrix tuberis at least 2 weeks later than average at Yakima. (Landis).

POTATO FLEA BEETLE (Epitrix cucumeris) - PENNSYLVANIA - Heavy in commercial field of potatoes in Centre County. (Adams). DELAWARE - Prevalent and injurious generally on all untreated tomatoes and potatoes. (Milliron). WISCONSIN - Very abundant on new potatoes and newly-planted vegetable plants in Dane County. (Chambers).

TOMATO PSYLLID (Paratrioza cockerelli) - COLORADO - Adults taken on wild morning glory (Convolvulus) as many as 130 per 100 sweeps in Prowers and Bent Counties. This is the first time morning glory has been systematically surveyed for the species. The numbers of adults taken in southeastern area may portend the development of an outbreak in 1955. (Colo. Expt. Sta.). NEBRASKA - Increasing very rapidly on sprouts in cull potato piles and on Lycium in the North Platte Valley. Average of 13 per 100 sweeps, May 12. (Wallis).

LACEBUGS - NORTH CAROLINA - Many adults, probably Gargaphia solani, infesting eggplant in Duplin County. (Brett).

CUTWORMS - DELAWARE - Considerable damage to newly-set tomatoes by Agrotis ypsilon in several areas. Feltia subgothica, F. ducens and A. gladiaria also damaged tomatoes over State. (Milliron). NORTH CAROLINA - County-wide infestation of tobacco and vegetables in Jackson County. (Jameson).

TOMATO FRUITWORM (Heliothis armigera) - ARKANSAS - Attacking tomatoes in south central counties. Infestations light. (Warren).

HORNWORMS (Protoparce spp.) - ARKANSAS - Eggs plentiful on tomatoes in south central counties. (Warren). TENNESSEE - Moths still increasing in light trap catch. (Dozier).

POTATO APHID (Macrosiphum solanifolii) - DELAWARE - Increasing on potatoes in areas of New Castle and Kent Counties, and on tomatoes in Kent County. (Milliron).

GREEN PEACH APHID (Myzus persicae) - PENNSYLVANIA - Winged forms on potato and producing young in York County. (Pepper). NORTH CAROLINA - Light infestation on young field tobacco in Robeson and Jackson Counties. (Scott). ARIZONA - Heavy to severe on sugar beets grown for seed in one 50-acre field at Mesa, May 12. Plants covered with honeydew. (Ariz. Coop. Rpt.). WASHINGTON - Migration from peach to potato 3 weeks late at Yakima. (Landis).

CARROT WEEVIL (Listronotus oregonensis) - ILLINOIS - Laying eggs in Cook County. (Petty et al).

ASPARAGUS BEETLE (Crioceris asparagi) - RHODE ISLAND - Adults common asparagus. (Mathewson, Kantack). NEW YORK - Exceptionally heavy on asparagus in Chautauqua County. (Jordan). PENNSYLVANIA - Numerous adults in Centre County. (Adams). MISSOURI - Severe injury at Columbia. (Wkly. Rpt. Fr. Grow.). WASHINGTON - Emerged at Yakima. (Landis).

SPOTTED ASPARAGUS BEETLE (Crioceris duodecimpunctata) - DELAWARE - Adults very abundant south of Canterbury. (Milliron). PENNSYLVANIA - Numerous adults in Centre County. (Adams).

THRIPS - NEW JERSEY - Heavy on bunching onions in southern area. (Merrill). MARYLAND - Onion thrips quite heavy on onions in all sections. (U. Md., Ent. Dept.). NEW MEXICO - Numerous in untreated onion fields. (Ins. Lett.).

MITES - RHODE ISLAND - Severe on mushrooms in Cranston. Damage observed on spawn in beds. (Kantack).

ONION MAGGOT (Hylemya antiqua) - NEW JERSEY - Heavy damage throughout State. (Merrill). ILLINOIS - Increasing on onion sets in Cook County. (Petty).

BERTHA ARMYWORM (Mamestra configurata) - WASHINGTON - Small numbers active over wide area in Yakima Valley. (Landis).

STRAWBERRY LEAF ROLLER (Ancyliis comptana fragariae) - KANSAS - Considerable damage to bearing strawberry fields where control not applied. (Eshbaugh).

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) - MICHIGAN - Very abundant at Hart, May 9; plentiful at Kingsley, May 10. Many larvae in untreated strawberry plantings and some pupae found. (Hutson).

SPITTLEBUGS - NEW YORK - Large numbers in unsprayed strawberry fields in Chautauqua County. (Jordan).

TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus) - NEW YORK - Large numbers on strawberries in Suffolk County. (Wells).

RASPBERRY CANE MAGGOT (Pegomya rubivora) - PENNSYLVANIA - Fairly heavy infestation on raspberry in Clearfield County. (Adams).

EASTERN RASPBERRY FRUITWORM (Byturus rubi) - RHODE ISLAND - Adults very common on raspberry in Scituate. (Mathewson, Kantack).

SNOWY TREE CRICKET (Oecanthus niveus) - MICHIGAN - Eggs numerous on raspberries at Climax and Coloma. (Hutson).

A SOD WEBWORM (Crambus sp.) - NORTH CAROLINA - Severe infestation of young field tobacco in Nash County, 90-95 percent of plants badly injured. (Rabb, Guthrie).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - NORTH CAROLINA - Infesting young field tobacco in Duplin and Jackson Counties. (Scott). MARYLAND - Larvae damaging tobacco in beds, Calvert County, and becoming more general. (U. Md., Ent. Dept.)

### COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis) - NORTH CAROLINA - Very few observed, but a few in Robeson and Scotland Counties. (Jones).

SOUTH CAROLINA - Total of 81 removed from 10 hibernation cages at Florence compared with 51 for previous week. Percent survival to May 20 was 3.2. (Walker, Hopkins, Jernigan). GEORGIA -

Overwintered adults in south Georgia fields. (Morgan, Jordan).

LOUISIANA - Found in 3 fields out of 22 examined in Tallulah area. Average for all fields 12 weevils per acre compared with 71 per acre for same week in 1954. (Gaines et al). Occasional weevil on cotton in Red River, Natchitoches, Bossier, Rapides, Avoyelles, and Caddo Parishes. (Oliver). ARKANSAS - Adults active in early-planted cotton in Hempstead County, 4 per 50 feet of row. (Warren).

TEXAS - Percent survival in cages at Waco to May 20 - 5.4; to same date in 1954 - 1.8. Survival greater only in 1941. (Parenchia et al). Weevils, mostly small numbers, found in cotton fields in several areas. (Davis, Martin, May 17). Increasing in lower Rio Grande Valley. (Deer).

BOLLWORMS - SOUTH CAROLINA - Total of 89 Heliothis armigera moths taken in light trap at Florence compared with 425 for previous week. Eggs and small larvae in 2 fields in Florence County. (Walker, Hopkins, Jernigan). NEW MEXICO - Moths laying eggs on cotton and alfalfa in Mesilla Valley. (Ins. Lett., May 14).

THRIPS - MISSISSIPPI - Damage medium to heavy in all untreated early-planted cotton in Stoneville area. Average of 4 per plant on samples checked compared with 1.2 last week. (Merkl et al).

LOUISIANA - Continue severe in several fields in Tallulah area. Still building up. Frankliniella fusca major species. (Gaines et al). F. fusca light to moderate in most cotton fields over State. (Oliver).

TEXAS - Migration to cotton has increased considerably and is major problem on seedling cotton in several areas. Damaging infestation in many untreated fields in east, northeast, north central, and central areas. (Davis, Martin, May 17). ARKANSAS - Increased activity; 2 per plant in east central area, 3-4 per plant in southwest area. (Warren). ARIZONA - General infestation May 13, being treated most areas. One to 4 per plant some areas. (Ariz. Coop. Rept.).

SPIDER MITES - NORTH CAROLINA - Tetranychus desertorum found on cotton in considerable numbers in Scotland County. Det. Farrier. (Mistic). MISSISSIPPI - Light in a few fields in Stoneville area. (Merkl et al).

APHIDS - SOUTH CAROLINA - Aphids on nearly every stalk of cotton in Oconee County. (Williams, Sparks). NORTH CAROLINA - A few on cotton in Scotland and Union Counties, but little or no injury. (Mistic). LOUISIANA - Becoming more numerous in Tallulah but no damaging infestations reported. (Gaines et al). TEXAS - Damage in scattered fields in lower Rio Grande Valley. (Deer). ARIZONA - Aphis gossypii and A. medicaginis general on cotton in all areas, May 13. Many fields treated. (Ariz. Coop. Rept.)

BROWN COTTON LEAFWORM (Acontia dacia) - LOUISIANA - Found in Caddo Parish for the first time in 1955. Several fields infested in Natchitoches and Red River Parishes. (Oliver). TEXAS - Reported from several additional counties. Infestation generally not as heavy as earlier. This pest has been effectively controlled in treated fields; however, eggs can still be found in many of the treated fields. (Davis, Martin, May 17).

PINK BOLLWORM (Pectinophora gossypiella) - TEXAS - Bloom inspection, May 9-15, in four Rio Grande Valley counties of Cameron, Hidalgo, Starr, and Willacy shows average of 32 pink bollworms per 100,000 blooms. Total of 411 fields inspected and 93, or 22.6 percent, found infested. For same period last year pink bollworms were found

at rate of 18 per 100,000 blooms and 59, or 12.9 percent, of 455 fields inspected were found infested. Twenty-two early blooming fields examined in Bee, Jim Wells, Kleberg, Nueces, and San Patricio Counties, and 14 found infested. At same time last year 16 fields inspected in 4 counties in this area showed no infestation. (PBW Cont. Proj., May 1-15). Pink bollworm increasing in lower valley and damaging infestations found in some fields. (Deer).

COTTON FLEAHOPPER (Psallus seriatus) - TEXAS - Migration to cotton increased sharply in coastal bend, upper coastal, east, central, and south central areas. (Davis, Martin, May 17).

LEAF MINERS - TEXAS - Damage continues unusually heavy over east and parts of south central and central areas. (Davis, Martin, May 17).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - GEORGIA - Heavy infestation damaging cotton at Marshallville. (Turner).

#### FOREST, ORNAMENTAL AND SHADE TREE INSECTS

PINE SAWFLIES - NEW JERSEY - Infesting pines in Bergen County. (Merrill). MARYLAND - Moderate to heavy defoliation of Virginia pine, Patuxent River Watershed and damaging this pine in northern Anne Arundel County. (U. Md., Ent. Dept.). OHIO - Neodiprion sp. larval infestations severe on Christmas tree plantings over much of State. (Parks).

RED-PINE SAWFLY (Neodiprion nanulus) - WISCONSIN - More abundant than usual. Hatching in north central counties, May 2. (Chambers).

EUR. PINE SAWFLY (Neodiprion sertifer) - WISCONSIN - First reported last fall in Adams County; has been hatching and efforts being made to wipe out the infestation by plane spraying. (Chambers).

INTRODUCED PINE SAWFLY (Diprion simile) - WISCONSIN - Has been very abundant in several northwestern counties but apparently being checked by natural enemies and not spreading as rapidly as several years ago. (Chambers).

PINE TORTOISE SCALE (Toumevella numismaticum) - WISCONSIN - Few additional heavy infestations in Langlade and Marinette Counties where red and jack pine seriously injured through apparent lack of activity of parasites. (Chambers).

PINE SPITTLEBUG (Aphrophora parallela) - MARYLAND - Moderate infestations on young loblolly pine, Eastern Shore. (U. Md., Ent. Dept.)

CANKERWORMS - VIRGINIA - A. pometaria feeding on elms at Warwick. (Morris). TENNESSEE - Defoliating timber tracts in Hawkins County. (Mullett). OHIO - Severe outbreak of Paleacrita vernata on elms largely limited to Hamilton County. (Parks). MICHIGAN - Alsophila pometaria numerous on elms at St. Johns. (Hutson). WISCONSIN - Both P. vernata and A. pometaria damaging shade trees in Waukesha, Jefferson and Walworth Counties. (Chambers).

ENGRAVER BEETLES - NORTH CAROLINA - Ips sp. infestation county-wide on pines in Union County. (Marsh).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - WISCONSIN - On elms in several areas. (Chambers).

FOREST TENT CATERPILLAR (Malacosoma disstria) - MINNESOTA - Many reports of small, widely scattered infestation in central and southern areas. (Minn. Ins. Rept. Serv.). WISCONSIN - Earliest hatch observed, April 27, 20 days earlier than last year. Infestation spreading southward from the 12 northwestern counties infested during past 2 years. (Chambers).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - WISCONSIN - Tents abundant on wild cherry and neglected apple trees throughout State. Much earlier than normal. (Chambers).

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) - WISCONSIN - Small numbers along Lake Michigan shores during past 2 years, but building up rapidly and spreading away from lake. Heavy infestations in several areas of State and has become a problem in some nurseries. (Chambers).

PINE BARK APHID (Pineus strobi) - WISCONSIN - More abundant than usual on white and red pine in central area. (Chambers).

AN APHID (Cinara sp.) - PENNSYLVANIA - Infesting Scotch pine seedlings and young plants in Wyoming, Lawrence, and Armstrong Counties. (Adams, Gesell).

BIRCH LEAF MINER (Fenusa pusilla) - NEW JERSEY - Active throughout State and flies still found about birch clumps. (Merrill).

WHITE PINE WEEVIL (Pissodes strobi) - WISCONSIN - Very abundant in north central area. Adults in Wood County April 9 and oviposition on April 24. (Chambers).

WHITE-MARKED TUSSOCK MOTH (Hemerocampa leucostigma) - WISCONSIN - Overwintering eggs abundant on trees in Manitowoc, Sheboygan and Washington Counties. (Chambers).

LARCH SAWFLY (Pristophora erichsonii) - MINNESOTA - Adults at Cass Lake May 17, 3 weeks earlier than last year. (Minn. Ins. Rept. Serv.). WISCONSIN - Reported and oviposition observed in Wood County, May 12. (Chambers).

LARCH CASEBEARER (Coleophora laricella) - WISCONSIN - Not as abundant as in previous years but general over larch-growing areas of State. Heavy infestations in Langlade, Oneida and Lincoln Counties. Feeding began early in April this year. (Chambers).

ELM LEAF BEETLE (Galerucella xanthomelaena) - MARYLAND - Adults and eggs quite heavy on elms in all sections. (U. Md., Ent. Dept.).

SPIDER MITES - MINNESOTA - Building up rapidly on some nursery stock and landscape plantings, especially on evergreens. (Minn. Ins. Rpt. Serv.). MASSACHUSETTS - Severe infestation on red cedar, arborvitae and spruces. (Crop Pest Cont. Mess.).

ROSE APHID (Macrosiphum rosae) - PENNSYLVANIA - Terminals of rose heavily infested in York, Adams and Cumberland Counties. Alates beginning to migrate. (Pepper).

OYSTERSHELL SCALE (Lepidosaphes ulmi) - NORTH DAKOTA - Nymphs active on cottonaster at Fargo, May 19. (Goodfellow). PENNSYLVANIA - Extremely heavy infestation on lilac in Northumberland County, May 8. (Gesell). WISCONSIN - Building up in many sections of State. Hatching occurred in southern area. (Chambers):

SARATOGA SPITTLEBUG (Aphrophora saratogensis) - MINNESOTA - Second-instar nymphs on sweetfern and other alternate hosts in east-central area. In area where 1954 injury to pine apparent, 4-5 nymphs found on a single sweetfern. This indicates heavy population. (Minn. Ins. Rept. Serv.).

LIGHT TRAP COLLECTIONS

		Pseudal. unipun.	Prod. ornith.	Agrotis ypsilon	Perid. marg.	Feltia subter.	Heliothis armig. vires.	Protoparce sexta quin.
TEXAS								
Waco	5/14-20	10	12		2	1	2	
ARKANSAS								
Hope	5/13-19	5		19	29		2	
Stuttg.	5/15-18	6		16	3			
Van B.	5/13-19	10		20	4		17	
Varner	5/6-12	2		16	20		13	
Fayett	5/13-19	90		21	12		47	63
Clarksv.	5/9-18	17	116	55	11		3	
LOUISIANA								
B. Rouge*	5/14-20		304	8	5	233	33	9 sp.
Curtis	5/12-17	48	22	46	119	7	42	1 sp.
Franklin	5/11-18		22	2	1	14	15	4
Bunkie	5/12-17	1	58	1	2	66	45	1 sp.
Crowley	5/12-18		8	2		6	1	
St. Jo.	5/10-16	1	2		7	8	2	
Tallulah*	5/14-20	149	106	53	157	78	78	1 42
MISS. (Counties)								
Coahoma	5/14-20	30	7	41	5	6	13	
Humphreys		344	29	22	32	9	20	
Oktibbeha.		305	81	56	27	15	4	
Pearl River		6	4		4	14	5	
Washington		4660 1/2	153	65	360	37	54	47 spp.

\* Two traps at Baton Rouge, 3 at Tallulah.  
 1/2 Second generation moths appearing.

LIGHT TRAP COLLECTIONS

		Pseudal. unipun.	Prod. ornith.	Agrotis ypsilon	Perid. marg.	Feltia subter.	Heliothis armig.	Protoparce sexta quin.
ALABAMA								
Auburn	5/7-20	9	32		12	6		
GEORGIA (County)	5/8-14	1	10			4		28
Tift								
TENN. (County)	5/12-18							56 spp.
Lawrence		20	3	4	4	21	45	39
Maury		12		8	2	8	3	7
Robertson		20		10	4	10	1	3
Cumberland		1					1	1
Knox		12		4		4		
Greene								
SO. CAROLINA (County)								
Oconee	5/15-21	12				5 sp.	1	25
NO. CAROLINA (County)								7 sp.
Duplin	5/15-21							5
KANSAS								6
Manhattan	5/16-17	400+				4		

-471-

2/ Hornworms from 2 traps.

Some other collections of interest: ARKANSAS (Fayetteville) - Plathypena scabra 228. LOUISIANA (Tallulah)-  
Loxostege similalis 2182, Udea rubi galis 490, P. scabra 105, Laphygma exiqua 80. MISSISSIPPI (Wash. Co.) -  
A. malefica 58. TENNESSEE (State total) - E. rugiceps 3530.

INSECTS AFFECTING MAN AND ANIMALS

SCREW-WORM (Callitroga hominivorax) - TEXAS - Heavy widespread infestations on all types of livestock in Burnet County. (Page).

CATTLE GRUBS (Hypoderma spp.) - MARYLAND - Cattle being chased by heel flies in Washington County. (U. Md., Ent. Dept.). TEXAS - H. lineatum medium widespread on cattle in Burnet County. (Page). NEBRASKA - Adults reported out in force in all cattle raising areas of State. (Andersen).

HORN FLY (Siphona irritans) - LOUISIANA - Averaged about 750-1200 per head of approximately 100 head of steers, about 200 per head on 50 Hereford and Angus cows in East Baton Rouge Parish. (Oliver). NEBRASKA - Counts on feeder cattle averaged 80 per head in Richardson County. (Roselle). NEW MEXICO - In northeastern area reached populations of 500 or more per animal. Control underway. (Ins. Lett.).

BLACK BLOW FLY (Phormia regina) - TEXAS - Light local infestation of fleeceworms on sheep in Burnet County. (Page). Heavy local in Brazos County. (Price).

A BLACK FLY (Simulium venustum) - NORTH DAKOTA - Larval concentrations in swift moving streams of the Red River Valley more abundant than during the last 5 years. (Post).

SHEEP KED (Melophagus ovinus) - NEBRASKA - Infestation general on native lambs in Richardson County. (Roselle).

MOSQUITOES - UTAH - Aedes flavescens, A. increpitus, A. dorsalis and A. fitchii emerging in Logan meadow areas, but little annoyance. (Harmston). Moderate number of mosquitoes in alfalfa in Duchesne, Uintah, Summit and Morgan Counties. (Knowlton). COLORADO - First brood of mosquitoes, Culex tarsalis, C. dorsalis and C. inornatus. May 12, Weld County. (P. H. S.)

TICKS - NORTH DAKOTA - Appear more abundant through Red River Valley this spring than during last few years. (Post). TEXAS - Otobius megnini heavy widespread on cattle in Burnet County. (Page). RHODE ISLAND - Populations of Dermacentor variabilis extremely heavy throughout State. (Kantack).

MITES - OHIO - Operating room of city hospital at Piqua suddenly found swarming with bird mites attributed to pigeons roosting on roof and ledges. (Parks).

### BENEFICIAL INSECTS

HONEY BEE (Apis mellifera) - NORTH CAROLINA - Many colonies starved out as result of the late March freeze which killed much of nectar resources. Many colonies which survived have not built up because of paucity of nectar, and in some areas there is a scarcity of honey bees as pollinators. (Stephen).

A SARCOPHAGID (Sarcophaga aldrichi) - MINNESOTA - Increasing numbers of these important parasites of forest tent caterpillar noted in Pine County May 17. This fly has been primary factor in reduction of forest tent caterpillar population in many areas of State during past 2-3 years. (Minn. Ins. Rept. Serv. ).

A KLAMATHWEED BEETLE (Chrysolina gemellata) - WASHINGTON - First beetle of new generation observed about May 1 in San Juan County. (Baker). This beetle has been liberated in almost all counties and is giving good control of Klamathweed at release points. (Johansen).

### MISCELLANEOUS INSECTS

WHARF BORER (Nacorda melanura) - DELAWARE - Adults prevalent in house near Wilmington. (Milliron).

HORNWORMS - OKLAHOMA - Some roads have been hazardous due to the slippery conditions resulting from crushed larvae. (Howell).

### RECENT INTERCEPTIONS AT PORTS OF ENTRY

Of interest recently was the unusual interception of 24 nymphs of Oxycarenus hyalinipennis (Costa), the so-called cotton seed bug, with Hibiscus cannabinus seed in the mails from Afghanistan at Washington, D. C. (Gouldman). This insect has been reported injurious to cotton, Hibiscus, Althea and other Malvaceous plants in Southern Europe and Asia, Northern and central Africa and Brazil. Injury is caused by the adults and nymphs puncturing the seed pods and seeds of the host plant,

causing a reduction in the weight and germination quality of the seed. In addition, lint from infested cotton may stain if ginned soon after picking due to the presence of the bugs. Although it seems to be a common insect in fields in areas where it is known to occur reports on its economic injury vary from none to minor or occasionally serious. It has also been reported predaceous in some regions.

Observations on the biology of the insect in Egypt indicate mating occurs when the seeds of the host plant develop. Oviposition soon follows. Eggs are deposited in the seed pods or bolls, hatching in 4-10 days. Five nymphal stages of about 2 weeks duration occur. A life cycle may be completed in 20 days. Three or 4 generations may develop in a growing season. Then the adults become quiescent and remain on tree trunks or branches of the cotton plant or in brush, weeds or grass until the seeds of the host plants are again available for oviposition the following season. A total of 17 hosts have been listed for O. hyalinipennis, nearly all Malvaceae. It has been intercepted on a few occasions with cotton bolls, cotton seed, Convolvulus and Hibiscus seed and cut flowers and as a stowaway on airplanes from various sources in Europe, Asia, Africa and South America. It is not known to occur in the United States. (Compiled - Plant Quarantine Branch).

#### ADDITIONAL NOTES

TENNESSEE - Controls for ARMYWORM underway in scattered fields in southwest, northwest, central and east Tennessee. Large numbers of fields have armyworms, but only scattered fields have sufficient infestation to require controls. (Mullett). Armyworm just beginning to cause noticeable damage in south central counties. Generally light except in rank grain, particularly oats, where larvae range from 4-8 per square foot. Over 1,000 acres treated in Rutherford County. Larvae mostly third and fourth instars but some mature and one pupa found in Maury County. (Dozier). GRASSHOPPERS becoming abundant in Maury and Robertson Counties. SUGARCANE BEETLE beginning to injure corn in west Tennessee. Heavy light trap catches of adults pointed up this problem. (Mullett).

NORTH CAROLINA - Rather serious and general ARMYWORM outbreak in small grains in Cleveland-Lincoln Counties area, west and north of Charlotte. Reports from adjacent counties indicate that serious trouble may occur in next few days. Recent rains and wet fields delaying control work. (Jones, May 24).

WEST VIRGINIA (Kearneysville area) A LEAF MINER (Callisto geminatella) - Most larvae on apple foliage in last instar. Control in some orchards becoming more necessary. ORCHARD MITES development for most part comparatively slow, probably because of cool damp weather. CODLING MOTH pupation extensive, but as of May 24 there has been no great emergence of moths. No entries observed. (Hamstead).

NEW YORK - Prepupae and pupae of EUROPEAN CHAFER first observed May 2 and May 19, respectively, in Newark, N. Y. area. (Tashiro).

IDAHO - A very severe outbreak of ARMY CUTWORM has occurred in Camas Prairie area of northern Idaho, north and west of Grangeville. Approximately 2000 acres of wheat, barley and alfalfa known infested with approximately 1000 acres of this severely damaged. Cutworms range from approximately 1/3 to full grown. Some of the specimens have pupated; however, it is estimated that damage will continue for ten days to two weeks. A considerable portion of the area has been treated or is being treated. (Manis). Recent survey throughout the major GRASSHOPPER infested areas of southern Idaho reveal that no hatching has occurred. Cool weather has markedly delayed hatching this season. (Smith).

CALIFORNIA - YELLOW CLOVER APHID reported over all of Riverside County except the extreme western border. (Coop. Ins. Pest Rept.).







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*Cooperative*

**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL BRANCH**

**AGRICULTURAL RESEARCH SERVICE**

**UNITED STATES DEPARTMENT OF AGRICULTURE**



# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Economic Insect Survey Section  
Plant Pest Control Branch  
Agricultural Research Service  
United States Department of Agriculture  
Washington 25, D. C.

## COOPERATIVE ECONOMIC INSECT REPORT

## Highlights of Insect Conditions

EUROPEAN CORN BORER egg-laying peak expected in Iowa June 10-12 and in Illinois by June 15. Situation still looks serious in Iowa. Moths active in several states. (page 479).

ARMYWORM damaging small grains in Missouri, Kansas, and North Carolina. Infestation peak passed in Tennessee. Moth flight continues in several areas. (page 481). Also see LIGHT TRAP collections. (page 500).

CORN FLEA BEETLE damage appearing in Ohio, Illinois, Missouri and Delaware. (page 482).

SUGARCANE BEETLE causing severe injury to corn in Tennessee and Alabama and in areas of Arkansas and North Carolina. (page 482).

BEET LEAFHOPPER outlook for southern Idaho. (page 488). Conditions in Utah. (page 489).

Egg survey on POTATO-INFESTING APHIDS in northeastern Maine. (page 490).

VEGETABLE WEEVIL recorded in Missouri and Kentucky for first time. (page 493).

THRIPS damaging cotton in several states. (page 494).

Status of EUROPEAN CHAFER in United States. (Map) (after page 502).

NOTES received too late for inclusion in body of this issue. (page 502).

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Reports in this issue are for the week ending May 27, 1955 unless otherwise designated.

WEATHER BUREAU'S 30-DAY OUTLOOK  
June 1955

The Weather Bureau's 30-day outlook for June calls for temperatures to average above seasonal normals over the eastern half of the nation. Below normal temperatures are expected west of the Continental Divide, except for near normal in coastal California. Near normal values are anticipated over the Plains Region.

Precipitation is expected to exceed normal over a broad area extending from the Southern Plateau through the Central Plains to the Great Lakes Region. Subnormal amounts are indicated along the West Coast and in the Southeast. In unspecified areas near normal amounts are in prospect.

This report released by the Weather Bureau on May 31, 1955.

Weather forecast given here is based on the official 30-day "Resume and Outlook", published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price: \$4.80 a year, \$2.40 for six months.

WEATHER FOR THE WEEK ENDING May 30, 1955

During the last week of May the weather was featured by numerous destructive storms in the central portion of the country and moderate to heavy rains over most of the area east of the Rocky Mountains. Most of the rainfall and storms occurred during the passage of a low pressure area which moved into the lower Great Plains from the far Southwest on the 26th and then swung northeastward across the Great Plains reaching the Great Lakes on the 28th and northern Maine at the end of the period. Total rainfall in the Great Plains exceeded an inch from central Texas northward and local areas reported over 5 inches. In Arkansas more than 9 inches fell locally during the night of the 26th. In the northern Great Plains and upper Mississippi Valley rain generally totalling from 1 to 4 inches replenished soil moisture which was very short in some sections. (Weather continued on page 499 ).

CEREAL AND FORAGE INSECTS

EUROPEAN CORN BORER (*Pyrausta nubilalis*) - NEW JERSEY - Adults emerging some areas. (Merrill). DELAWARE - In flight throughout State. Eggs on taller corn and other plants from Lincoln southward. (Milliron). INDIANA - First adult May 20, about 5 days earlier than usual. (Deay). ILLINOIS - Emergence in southern area 40-90 percent, pupation complete. Five to 15 percent emergence in central area with pupation from 75-95 percent. One to 5 percent emergence in northern counties with 40-80 percent emergence. First egg mass found May 27 on volunteer corn in central area. Peak moth flight and egg-laying will occur by June 15 in much of infested area. (Petty et al). IOWA - Situation still looks very serious. Earliest eggs found at Ankeny May 23 with 4 egg masses per 100 plants. Tallest corn in central area 20-24 inches. Corn remarkably uniform over State. Cool, rainy weather has slowed activity somewhat. Pupation 100 percent in Wright County, 80 percent with 20 percent emergence in Madison County, 98 percent pupation with 27 percent emergence in Boone County. Expect peak moth flight June 1-3 with maximum egg production June 10-12. (Harris). WISCONSIN - Mostly pupated. Occasional moth as early as May 25. (Chambers). MINNESOTA - In southwest 55 percent pupation, 4 percent emergence. In west central pupation 28 percent. Corn 3 inches tall. Pupation still ahead of corn development in comparison with 1954. (Minn. Ins. Rept. Serv.).

GRASSHOPPERS - SOUTH CAROLINA - Numerous in alfalfa fields in Sumter County. (Nettles, Bowen and Lytle). TENNESSEE - Nymphs becoming very numerous in scattered alfalfa fields in Greene, Jefferson, Knox and Loudon Counties. (Dozier). LOUISIANA - *Melanoplus* sp. average 28 per 100 sweeps in clover in Iberville Parish. Mainly nymphs. (Oliver). TEXAS - Medium to heavy widespread in Collin and Denton Counties. Beginning to move into crop land. Mainly *M. differentialis* involved. (Chada, Dahlburg). NEW MEXICO - Almost complete hatch in northwest Lea County with 750,000 acres known infested. An area of about 40,000 acres near Nara Visa has average of 50 per square yard. Large area infested also in northwest Chaves County. (Ins. Lett., May 21). UTAH - Threatening some areas, hatch continues. (Knowlton). OKLAHOMA - Very numerous, 25 to square yard, in vetch and oats in Murray County. Mostly *M. bivittatus* and *M. differentialis*. From 5-25 per square yard of miscellaneous species along fence rows and ditch banks in Jefferson and Cotton Counties. Reports of 15-25 per square yard from most parts of western half of State. (Stiles, Howell). ARKANSAS - Have hatched in heavy numbers in some localities, especially in the eastern area. (Warren, Barnes). MISSOURI - More grasshoppers than at same time last year, 100-200 nymphs per square yard common in many areas. Threat to crops this year remains. (Kyd, Thomas). KANSAS - Populations continue to build up in many

counties, highest in eastern third of State. From 40-60 nymphs per square yard along roadsides and in fence rows at many stops. Some areas in Linn and Crawford Counties have 80-100 nymphs per square yard. (Matthew). From 20-30 nymphs per square yard on roadsides in Greeley and Wichita Counties. (Gates). NEBRASKA - From 15-43 per 100 sweeps in alfalfa and sweetclover in eastern area, fourth instars appearing. Second and third instars ranging from 10-25 per 100 sweeps in alfalfa in Platte Valley area. (Andersen). IOWA - Hatching continues, nymphs abundant but eggs still present. (Harris). ILLINOIS - Melanoplus spp. nymphs hatching and concentrated in fence rows and ditch banks. Scattered through small grain fields in some cases. (Petty et al). WISCONSIN - Hatching in light sand areas over State. Some third and fourth instars. (Chambers). MINNESOTA - In north and east central counties nymphal counts range from 0 to 10-15 per square yard in some areas. (Minn. Ins. Rept. Serv.).

CORN EARWORM (Heliothis armigera) - CALIFORNIA - Some very heavy infestation in sweet corn in Riverside County. (Coop. Ins. Pest Rept., May 20). NORTH CAROLINA - Eggs and first-instar larvae on young corn in Wake and Johnston Counties, 2 per plant some fields. (Townes).

CUTWORMS - CALIFORNIA - During investigation of a heavy aphid (Rhopalosiphum poae) infestation on bluegrass in Kern County (CEIR, 5(20):431) numerous dead clumps of the grass were noted. This damage was at first attributed to the aphid but on closer examination it was determined that it was due to glassy cutworm (Crymodes devastator) feeding on the roots. (Armitage). NEBRASKA - Agrotis orthogonia averaging 10 per linear foot of wheat row in southern Banner, Kimball, Morrill and Cheyenne Counties. Third to fifth instars. (Andersen). MINNESOTA - Fields treated in Waseca and Swift Counties. Crymodes devastator involved in Waseca. (Minn. Ins. Rept. Serv.). IOWA - Damaging numbers in Madison, Wright, Sac and Plymouth Counties. (Harris). ILLINOIS - Reports of damage to corn beginning.

Average of 12 Peridroma margaritosa per 100 sweeps in legume fields in central area. (Petty et al). MISSOURI - A. ypsilon, A. gladiaria continue to damage corn in northwest area. Peak damage apparently passed in all areas. (Kyd, Thomas). COLORADO - Serious Chorizagrotis auxiliaris damage in alfalfa and corn in Morgan County May 23. (Colo. Exp. Sta.). PENNSYLVANIA - Damage by Agrotis gladiaria continues in corn and other crops in Fulton and Bedford Counties. (Udine). Still abundant and considerable controls necessary in south central areas. (Pepper). Control necessary on corn in Centre County. (Adams). DELAWARE - Agrotis ypsilon causing considerable damage to field corn at Townsend. Feltia subgothica injuring corn also. (Milliron). MAINE - A. ypsilon moths taken in light trap at Scarborough. (Maine Coop. Rept.). FLORIDA - Feltia subterranea destroyed 20 acres of corn and a crop of peanuts in Suwanee County. (Brogdon).

ARMYWORM (Pseudaletia unipuncta) - KANSAS - Destructive populations in many barley fields of east central and southeast counties. From 5-14 larvae per square foot in most fields surveyed. Infestations also in wheat, brome and pastures. Many heads of barley cut and yields will be reduced greatly if controls not initiated immediately. Fields in Kansas River Valley have similar infestation but larvae smaller. (Matthew). NORTH DAKOTA - Four moths taken May 21 at Fargo. (Goodfellow). MISSOURI - Damage to barley became severe, 10 to 95 percent of heads cut, and expected to continue heavy in central area. Three to 35 per square foot in barley. Some migration noted. Spraying has been done on large acreage and more is warranted. Parasitism is high but not expected to prevent damage to barley. (Kyd, Thomas). ILLINOIS - Infestation generally spotted from St. Louis to Charleston, north to Champaign and westward to Peoria. From few to 10 or more per linear foot in rank wheat. First to fourth instars in most fields. Grass fields also infested in some areas. (Petty et al). OHIO - Moths still fairly abundant in light traps at Wooster, but no reports of armyworm injury. (C. R. Neiswander). TENNESSEE - Peak infestation past. Generally, infestations were scattered and less severe than previous years. (Mullett). Population light in most grain in Sevier, Jefferson, Greene, and Knox Counties. Little damage expected. Heavy damage to several fields of oats and corn in Blount County. From 8-12 larvae, one-half to full-grown, per linear foot of row. Population in several fields of oats in Monroe County at danger level. (Dozier). NORTH CAROLINA - Scattered fields of oats heavily attacked in Rowan, Iredell, Catawba, Lincoln, Cleveland, Gaston and Union Counties. Barley and wheat invaded in many areas, some pastures severely damaged, and alfalfa attacked in some localities. From 100-200 larvae per square yard in some areas. (Mitchell). PENNSYLVANIA - First moth in Centre County May 17, highest number (32) in light trap May 26. Flight continues. (Frost). DELAWARE - No increases detected anywhere; a few small larvae in some areas. (Milliron). MAINE - Large percentage of moths taken at light trap at Scarborough and Monmouth were gravid females. (Maine Coop. Rept.). MINNESOTA - Adults collected in Duluth, Thief River Falls and Worthington. (Minn. Ins. Rept. Serv.).

FALL ARMYWORM (Laphygma frugiperda) - TEXAS - Greatly reduced in Polk County. (O'Brien).

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - IOWA - Occurring in Story, Polk and Page Counties. (Harris). MISSOURI - Light on corn, 1-5 percent infestation. Light on soybeans in extreme southeast area. (Jenkins).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - FLORIDA - Infested 90 acres of peanuts in Columbia County. Infested peanuts on one farm also in Sumter County. (Brogdon).

SUGARCANE BORER (Diatraea saccharalis) - LOUISIANA - In west St. John and St. Charles and lower Lafourche Parishes where cane was not killed by late freeze infestation is quite heavy and deadhearts were appearing in large numbers, May 20. From 88 to 367 deadhearts per acre in several parishes, May 27. No second generation borer to that date. (Oliver).

ENGLISH GRAIN APHID (Macrosiphum granarium) - ILLINOIS - From 3-34 per head in southwestern area but number drops rapidly as grain matures. (Petty et al). KANSAS - Moderate to heavy, 8-27 aphids per head, in nearly all barley and wheat fields in southeast counties, although little visible injury. (Matthew). MISSOURI - Large build-up in wheat and oats. (Kyd, Thomas).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - CALIFORNIA - Heavy infestation on Merion bluegrass in Kern County. (Coop. Ins. Pest Rept., May 20).

APHIDS - ARKANSAS - Population heavy in grain in northwest area, but natural enemies will probably be effective. (Warren, Barnes). TEXAS - Heavy on vetch in Delta County. (Barrow).

FALSE WIREWORMS (Eleodes sp.) - KANSAS - Damage may be expected in early-planted sorghum in Greeley County in seed not treated. (Gates).

CORN FLEA BEETLE (Chaetocnema pulicaria) - DELAWARE - Injuring sweetcorn in several areas. (Milliron). OHIO - Continue abundant in sweetcorn. Stewart's disease beginning to show in southern area. (C. R. Neiswander). ILLINOIS - Damage to corn appearing. Feeding damage on 22 percent of plants in some fields in central area. (Petty et al). MISSOURI - Light to moderate, 0-6 beetles per plant, in west central and northwest areas. (Kyd, Thomas).

JAPANESE BEETLE (Popillia japonica) - NORTH CAROLINA - Adults appearing in large numbers in New Hanover County. Attacking oats, lettuce, roses and other ornamentals. (Jenkins).

SUGARCANE BEETLE (Euetheola rugiceps) - NORTH CAROLINA - Severely damaging young corn in Pamlico County. (Stovall, Jones). ALABAMA - Reports of severe damage to corn continue. (Arant). ARKANSAS - Attacking corn in southeast area, stands reduced some fields. (Warren, Barnes). TENNESSEE - Severe injury to corn over State. Several fields completely destroyed. (Mullett). Still appearing in large numbers in light traps in Shelby County. (Dozier).

CHINCH BUG (Blissus leucopterus) - ILLINOIS - Nymphs, first and second instars, in spotted areas in thin fields of grain in eastern and central areas. (Petty et al).

BILLBUGS (Calendra spp.) - MICHIGAN - Numerous at St. Johns. (Hutson). ILLINOIS - About 3 percent of corn plants showing damage in some fields. (Petty et al). MISSOURI - Stalk injury to corn ranges from 2-97 percent, heaviest on river and creek bottoms. (Kyd, Thomas). FLORIDA - Damage to corn in several fields in Gadsden County. (May).

WIREWORMS - IOWA - Up to 22 per hill of corn in peat soil in Hancock County. Replanting necessary some fields. (Harris). COLORADO - Damaging corn on several farms in Weld County. (Chem. Ind.). NORTH DAKOTA - Moderate local damage in infested wheat through Bowman, Slope and Golden Valley Counties. (Colberg).

SEED-CORN MAGGOT (Hylemya cilicrura) - DELAWARE - Numerous adults emerging in several areas. As much as 10 percent loss in some corn fields. (Milliron). COLORADO - Early-planted corn infested in Weld County. (Colo. Exp. Sta.).

MORMON CRICKET (Anabrus simplex) - COLORADO - Situation critical on 2500 to 3000 acres in Moffat County, May 19. First and third instars and feeding principally on western wheatgrass and trefoil. (Colo. Exp. Sta. and ARS).

YELLOW CLOVER APHID (Myzocallis trifolii) - UTAH - Found in every alfalfa field examined in Washington County. First controls applied May 1. (Knowlton, Hughes). Also found in small area of Iron County. Predators sometimes very numerous. (Knowlton). NEW MEXICO - Still building up and have covered entire Mesilla Valley. (Ins. Lett. May 21). KANSAS - Found in irrigated alfalfa in west central area; however, populations not of apparent economic importance. Lady beetles numerous in infested fields. (Gates). OKLAHOMA - Has practically disappeared from alfalfa from almost all areas, but populations increasing slightly. (Stiles, Howell, Fenton). NEBRASKA - Found as far north as Dakota County and as far west as Lincoln County on sweetclover. The aphid has been found in only 2 fields of alfalfa, 2-10 per 100 sweeps. These located in northeast. (Andersen). TEXAS - Medium to heavy spotted but widespread in alfalfa and other legumes in Denton and Collin Counties. (Chada, Dahlburg).

PEA APHID (Macrosiphum pisi) - UTAH - Light to moderately numerous generally over State. (Knowlton). NEBRASKA - Averaging 40 per 100 sweeps on alfalfa in Platte Valley. (Andersen). WISCONSIN - Quite abundant in some alfalfa but very few in pea fields. (Chambers). RHODE ISLAND - Increasing in alfalfa, 40-50 per sweep some fields. (Kantack). DELAWARE - Adults dispersing from alfalfa in large numbers. Loss of alfalfa, aggravated by dry weather, serious at most places. (Milliron). MARYLAND - Appearing on second-growth alfalfa in Howard and Carroll Counties, but light generally. (U. Md., Ent. Dept.). SOUTH CAROLINA - Unusually abundant on alfalfa at Laurens May 23.

Lady beetles also abundant. (Nettles) LOUISIANA - Light to moderate infestations in some alfalfa fields. (Oliver).

LEAFHOPPERS - ILLINOIS - Empoasca adults in legumes range from 20-100 per 100 sweeps. (Petty et al). IOWA - Six-spotted leafhopper averaging 1-5 per hill of corn in central area. (Harris). FLORIDA - Have increased considerably in Everglades pastures recently. (Genung).

CLOVER ROOT CURCULIO (Sitona hispidula) - MISSOURI - A few fields of red clover heavily infested and damaged in central area. Twelve to 24 larvae per crown. (Kyd, Thomas).

ALFALFA WEEVIL (Hypera postica) - UTAH - Larval hatch continues in warmer valleys. Damage in scattered fields. (Knowlton). NORTH DAKOTA - No specimens found in preliminary survey in southwest counties. (Colberg). PENNSYLVANIA - Very abundant in southeastern Pennsylvania. All stages. (Menusan). Severe damage in many fields in Franklin and Lancaster Counties. (Pepper). MARYLAND - Larvae, cocoons, and new adults abundant in alfalfa in all sections. Alfalfa damaged heavily in southern Washington County for first time. (U. Md., Ent. Dept.). VIRGINIA - Adults feeding on soybeans in a northeastern county. (Willey, May 21). DELAWARE - Severe damage to first-growth alfalfa general, and injury to second growth in several areas. Clovers infested in several areas also. (Milliron).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - PENNSYLVANIA - Considerable damage some fields in Lancaster County. Some larvae mature. (Pepper). DELAWARE - Continues to cause severe injury to red clover over State. (Milliron). ILLINOIS - Adults emerging. (Petty et al). MISSOURI - Most fields of red clover show from 15-60 percent of buds and stems damaged. Most larvae pupating, some adults emerging. (Kyd, Thomas). IOWA - Larval damage to red clover blossoms general over State. (Harris).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - IDAHO - Damage very severe in some fields in Butte County. (Portman, May 21). NEBRASKA - Averaging 35 per 100 sweeps in sweetclover in northeast. (Andersen). MINNESOTA - Total of 800 acres of sweetclover treated in Roseau County. (Minn. Ins. Rept. Serv.).

VETCH BRUCHID (Bruchus brachialis) - DELAWARE - Adults numerous at many places in Kent and Sussex Counties. (Milliron).

POTATO LEAFHOPPER (Empoasca fabae) - PENNSYLVANIA - Adults moderately abundant on alfalfa, potatoes and beans in southeastern area. (Menusan). OKLAHOMA - Considerably more abundant than last week. Nymphs observed. (Fenton).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - LOUISIANA - Appearing in alfalfa and clover. As many as 12 adults per 100 sweeps in Bossier Parish. (Oliver).

PLANT BUGS - NEBRASKA - Lygus lineolaris very abundant on alfalfa and sweetclover, from 50-200 in northeast district to 100-250 in Platte Valley area. Adelphocoris rapidus averaging 10 per 25 sweeps in northeast and Platte Valley, and A. lineolatus ranging from 5-10 per 25 sweeps. Correction: (CEIR, 5(21):457 under Nebraska) - L. elisus should be changed to A. lineolatus. (Andersen). MINNESOTA - From 0-0.5 Lygus spp. per sweep in legumes in west central district. (Minn. Ins. Rept. Serv.). ILLINOIS - Lygus lineolaris adults in legumes range from 4-160 per 100 sweeps, nymphs from 0-516. (Petty et al). LOUISIANA - Lygus lineolaris continues to infest alfalfa and clover. As high as 16 adults and 2 nymphs per 100 sweeps in Iberville Parish. (Oliver). PENNSYLVANIA - Very abundant on legumes for time of year in southeastern area. (Menusan).

BLISTER BEETLES - NEBRASKA - Epicauta maculata building up on alfalfa and sweetclover, 5 per 25 sweeps in northeast area. (Andersen).

MEADOW SPITTLEBUG (Philaenus leucophthalmus) - WISCONSIN - Very abundant on alfalfa and in oat fields in southern half of State. (Chambers). MARYLAND - Adults in all sections. In general insect less injurious than last year. (U. Md., Ent. Dept.).

CLOVER ROOT BORER (Hylastinus obscurus) - WASHINGTON - Damaging red clover at Quincy. (Telford).

WHITE-LINED SPHINX (Celerio lineata) - TEXAS - Destroyed some stands of vetch in Fannin County, up to 10 larvae per square yard. (Green).

BEAN LEAF BEETLE (Cerotoma trifurcata) - MISSOURI - Adults of first generation appearing on soybeans in southeast area. (Jenkins). ILLINOIS - One hundred percent of leaves fed upon in many fields of soybeans, but damage not alarming. (Petty et al). ARKANSAS - Still very active in eastern area. (Warren, Barnes). DELAWARE - Destroying seedling soybeans near Slaughter Beach. (Milliron).

CLOVER APHID (Anuraphis bakeri) - MISSOURI - Found in most red clover fields in north half of State. A few fields damaged by low numbers, 7-35 per square foot. (Kyd, Thomas).

FRUIT INSECTS

CODLING MOTH (Carpocapsa pomonella) - DELAWARE - Emergence of spring-brood uninterrupted, no entries observed. (Late News). INDIANA - Egg hatching increased in Vincennes area. New entries readily found since May 18. Under trunk bands 32 percent of overwintering larvae emerged. First-brood activity will probably continue throughout June. (Hamilton). MICHIGAN - Numerous at Grand Rapids, peak flight May 26. (Hutson). ILLINOIS - Although peak of brood passed, a lesser peak now occurring in the Carbondale area. Continued numbers of fresh entrances. (Chandler). WISCONSIN - More abundant than usual in farm orchards and very abundant in neglected orchards. (Chambers). MINNESOTA - Continued activity can be expected. (Minn. Ins. Rpt. Serv.). MISSOURI - Weather causing drawn-out, uniform attack by larvae. (Wkly. Rpt. Fr. Grow.).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - PENNSYLVANIA - Heavy in unsprayed plum and prune orchard, Erie County. (Adams). INDIANA - Large numbers attacking peach twigs in Orleans area. (Marshall). CALIFORNIA - From March 21 and April 19, 2,516 moths were captured in 5 oriental fruit moth traps, in a single orchard near Kingsburg. Maximum catch for one day was 403. Traps in neighboring orchards caught much less and numbers in all collections have dwindled since that date. (Armitage, May 20).

PLUM CURCULIO (Conotrachelus nenuphar) - PENNSYLVANIA - Some injury in edges of cherry and prune orchards, Erie County. (Adams). OHIO - Adults very active on peaches and plums. (Rings). ILLINOIS - Stings in sprayed orchards increasing somewhat. (Chandler). MISSOURI - Heavier this year in southeast area than in preceding 2 seasons. (Wkly. Rpt. Fr. Grow.).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - RHODE ISLAND - Numerous eggs on apple trees in Exeter area. (Kantack). PENNSYLVANIA - Some larvae almost mature on apple in Franklin County, heavy numbers of eggs in Erie County. (Pepper, Adams). ILLINOIS - Found in most orchards in Carbondale area. (Chandler). WISCONSIN - More abundant than usual throughout fruit-growing area of State. (Chambers).

EUROPEAN RED MITE (Metatetranychus ulmi) - PENNSYLVANIA - Very abundant in some apple orchards, Franklin County. (Pepper). IDAHO - Considerable damage in some untreated apple and pear orchards in southwestern area. (Walz, May 21).

LESSER PEACH TREE BORER (Synanthedon pictipes) - PENNSYLVANIA - Heavy numbers of moths on peach, Erie County. (Adams).

PEACH TWIG BORER (Anarsia lineatella) - MICHIGAN - Numerous on sour cherry at Northport. (Hutson).

EYE-SPOTTED BUD MOTH (Spilonota ocellana) - PENNSYLVANIA - Moderate to heavy in a 5-acre plum and prune orchard in Erie County. (Adams).

CAT-FACING INSECTS - OHIO - Considerable damage by nymphs and adults of a plant bug (believed to be Neolygus quercalbae) to peaches in orchard near Wooster. Oviposition heavy by Euschistus variolarius, E. servus and E. tristigmus. (Rings).

THRIPS - CALIFORNIA - Serious on peaches in Riverside County. Control used. (Cal. Coop. Ins. Pest Rpt., May 20).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - RHODE ISLAND - Remain heavy on neglected apple trees and wild cherry with 5-8 colonies per tree in many cases. (Kantack). Larvae annoying by crawling on buildings at Central Falls and Cranston. (Mathewson).

WESTERN TUSSOCK MOTH AND ORANGE TORTRIX - CALIFORNIA - Unusually abundant on 10,000 acres of prunes and cherries in Santa Clara County. Control applied. (Cal. Coop. Ins. Pest Rpt., May 20).

ROUNDHEADED APPLE TREE BORER (Saperda candida) - PENNSYLVANIA - Adults on young apple trees, Lycoming County. (Gesell).

A GRAPE LEAFHOPPER (Erythroneura variabilis) - CALIFORNIA - Light to heavy in vineyards in Riverside County. Control applied. (Cal. Coop. Ins. Pest Rpt., May 20).

FALL WEBWORM (Hyphantria cunea) - MISSISSIPPI - Adult ovipositing on pecan at State College. (Hutchins). FLORIDA - Larvae on pecan, May 11, in Jefferson County. (Phillips).

HICKORY SHUCKWORM (Laspeyresia caryana) - FLORIDA - Larvae infesting 25 percent of young pecan nuts on ground, May 16, at Monticello. (Phillips).

CLOVER MITE (Bryobia praetiosa) - UTAH - Becoming generally numerous to serious in all observed fruit areas where dormant sprays were missed. (Davis, Knowlton).

EASTERN LUBBER GRASSHOPPER (Romalea microptera) FLORIDA - Feeding on lower branches of marginal large citrus trees in Lake County. Average 100 per young tree. Control used. (Norris, Dekle).

COTTONY-CUSHION SCALE (Icerya purchasi) - CALIFORNIA - Severe infestations in some citrus orchards in Riverside County. (Cal. Coop. Ins. Pest Rpt., May 20).

### TRUCK CROP INSECTS

#### Beet Leafhopper Conditions in Southern Idaho for 1955

Beet-leafhopper conditions in southern Idaho May 23 may be summarized as follows: A medium population entered the winter of 1954-55 under dry, favorable conditions. The long, cold winter was unfavorable for survival. Spring studies of representative breeding areas showed that host plants are generally abundant and widely distributed in most burned and disturbed areas, while in sagebrush areas they are dwarfed and sparse. The weed-host patches in western Idaho-eastern Oregon are more abundant than for several years. However, they are unfavorable for producing high populations of leafhoppers because they are growing either in dense stands or are intermixed with non-host grasses, creating unfavorable environmental conditions. In southern Idaho weed-host patches are less abundant and are also intermixed with grasses. Overwintered leafhopper populations in representative breeding areas average 15 per 100 square feet of weed host, as compared with an average of 30 for past 14 years. The long, cold spring has been unfavorable for the development of spring generation, and Russian-thistle,

the most important summer host plant, has germinated in all areas, which will tend to absorb many of the spring migrant leafhoppers. Current indications are that the number of beet leafhoppers that will move from spring breeding areas into cultivated districts of southwestern and southern Idaho will be low and that the movement will be late. Some of the more important spring breeding areas are being restudied with a view of spraying for control of this insect in these areas if the population should build up to threatening numbers. Spring weather conditions affect development of leafhoppers and host plants; therefore, another statement will be issued later, giving an estimate of size of leafhopper population, probable date of movement, and percentage carrying the virus of curly top. (Douglass).

BEEF LEAFHOPPER (Circulifer tenellus) - UTAH - Population on sugar beets in northern Utah averaged 0.7 per square foot of row with a range of 0.08 to 2.2 compared with an average of 0.5 in 1954. Population in southern portion of beet area twice as large as in 1954 but lower in tomato-growing district of northern area than in 1954. Peak of movement was May 20. Local movement from breeding ground in northern area expected to start by mid June. (Dorst). Adults and nymphs numerous on stunted curly-top beets in some seed beet fields in St. George-Washington area. (Knowlton).

PEA APHID (Macrosiphum pisi) - DELAWARE - Numbers remain high in most commercial fields despite control. Heavy on most garden peas everywhere. Lima beans also infested. (Milliron).

CONCHUELA (Chlorochroa ligata) - TEXAS - Heavy local spotted infestations on black-eyed peas in Wilson and Karnes County. Heavy damage in some fields. (Spaniel, Griffin).

CABBAGE APHID (Brevicoryne brassicae) - DELAWARE - Injury severe enough to warrant control at Townsend and Georgetown. (Milliron).

CABBAGE MAGGOT (Hylemya brassicae) - MASSACHUSETTS - Severe on unprotected cabbage, broccoli and cauliflower in Amherst area. (Crop Pest Cont. Mess.). WISCONSIN - Abundant in southern area. (Chambers).

IMPORTED CABBAGEWORM (Pieris rapae) - DELAWARE - Heavy damage in several areas of Sussex County. (Milliron).

CABBAGE LOOPER (Trichoplusia ni) - FLORIDA - Increasing in Everglades area. A virus disease is appearing and is expected to control. (Genung).

STRIPED CUCUMBER BEETLE (Acalymma vittata) - MASSACHUSETTS - Active in squash in Hampden. (Crop Pest Cont. Mess.). INDIANA - Unusually abundant at light traps, Lafayette. (Deay).

SEED-CORN MAGGOTT (Hylemya cilicrura) - CALIFORNIA - Medium damage to seedling melon plants in Riverside County when untreated seed planted. Treated seed not damaged. (Cal. Coop. Ins. Pest Rpt., May 20).

A WEEVIL (Compsus auricephalus) - MISSISSIPPI - Reported to be damaging watermelons in one locality in DeSoto County. (Hutchins).

Egg Survey on Potato-Infesting Aphids, Northeastern Maine

A survey to determine spring abundance of eggs of potato aphids on overwintering hosts was conducted April 20-22. Eggs of buckthorn aphid (Aphis abbreviata) on alder buckthorn were only one-half as abundant as at same time in 1954, and 64 percent as abundant as average for preceding 10 years. Very large populations of this aphid have ultimately developed on potatoes during following summer from such an egg population, however. Aphid eggs on Canada plum, a primary host of green peach aphid (Myzus persicae) were but 43 percent as large as in spring of 1954 or 96 percent as large as 10-year average for time of year. Spring populations of green peach aphid on this plant likely will be too small to result in appreciable numbers on potatoes this summer. Aphid eggs on swamp rose, most important primary host of potato aphid (Macrosiphum solanifolii), were but 80 percent as abundant as at corresponding time in 1954 or 41 percent of 10-year spring average. Such egg populations on swamp rose have resulted under favorable conditions in fairly large populations of potato aphid on potatoes during the summer. Hatching of aphid eggs began at about usual time: on swamp rose about April 20, Canada plum April 25, and alder buckthorn May 3. (Shands, Simpson, Wave, et al).

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - WASHINGTON - Adults started emerging middle of May at Yakima. Eggs on potatoes at Yakima. (Landis, Schopp).

POTATO PSYLLID (Paratrioza cockerelli) - UTAH - Adults on matrimonyvine foliage .01 per sweep of insect net at Centerville, Taylorsville and Fayette, .02 per sweep at Summit and .04 per sweep at Middleton and Gunnison. (Knowlton). COLORADO - Average count on matrimonyvine 80 per 100 sweeps. Eggs well distributed and nymphs common. (Exp. Sta.).

POTATO LEAFHOPPER (Empoasca fabae) - DELAWARE - Common on potatoes east and south of Dover. Very numerous at lights, May 24, Newark. (Milliron). INDIANA - One female of Empoasca probably fabae taken at light trap, May 16, Lafayette. First collection. (Deay).

MEXICAN BEAN BEETLE (Epilachna varivestis) - TENNESSEE - Populations appear very low. (Mullett).

FLEA BEETLES - MASSACHUSETTS - Severe damage to tomatoes and potatoes in Amherst area. (Crop Pest Cont. Mess.). RHODE ISLAND - Epitrix cucumeris very heavy on potatoes in many areas, 30-40 beetles per plant in Allenton area, 15-20 in South Kingstown area. (Kantack). MARYLAND - Numerous and damaging potatoes and tomatoes in central area. (U. Md., Ent. Dept.). DELAWARE - Much injury by E. cucumeris to untreated potatoes and tomatoes in general. (Milliron). COLORADO - Phyllotreta albionica seriously damaging cabbage seedlings in Larimer County. (Exp. Sta.). UTAH - Damaged radishes in Washington and Kane Counties. (Knowlton). WISCONSIN - Continue to develop in large numbers and riddle newly-set garden plants. (Chambers). WASHINGTON - E. tuberosa adults emerged in sufficient numbers at Toppenish to warrant control on potatoes. Emergence started at Union Gap, May 19. E. subcrinita adults injuring potatoes and tomatoes at Toppenish, May 18. (Landis, Schopp). PENNA. - Considerable injury to vegetables, Lancaster and Clinton Counties. (Pepper, Gesell). AN IRIS WHITEFLY (Aleyrodes spiraeoides) - WASHINGTON - First eggs on potatoes at Union Gap, May 23. (Landis, Schopp).

APHIDS - CALIFORNIA - Heavy damage to lettuce in Riverside County. (Calif. Coop. Ins. Pest Rpt., May 20).

SLUGS - WASHINGTON - Very numerous in gardens in lower Puget Sound area. Most common species Arion ater. (Doucette). MISSOURI - Slugs and sowbugs considerably damaged tomatoes and strawberries in several localities over State. (Wkly. Rpt. Fr. Grow.).

YELLOW-MARGINED LEAF BEETLE (Microtheca ochroloma) - ALABAMA - Widespread damage to leafy vegetables in Clarke County. (Arant).

ASPARAGUS BEETLE (Crioceris asparagi) - DELAWARE - Adults destructive at Ellendale, larvae plentiful at Slaughter Beach. (Milliron).

SPOTTED ASPARAGUS BEETLE (Crioceris duodecimpunctata) - RHODE ISLAND - Numerous adults in Scituate and Cranston areas. (Mathewson, Kantack). DELAWARE - Adults unusually abundant at Ellendale. (Milliron). WASHINGTON - Adults emerged at Wapato. (Landis, Schopp).

ONION THRIPS (Thrips tabaci) - UTAH - Severely damaging onions and injuring cabbage in some fields at Washington. (Hughes, Knowlton).

EUROPEAN EARWIG (Forficula auricularia) - UTAH - In many localities damaging recently-set-out bedding plants and sometimes other young garden vegetables. (Knowlton). WASHINGTON - Adult activity increasing at Yakima. (Landis, Schopp).

CUTWORMS - MARYLAND - Light to moderate damage to peppers in Worcester County. (U. Md., Ent. Dept.). FLORIDA - Agrotis ypsilon and Feltia subterranea have caused considerable damage to beans, crucifers and peppers at Belle Glade. (Genung). WISCONSIN - Causing much damage in southern area. (Chambers). WASHINGTON - Damage increasing on tomatoes, corn and alfalfa in Yakima Valley and injury reported at Ellensburg. (Landis, Schopp). PENNSYLVANIA - Heavy infestation of Feltia subgothica on sod ground, cutting off cucumber and raspberry plants and feeding on leaves, Erie County. (Adams).

HORNWORMS (Protoparce spp.) - KENTUCKY - Moth of P. quinque-maculata taken May 19. This is an early record. (Boush). TENNESSEE - Based on light trap records, adults of tomato and tobacco hornworms considerably more abundant than in 1953 or 1954 at Clarksville. (Scott). NORTH CAROLINA - Eggs and larvae averaged one per 8 or 9 plants in 16 fields in Harnett, Cumberland, Robeson, Columbus, Bladen and Sampson Counties. (Mitchell). SOUTH CAROLINA - On tobacco in small numbers in Florence area. (Allen, May 21).

RASPBERRY ROOT BORER (Bembicia marginata) - WASHINGTON - Damage to raspberries at Harrah. (Landis, Schopp).

A MEALYBUG - CALIFORNIA - Severe injury on 15 to 20 acres of strawberry plants in Santa Clara County. Control used. (Cal. Coop. Ins. Pest Rpt., May 20).

CYCLAMEN MITE (Tarsonemus pallidus) - WISCONSIN - Very troublesome on strawberry plantings and delphiniums in central area. (Chambers).

STRAWBERRY WHITEFLY (Trialeurodes packardi) - WASHINGTON - Starting to lay eggs on strawberry at Toppenish. (Landis, Schopp).

STRAWBERRY APHID (Capitophorus fragaefolii) - MINNESOTA - On strawberry plants at Osseo and Forest Lake. Infestation noted because of its importance as a vector of viruses in other parts of the Country. (Minn. Ins. Rpt. Serv.).

STRAWBERRY LEAF ROLLER (Ancylis comptana fragariae) - MISSOURI - Considerable injury to strawberries and attack is somewhat more intense than in past. (Wkly. Rpt. Fr. Grow.).

SUGARCANE BEETLE (Euetheola rugiceps) - ARK. - New strawberry beds seriously damaged in some counties. (Warren, Barnes). TENNESSEE - Attacking tobacco in Montgomery County. (Scott).

COLLEMBOLA - KENTUCKY - Extremely heavy in tobacco plant beds. Damage evident in Boyle County. (Boush).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - KENTUCKY - Found in a tobacco bed at Kettle, Cumberland County, May 18. This is recorded for the first time in the State. (Price). MISSOURI - Found damaging gardens in Christian County and commercial tomatoes in Stone County. First records for State. (Kyd, Thomas). SOUTH CAROLINA - Adults continued to damage some tobacco plants in field in Florence County. (Allen, May 21). ARKANSAS - Heavy damage to some vegetable crops, especially tomatoes, in nearly all of State. Decrease apparent, but attacks may still occur. (Warren, Barnes).

TOBACCO WIREWORM (Conoderus vespertinus) - SOUTH CAROLINA - Considerable damage in Florence area where a number of original plantings plowed up and replanted. On one farm 100 percent of untreated plants infested. (Allen, May 21). TENNESSEE - A wireworm, presumably this species, severely injuring isolated tobacco plantings in Clarksville area. One planting of 13 acres replanted. (Scott).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - MARYLAND - Damaging tobacco plants in bed, Prince Georges County. (U. Md., Ent. Dept.). NORTH CAROLINA - Light on field plants in eastern counties. (Mitchell).

POTATO TUBERWORM (Gnorimoschema operculella) - SOUTH CAROLINA - Severe infestation of field tobacco plants near Hemingway. Infestation came from stored Irish potatoes near tobacco field. (Allen, May 21).

CUTWORMS ON TOBACCO - KENTUCKY - Agrotis ypsilon and A. gladiaria heavy on tobacco plant beds, May 16. (Boush). MARYLAND - Light to moderate damage to tobacco in Prince Georges County. (U. Md., Ent. Dept.).

STALK BORER (Papaipema nebris) - MARYLAND - Damaging newly-set tobacco plants in Prince Georges County. (U. Md., Ent. Dept.).

GREEN PEACH APHID (Myzus persicae) - NORTH CAROLINA - Very light on field tobacco in eastern counties. (Mitchell). WASHINGTON - Spring migrants leaving peach trees for summer hosts at Parker. First deposition of young aphids on potatoes, Union Gap, May 23. (Landis, Schopp).

## COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Survival in cages at Waco continues highest since 1941. Weevils found in 9 of 10 fields inspected in McLennan and Falls Counties at rate of 90 per acre compared with 75 per acre in 9 fields last week. (Parencia et al). Build-up slow generally in lower Rio Grande Valley. (Deer). ARKANSAS - Overwintered weevils seem to be lighter than usual for time of year. (Warren, Barnes). LOUISIANA - Ninety-eight live adults per acre Natchitoches Parish and 40 per acre Rapides Parish. (Oliver). ALABAMA - Adults active in cotton in Lee County. (Arant). SOUTH CAROLINA - Percentage survival to May 27 in cages at Florence was 3.8 percent compared with .14 percent to same date in 1954. Number of weevils (305) taken to this date in trap plot is 4 times total number taken in 1954. (Walker, Hopkins, Jernigan). NORTH CAROLINA - Some adults in Scotland and Robeson Counties. One weevil per 100 plants some fields. (Jones, Mistic).

BOLLWORMS - SOUTH CAROLINA - Total of 70 Heliothis armigera moths taken in light trap at Florence during week compared with 89 for previous week. Considerable damage to buds and terminal leaves in 3 cotton fields in Florence County. (Walker, Hopkins, Jernigan). NORTH CAROLINA - Small larvae on cotton in Scotland County, 1-2 per 100 terminals. (Mistic, McMahan).

THRIPS - NEW MEXICO - Moving into cotton from recently-cut alfalfa. (Ins. Lett., May 21). TEXAS - Injurious infestations continue in most fields in McLennan and Falls Counties. (Parencia et al). Extremely heavy migrations to cotton in east, south, central, northeast, central and north central areas. Major pest of cotton in these areas. (Davis, Martin, May 24). OKLAHOMA - Frankliniella sp. causing moderate damage to seedling cotton, as high as 4-6 per terminal. (Bryan). MISSISSIPPI - Thrips damage heavy in all untreated fields in delta counties. Heavy migration from other crops causing some damage in treated fields. (Merkl et al). TENNESSEE - Some damage to young cotton in west Tennessee. (Locke). SOUTH CAROLINA - Survey in Piedmont section of State showed mostly light infestations but medium in some fields in Anderson and Florence Counties. One heavy also in Florence County. (Walker, Jernigan, Hopkins). NORTH CAROLINA - Average of 4 per plant, 2-leaf stage, in Scotland County. (Mistic).

SPIDER MITES - CALIFORNIA - Tetranychus atlanticus reported on seedling cotton in Imperial Valley. (Coop. Ins. Pest Rept., May 20). TEXAS - Appear to be outstanding pest problem in cotton in lower Rio Grande Valley. Heavier in older cotton but building up in late-planted cotton. Controls warranted in most fields. (Deer). NORTH CAROLINA - Average of 3 per plant, 2-leaf stage, on cotton in Scotland County. (Mistic).

FLEAHOPPERS - TEXAS - Movement to cotton continues to increase in south central, central, east, northeast and north central areas but decreasing in some other areas. (Davis, Martin, May 24).

MISSISSIPPI - Low numbers in most fields in delta counties. This is unusual for this area on seedling cotton. (Merkl et al). TENNESSEE - Nymphs in some fields in west Tennessee. (Locke). LOUISIANA - Four Psallus seriatus adults per 100 linear feet of row in one field Natchitoches Parish. (Oliver).

BROWN COTTON LEAFWORM (Acentia dacia) - TEXAS - Infestations generally not as heavy as earlier, but spotted heavy infestations continue in some east and south central areas. (Davis, Martin, May 24). LOUISIANA - Three fields in Natchitoches Parish lightly infested. (Oliver).

GRASSHOPPERS - MISSOURI - Light marginal injury to cotton by mixed populations. (Kyd, Thomas). TEXAS - Migrating to cotton in some areas. Heavy in 10 fields in Delta County. (Davis, Martin, May 24).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - NORTH CAROLINA - Attacking plants in border rows of cotton field in Union County. (Jones, Morgan).

APHIDS - CALIFORNIA - Aphis medicaginis and A. gossypii common in some cotton fields in San Joaquin Valley. Green peach aphid occurring in extensive areas of Riverside County. (Coop. Ins. Pest Rept., May 20). ARIZONA - Populations reduced by parasites in many areas, May 20. (Ariz. Coop. Rept.). NEW MEXICO - A. medicaginis severe in some cotton fields. Controls used. (Ins. Lett., May 21). TEXAS - Decreasing generally in cotton over State. (Davis, Martin, May 24). TENNESSEE - Control necessary in some fields in west Tennessee. (Locke).

CUTWORMS - CALIFORNIA - Damage in many fields in Riverside and Imperial Valleys. (Coop. Ins. Pest Rept., May 20).

WHITEFLIES - ARIZONA - Adults rather general in Maricopa, Pinal and Pima Counties, May 20. (Ariz. Coop. Rept.).

#### FOREST, ORNAMENTAL AND SHADE TREE INSECTS

FOREST TENT CATERPILLAR (Malacosoma disstria) - WISCONSIN - Have been very abundant throughout northwestern quarter of State. Complete defoliation of many shade trees. A sarcophagid (Sarcophaga aldrichi) continues unusually abundant and annoying in this area. (Chambers).

MINNESOTA - No noticeable defoliation reported from Duluth although single clusters found on individual trees. Feeding should continue for 10-14 days. Large numbers of S. aldrichi in areas where larval infestation has been heavy. (Minn. Ins. Rpt. Serv.).

EASTERN TENT CATERPILLAR (*Malacosoma americanum*) - WISCONSIN - More abundant than usual in central area but parasites seem to be controlling in some southern counties. (Chambers).

CANKERWORMS - PENNSYLVANIA - Complete defoliation on 10 acres of forest trees in Butler County. (Adams). Heavy infestation west of Uniontown controlled by airplane spraying. (Udine). WISCONSIN - Continue to defoliate oak and maple in areas along lakes and rivers of southern area. (Chambers). NORTH DAKOTA - Light damage at Fargo. (Goodfellow).

ENGRAVER BEETLES - NORTH CAROLINA - *Ips calligraphus* attacking weakened pine trees in Anson County. (Jones, Scheer).

EUROPEAN PINE SAWFLY (*Neodiprion sertifer*) - CONNECTICUT - Feeding heavily on old needles of red and Scotch pines. Infestation general and light over Stamford watershed. (Johnson, Macintyre). OHIO - Larvae on red and Scotch pine plantings 10 days earlier than usual and are nearly full grown. Widely distributed in northern area and in an occasional planting some trees almost defoliated. (R. B. Neiswander).

LARCH SAWFLY (*Pristiphora erichsonii*) - WISCONSIN - More abundant than usual. (Chambers).

LARCH CASEBEARER (*Coleophora laricella*) - WISCONSIN - Serious damage to tamarack in several northern counties. (Chambers).

AN APHID (*Chermes strobilobius*) - PENNSYLVANIA - Heavy infestation on all larches in Centre County. (Adams).

PINE BARK APHID (*Pineus strobi*) - PENNSYLVANIA - Heavy on pine in Centre County. (Adams).

PINE LEAF APHID (*Pineus pinifoliae*) - WISCONSIN - Very abundant on white pine in scattered areas in northern part of State. (Chambers).

PINE NEEDLE SCALE (*Phenacaspis pinifoliae*) - WISCONSIN - More abundant than usual, damage to landscape plantings and pine plantations in forest areas. (Chambers).

SARATOGA SPITTLEBUG (*Aphrophora saratogensis*) - WISCONSIN - Very abundant in several areas in Marinette and Oconto Counties. (Chambers).

PINE SPITTLEBUG (*Aphrophora parallela*) - DELAWARE - Common on loblolly pine at Slaughter Beach and Milton. (Milliron). PENNSYLVANIA - Very abundant on white pine in Fulton County. (Udine).

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) - PENNSYLVANIA - Abundant on Scotch and red pine in Clarion County. Larvae mature. (Adams).

SPRUCE BUDWORM (Choristoneura fumiferana) - MINNESOTA - Larvae generally in second instar and more mined needles evident on black spruce than white spruce or balsam fir. (Minn. Ins. Rpt. Serv.).

COOLEY SPRUCE GALL APHID (Chermes cooleyi) - MICHIGAN - Migrating from fir to blue spruce at East Lansing. (Hutson).

FLETCHER SCALE (Lecanium fletcheri) - RHODE ISLAND - Heavy, 8-10 per inch of stem, on Taxus in nursery. (Mathewson). PENNSYLVANIA - Very heavy on Taxus in Franklin County. Still in egg stage. (Pepper). Light on juniper in Lycoming County. (Gesell). Young arborvitae heavily infested in nursery in Venango County. (Adams).

MAPLE BLADDER-GALL MITE (Vasates quadripedes) - PENNSYLVANIA - Many reports from several sections. Unusually abundant all over State. (Udine).

SCALE INSECTS - MINNESOTA - An increasing number of infestations reported from all areas. Most common are Lecanium corni, Chionaspis sp., Lepidosaphes ulmi and Toumeyella numismaticum. (Minn. Ins. Rpt. Serv.).

SPIDER MITES - NORTH DAKOTA - Populations increasing rapidly in evergreen foundation plantings in southeastern and south central areas. (Goodfellow).

BIRCH LEAF MINER (Fenusa pusilla) - RHODE ISLAND - Small mines common on birch. Adults active. (Mathewson, Kantack). PENNSYLVANIA - Moderate infestation in birch in Crawford County. (Adams).

EUROPEAN ELM SCALE (Gossyparia spuria) - IOWA - Attracting considerable attention on elms in urban areas over State. (Harris).

WOOLLY ELM APHID (Eriosoma americanum) - DELAWARE - Prevalent on American elm in Smyrna-Leipsic-Dover area. (Milliron).

ELM LEAF BEETLE (Galerucella xanthomelaena) - DELAWARE - Feeding and ovipositing. (Milliron). SOUTH CAROLINA - Defoliating elms in Abbeville. (Barker, Bull). TENNESSEE - Widespread across State. (Mullett). WASHINGTON - Adult injury starting at Toppenish. (Landis, Schopp).

OYSTERSHELL SCALE (Lepidosaphes ulmi) - MICHIGAN - Abundant on birch at Carson City. (Hutson).

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) - PENNSYLVANIA - The weevil listed as damaging young conifers in Somerset and Indiana Counties (CEIR 5(20):441) has been identified as this species by W. H. Anderson. (Udine).

#### INSECTS AFFECTING MAN AND ANIMALS

HORN FLY (Siphona irritans) - OKLAHOMA - Populations on untreated animals vary from 400 to 1500 over much of State. (Howell). TEXAS - Medium to heavy on cattle in Harrison County. (Rose). TENNESSEE - Prevalent all across State. (Mullett).

HOUSE FLIES - PENNSYLVANIA - Control necessary in northeast area. (Gesell).

MOSQUITOES - COLORADO - Populations developing rapidly in eastern area. (Ext. Serv. and PHS). OKLAHOMA - Extensive populations of Psorophora found in many sections of central area. (Howell). CALIFORNIA - Larval density of Culex tarsalis and Aedes sp. increasing in some agricultural regions in coastal area, but C. tarsalis far below same time in 1954. (Coop. Ins. Pest Rept., May 20).

FLEAS - SOUTH CAROLINA - Tremendous number of complaints in sandy areas. (Nettles).

LONE STAR TICK (Amblyomma americanum) - OKLAHOMA - Average 25 to 30 replete females per cow in eastern area. (Howell). TEXAS - Medium infestations on all livestock in Harrison County. (Rose).

AMERICAN DOG TICK (Dermacentor variabilis) - NORTH DAKOTA - Continuous numerous in eastern area. (Goodfellow).

SAND FLIES (Culicoides spp.) - OKLAHOMA - Very common in light traps at Oklahoma City, Enid, Altus and Stillwater. (Howell).

#### BENEFICIAL INSECTS

LADY BEETLES - ILLINOIS - Still extremely abundant not only in legumes but also in small grains. (Petty et al). OKLAHOMA - Very numerous on elms and aphids greatly reduced. (Howell).

MISCELLANEOUS INSECTS

BLACK CARPENTER ANT (Camponotus herculeanus pennsylvanicus) - WISCONSIN - Building up and becoming more troublesome in many areas of State. (Chambers).

WHARF BORER (Nacerda melanura) - MARYLAND - Adults found in boat with damaged wood, Baltimore County. (U. Md., Ent. Dept.).

OLD HOUSE BORER (Hylotrupes bajulus) - CONNECTICUT - Larvae found in flooring at Danbury. (Johnson, Turner).

Weather continued:

On the evening of the 25th a tornado moving across northcentral Oklahoma and southern Kansas killed at least 80 people and destroyed scores of homes and other buildings. Heaviest losses occurred in Blackwell, Oklahoma and Udall, Kansas. Many other tornadoes or funnel clouds were reported in the Oklahoma-Kansas-Missouri area but none were reported to have caused heavy losses. On the 28th tornadoes were reported near Clintonville, Wisconsin and in Eaton and Kalamazoo Counties, Michigan. Washing rains, hail and severe squalls also caused damage in a wide belt from the central Great Plains to the Great Lakes.

East and west of a line joining Marquette, Michigan and El Paso, Texas, temperatures for the week averaged above and below normal, respectively. The weather was warm and humid in the Gulf and Atlantic Coastal States until cool, dry polar air overspread the eastern half of the country at the end of the period. In the Northern Great Plains and upper Mississippi Valley this was the first week that temperatures have averaged below normal since March. In the Far West subnormal temperatures last week ended an unusually cool period. Freezing occurred in the central and northern Rockies and the Great Basin on the 27th and 28th when some corn and potatoes were damaged in southwestern Idaho. (Summary supplied by U. S. Weather Bureau).

LIGHT TRAP COLLECTIONS

		Pseudal. unipun.	Prod. ornith.	Agrotis ypsilon	Perid. marg.	Feltia subter.	Heliothis armig. vires	Protoparce sexta quin.
TEXAS								
Waco	5/21-27	8	9	5	28	12		
LOUISIANA								
Franklin	5/19-25	32		3	16	21	6	
B. Rouge*	5/18-27	3	768	9	10	519	6	
Bunkie	5/18-22		9			4	6	
Curtis	5/18-24	60	16	12	48	2	18	
Tallahah*	5/21-27	137	176	11	67	43	207	5 30 2
MISS. (Counties)								
Humphreys	5/21-27	657	35	19	49	11	22	
Oktibbeha		193	150	3	31	20	24	1
Pearl River		9	7	5	2	11	28	
Washington		2462	166	37	159	5	42	7 20 spp.
ALABAMA								
Auburn	5/20-27	1	3				9	
TENNESSEE (Counties)								
Shelby	5/19-25							30 spp.
Lawrence								124 spp.
Maury		8		4			36	48 40
Robertson		20		8				84 12
Cumberland		6		12				2 8
Greene		32		8				39 22

\* Two traps at Baton Rouge, 3 at Tallulah

LIGHT TRAP COLLECTIONS

	Pseudal. unipun.	Prod. ornith.	Agrotis ypsilon	Perid. marg.	Feltia subter.	Heliothis armig.	Protoparce vires sexta quin.
SO. CAROLINA Charleston 5/17-23	3	4	4		31	4	1 29
NO. CAROLINA (County) Duplin 5-22-28			1			1	5
MARYLAND (County) Montgomery 5/16-26	21		10	4			2

Some other collections of interest:

LOUISIANA (Tallulah)-Loxostege similalis 2129.

MARYLAND - Estigmene acraea 12.

TENNESSEE (Shelby County) - Eucetheola rugiceps 4000.

ADDITIONAL NOTES

WYOMING - Two sections of 4,085 acres of rangeland near Sundance, were infested with MORMON CRICKETS in economic numbers ranging from 3 to 160 per square yard. The area is smaller than expected. The section near Sundance is also infested with GRASSHOPPERS in all instars averaging 20 per square yard. Reports of grasshoppers in the counties of Johnson, Campbell, Crook and Goshen. CANKERWORMS reported causing heavy damage on boxelder trees near Douglas. (Spackman).

# EUROPEAN CHAFER CONTROL 1955

The European chafer is a destructive root feeder in its larval stages. It damages and often destroys pasture, turf, hay crops, alfalfa, small grains, and nursery stock. Where populations are heavy, complete grass and crop losses result. Its peculiar life history and habits make it an extremely difficult pest to detect and suppress. During 1954 new infestations were found in Western New York and in Eastern West Virginia, and this insect now threatens to spread to other parts of the country.

AREAS OF  
KNOWN  
INFESTATION

1-21-55







VOL.5 No.23

JUNE 10, 1955

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*Cooperative*  
**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL BRANCH**

**AGRICULTURAL RESEARCH SERVICE**

**UNITED STATES DEPARTMENT OF AGRICULTURE**



# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Economic Insect Survey Section  
Plant Pest Control Branch  
Agricultural Research Service  
United States Department of Agriculture  
Washington 25, D. C.

## COOPERATIVE ECONOMIC INSECT REPORT

## Highlights of Insect Conditions

GRASSHOPPERS remain primary insect problem in New Mexico, continue to build up in Nebraska, and threatening populations remain in Kansas. Situation severe in Missouri. Other States report infestations. (pages 505, 529, 530).

ARMYWORM damage to small grains continues in Kansas and Missouri but beginning to decrease. Infestations remain spotted in Illinois. Damage appearing in Delaware and Maryland. Outbreaks subsiding in North Carolina, over in Tennessee. (pages 506, 529, 530).

ALFALFA WEEVIL reported from North Carolina for first time. Damage continues in Virginia, Maryland, and Delaware. (page 510).

CITRUS BLACKFLY found at Brownsville, Texas. (page 514).

MEDITERRANEAN FRUIT FLY reported from Costa Rica. (page 514).

PEA APHID active on peas in several States. (page 517).

Light infestation of GREEN PEACH APHID on tobacco in some North Carolina counties. (page 519).

THRIPS continue injurious to cotton in several States. (page 524).

A SCALE (Acnidiella taxus) collected in Florida for first time. (page 522).

SOUTHERN PINE BEETLE outbreak continuing in northern Alabama. (page 520).

NOTES received too late for inclusion in the body of this issue. (pages 529, 530).

States reporting this week - 42.

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Reports in this issue are for the week ending June 3, 1955 unless otherwise designated.

## WEATHER FOR THE WEEK ENDING JUNE 6, 1955

A low pressure trough moving slowly eastward from the Rocky Mountains to the Mississippi Valley during the week was responsible for a northward flow of warm, moist air and frequent showers in that area. Temperatures for the week averaged as much as 6° above normal in the upper Great Lakes and upper Mississippi Valley and 1° to 3° above in the Great Plains. Daily showers in north-central areas produced weekly totals ranging from one-half to over two inches. Over the weekend showers extended southward over the eastern portions of the Great Plains and Mississippi Valley almost to the Gulf. Numerous severe thunderstorms with damaging hail and wind and a few tornadoes were reported. Dry, cool Polar air covered most of the area east of the Mississippi until the last day of the period when the low pressure trough over the Mississippi Valley brought showers to the area between the Mississippi and the Appalachians. An area of low barometer off the northeastern coast was responsible for moderate to heavy showers in New England and light showers in the middle Atlantic States at the beginning of the period, and moderate to heavy frontal rains fell in coastal areas of the middle Atlantic States over the weekend. The remainder of the area east of the Appalachians received little or no rain. Temperatures were unusually low for the season in the Atlantic Coastal States at the beginning of the period, but had risen to about normal levels at the end.

Unseasonably cool, dry weather continued west of the Continental Divide. Freezing weather was rather general in central and northern interior areas early in the week when light to moderate rain and some snow fell in the northern half of the Rocky Mountain State area. Drought-breaking rains in the Great Plains were the main weather feature of May. Subnormal precipitation and drying winds during March and April in the Great Plains had depleted soil moisture to the extent that the crop outlook was dismal indeed. But heavy rains during the last two decades of May reversed this outlook completely. Soil moisture is now adequate and the crop outlook good to excellent, although the small grain crop was damaged beyond recovery in some areas. The month of May, like April, was warmer than normal east of the Continental Divide and unseasonably cool in the far West. (Summary Supplied by U.S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GRASSHOPPERS - PENNSYLVANIA - Nymphs abundant field margin of alfalfa in Perry County. (Pepper). NORTH CAROLINA - Up to 25 per square yard, mainly Melanoplus mexicanus, in corn, cotton, and other crops in Cleveland County. (Clapp, Jones). FLORIDA - First first-instar nymphs of Schistocerca americana at Gainesville. (Kuitert). LOUISIANA - Increased population of Melanoplus femur-rubrum and Melanoplus sp. in and near rice fields with 4 per square foot in Acadia Parish; 75 per 100 sweeps of alfalfa Natchitoches Parish. (Oliver). TEXAS - Medium to heavy widespread infestations, mainly M. differentialis, in pastures, field crops, legumes and fence rows in Lee, Collin, Tarrant, Haskell, Hunt, Dallas, Ellis, Navarro, Limestone Counties and to Oklahoma line. (Jones, Steinbach, Dahlberg, Martin, Randolph). NEW MEXICO - Grasshoppers continue as primary insect in State. Controls will be necessary on large areas in eastern part of State. (Ins. Lett., May 28). CALIFORNIA - Hatching reported April 18 in Merced County rangeland. (Cal. Coop. Ins. Rept.). MISSOURI - Population very high, from 20 to over 200 per square yard of hatching beds. Damage to alfalfa, soybeans and garden crops has started. Second-cutting alfalfa heavily damaged in several areas. Grasshoppers are beginning to spread out from hatching beds in southern half of State. (Kyd, Thomas). ILLINOIS - Hatching of Melanoplus spp. almost complete over most of State. In some cases grasshoppers have moved into new legume seedings and are causing damage. (Moore et al). WISCONSIN - Continuing to hatch, but hatch checked by cold wet weather. (Chambers). KANSAS - No appreciable change in population. Threatening populations still present and may increase. M. differentialis hatching. Counts of 30-40 Melanoplus nymphs, third and fourth instars, at survey stops in Riley and Wabaunsee Counties. (Matthew). NEBRASKA - Populations continue to build up in many areas. From 20-25 nymphs per square yard in alfalfa and oats in central area, 15-40 nymphs in east central, and 20-100 in southeastern. Melanoplus mexicanus adults along roadsides in some areas of eastern Nebraska. (Roselle, Andersen). SOUTH DAKOTA - Up to 75-100 per square yard in Lyman County. M. mexicanus and M. bivittatus 10-15 percent hatched, M. differentialis about 5 percent and M. femur-rubrum not yet started. (Burge, King). MONTANA - In Golden Valley County: M. confusus third instar, Aulocara elliotti, Ageneotettix deorum and Amphitornus coloradus first instars. M. confusus and Aeropedellus clavatus in southern area. (Twilde, Wolff).

EUROPEAN CORN BORER (Pyrausta nubilalis) - MASSACHUSETTS - Moths active. (Crop Pest Cont. Mess.). MARYLAND - Ten percent of wheat stems in 5-acre field broken off by small larvae. (U. Md., Ent. Dept.). DELAWARE - Egg masses common on taller corn in southern Kent and Sussex Counties, and on potatoes generally. Injury on corn at Canterbury and southward. (Milliron). OHIO - Moths 50 percent

emerged at Columbus June 2. Fifteen to 20 egg masses per 100 plants on early market sweet corn. At Wooster, emergence is just starting but pupation practically 100 percent. (C. R. Neiswander). ILLINOIS - Still two weeks earlier than normal. Moth emergence in southern third of State almost complete. Pupation complete in central third, 25-50 percent of moths emerged and eggs being deposited. In northern third pupation almost completed and emergence ranges from 10-25 percent. Heavy egg deposition, 60 masses per 100 plants, in East St. Louis area. Very few fields in this area will warrant treatment. (Moore et al). NEBRASKA - Pupation 100 percent throughout corn-growing areas of State. First eggs in Pawnee County, southeastern area, June 3; 12 egg masses per 100 plants in one field of 24-inch corn (extended). Emergence in northeast district about 23 percent, central about 29 percent, and southeast 32 percent. Average corn height for State 4-6 inches. (Roselle, Andersen). NORTH DAKOTA - Pupation 50 percent June 2 in southern Cass and northern Richland Counties; some emergence. Corn height in area 3 inches. Development of borer earlier than in previous years. (Goodfellow). SOUTH DAKOTA - Some emergence in Union County and practically all borers pupated. (Lofgren). MISSOURI - Pupation and emergence about complete in all areas. Very little corn in northern half of State tall enough to be attractive for egg deposition. (Kyd, Thomas).

ARMYWORM (Pseudaletia unipuncta) - DELAWARE - Larvae, all sizes, in grass and legumes. Approximately 20 acres wheat at Harrington showing serious damage, but only light feeding on small grains in several other areas. Damage to corn also noted. (Milliron). MARYLAND - Heavy damage to barley and oats in Talbot and Dorchester Counties, and corn in St. Marys County. First outbreaks of season. (U. Md., Ent. Dept.). NORTH CAROLINA - Early instars in Buncombe County. Outbreaks in Piedmont apparently subsiding. (Jones). ILLINOIS - Infestations rather spotted in triangular area from St. Louis to Charleston, north to Champaign and westward to Peoria. As high as 32 per linear foot in exceptionally rank grains and grasses. From second to fifth instars in many fields. Parasitism still very low. (Moore et al). MISSOURI - Some damage continues in central third of State although activity slowed some. Heads of barley still being cut and increasing injury to wheat may be expected. Undercover crops of legumes and grasses in small grains heavily damaged or destroyed in many fields. Parasites destroying considerable number of larger larvae and with warmer weather expected to largely eliminate problem. (Kyd, Thomas). KANSAS - Destructive populations continue in many barley fields of eastern area. Larvae also in wheat and brome fields and some pastures. Populations decreasing in southern area, pupation underway and parasites and predators numerous. Additional loss of barley may occur in east central counties. (Matthew).

MORMON CRICKET (Anabrus simplex) - MONTANA - Third and fourth instars at lower elevations in Big Horn and adjacent counties; second and third at higher elevations. (Roemhild). WYOMING - Five thousand acres of rangeland baited southeast of Sundance. (Spackman).

CHINCH BUG (Blissus leucopterus) - ILLINOIS - Still present in many thin stands of oats. Egg-laying continues even though many eggs have hatched. (Moore et al). SOUTH CAROLINA - Reported damaging corn in many Piedmont and Coastal Plain areas. (Nettles). NEBRASKA - Attacking volunteer corn in large numbers in Pawnee County. (Andersen).

CORN EARWORM (Heliothis armigera) - NORTH CAROLINA - Two to 4 early instars per plant on corn in Harnett County, 50 percent of plants infested. (Ammons, Jones). Late instars damaging corn in Duplin County. (Brett). Countywide in Sampson County. (Morgan). MISSOURI - Whorl injury to corn by half-grown larvae in Vernon County and a few other areas of southwest corner of State. (Kyd, Thomas). ARIZONA - Unusually abundant on alfalfa for time of year at Yuma; 1 per 10 sweeps. (Ariz. Coop. Rept.). WASHINGTON - First adult taken in light trap May 31, Yakima Valley. (Klostermeyer).

CUTWORMS - PENNSYLVANIA - Moderate on corn in Centre County. A. venerabilis involved. (Adams). DELAWARE - Numerous in alfalfa and clovers in some areas. (Milliron). TENNESSEE - Light widespread on corn and gardens in San Augustine and Sabine Counties. (Markwardt). OHIO - Agrotis ypsilon and Crymodes devastator causing damage to corn following mixed meadows in northeastern area. (C. R. Neiswander). ILLINOIS - Damage by A. ypsilon beginning in corn. Peridroma margaritosa population fairly low. (Moore et al). WISCONSIN - Serious damage in Washburn and Barron Counties. (Chambers). SOUTH DAKOTA - Corn and soybeans in southeast being damaged, especially in river bottom lands. From 10-20 percent loss in fields in Union County. (Lofgren, May 28). WASHINGTON - Severe damage to sod of bluegrass grown for seed in Yakima Valley. Strawberry root weevil (Brachyrhinus ovatus) also involved. (Klostermeyer).

ARMY CUTWORM (Chorizagrotis auxiliaris) - WASHINGTON - About 1500 acres barley and wheat sprayed in Asotin County\* and 200 acres of barley injured in Whitman County. (Brannon, Bond, Entenmann). IDAHO - Insecticides controlling outbreak in Idaho County. Pupation in fields where controls not applied. High incidence of disease observed. This disease has been identified by E. A. Steinhaus as a virus of the granulosis group and, according to him, is first known instance of a granulosis virus in C. auxiliaris. (Manis, May 28). MONTANA - Severe damage in wheat in Chouteau, Teton, Fergus, and Park Counties. Locally severe and moderate damage in Liberty, Blaine, Toole, Daniels, and Gallatin Counties. Invaded newly-seeded lawns in Glendive. (Roemhild). UTAH - Outbreaks subsiding as pupation occurring. Several

\* About 250 acres of rape destroyed in Asotin County

thousand acres of alfalfa and small grains treated during May. (Knowlton).

FALL ARMYWORM (Laphygma frugiperda) - FLORIDA - Heavy injury on grass at Belle Glade. Mocis sp. also involved. (Genung).

LOUISIANA - About one per stalk on seedling corn in East Baton Rouge Parish. Controls initiated. (Oliver).

PALE WESTERN CUTWORM (Agrotis orthogonia) - MONTANA - Major damage in widely scattered spots over State. Thousands of acres reseeded or treated. Infestations in Yellowstone, Big Horn, Broadwater, Gallatin and Liberty Counties. Additional counties also reporting. Damage mostly in winter wheat but barley and spring wheat damaged in some areas. (Roemhild).

SOD WEBWORMS - PENNSYLVANIA - Several corn fields with heavy infestation in Perry County. (Pepper). Fifteen acres corn completely destroyed Somerset County. (Udine).

STALK BORER (Papaipema nebris) - MISSOURI - Light damage to margins of corn, wheat and gardens in scattered areas. (Kyd, Thomas).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - FLORIDA - Several fields of young cane show 60-75 percent plants with dead hearts at Belle Glade. (Questel).

CORN FLEA BEETLE (Chaetocnema pulicaria) - DELAWARE - Bacterial wilt appearing on corn. (Milliron).

FALSE WIREWORMS (Eleodes spp.) - KANSAS - Numerous E. suturalis beetles appearing in central area. Other species in numbers in most of western Kansas. Much greater numbers than since 1948. General buildup result of dry weather of past few years. (Matthew).

MONTANA - Damage to grains very severe some areas. Abundant moisture has kept feeding at ground surface. Seed treatment has not controlled these pests. (Roemhild).

SUGARCANE BEETLE (Euetheola rugiceps) - NORTH CAROLINA - Damage to corn in Camden and Hertford Counties. (Scott). SOUTH CAROLINA - Damage to corn continues in many areas. (Nettles). KENTUCKY - Considerable numbers collected at Lexington and Louisville. (Price). MISSISSIPPI - Total of 500 specimens collected in one light trap in one night. Damaging corn in Lauderdale County; 75 percent of plants killed in one 7-acre field in Harrison County. (Hunsucker, Hutchins, McGehee).

MAIZE BILLBUG (Calendra maidis) - NEBRASKA - Damage beginning to show in corn; 9-10 plants per hundred show feeding holes. (Andersen).

WIREWORMS - IDAHO - Severe losses in winter wheat in Owyhee County. Areas up to one acre 100 percent destroyed. (Walz, May 28). MONTANA - Damage in winter wheat in Flathead, Pondera, Daniels, Carter, and Fallon Counties. (Roemhild). WYOMING - Up to 5 larvae per kernel of corn in Goshen County. (Robb). MISSOURI - Light damage, 1-4 percent, in most fields of corn in northeast area. (Kyd, Thomas). WISCONSIN - Considerable damage to corn and truck crops in southern area. (Chambers).

A MAY BEETLE (Phyllophaga cribrosa) - TEXAS - Heavy widespread infestations in pastures and grasslands in Denton County. (Randolph).

EUROPEAN WHEAT STEM SAWFLY (Cephus pygmaeus) - DELAWARE - Noticeable damage to barley near Kenton. (Milliron).

CORN BLOTCH LEAF MINER (Agromyza parvicornis) - DELAWARE - Adults prevalent in Kent and Sussex Counties. Larval damage to lower corn leaves common some areas. (Milliron).

SEED-CORN MAGGOT (Hylemya cilicrura) - WISCONSIN - Damage to corn in low ground in muck areas. (Chambers).

HESSIAN FLY (Phytophaga destructor) - MISSOURI - Lodging of wheat common throughout State, up to 17 percent of stand. (Kyd, Thomas).

RICE STINK BUG (Solubea pugnax) - LOUISIANA - Ten to 16 per 100 sweeps in grass and rice in Acadia Parish. (Oliver).

ENGLISH GRAIN APHID (Macrosiphum granarium) - CALIFORNIA - Generally distributed in Santa Barbara and San Luis Obispo Counties. Heavy in some wheat fields. Also on barley and grasses. (Cal. Coop. Rept.). KANSAS - Moderate to heavy infestations continue to cause concern in wheat and barley in southeast and east central areas. From 1-40 aphids per head in many fields but not all heads infested. (Matthew). NEBRASKA - From 20-25 per 25 sweeps on wheat in eastern and southeastern areas. (Andersen). MISSOURI - Populations declining in wheat in most of central third of State. Spring-seed oats becoming heavily infested in several areas, 6-35 per head. (Kyd, Thomas). ILLINOIS - Infestation on wheat heads very variable in southwestern area. Very little treatment has been needed or will be made as wheat nearing maturity. (Moore et al).

EUROPEAN CHAFER (Amphimallon majalis) - NEW YORK - Nine adults taken in trap in Geneva area June 2, earliest observed date of flight. Heavy flight may be expected after June 15 in Newark, New York area. (Tashiro).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - IDAHO - Injury in all sweetclover in southwest area. (Walz).

ALFALFA WEEVIL (Hypera postica) - DELAWARE - Heavy larval and adult feeding retarding second-growth alfalfa throughout State. (Milliron). MARYLAND - Cocoons numerous in alfalfa fields in Harford County, very little damage to second cutting. Second-growth alfalfa damage by larvae in Worcester County. (U. Md., Ent. Dept.). VIRGINIA - Larvae and adults continue to heavily damage alfalfa in many eastern counties, May 27. (Morris). NORTH CAROLINA - Infestation found on alfalfa in Granville and Vance Counties. Slightly over 6 larvae per 100 sweeps. (Dogger). According to ARS files, this is the first record of this insect in North Carolina. PA. - Found in alfalfa in Carbon, Monroe, Juniata, Snyder, Pike, Northampton, Lehigh, Luzerne and Northumberland Counties. (App, Negley, Menusan).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - NEBRASKA - Heavy in east and southeast; average of 19 of 25 stems in various fields showing injury. From 9-18 adults per 25 sweeps. (Andersen).

POTATO LEAFHOPPER (Empoasca fabae) - MARYLAND - Five adults per 10 sweeps in alfalfa field Worcester County, first of season. (U. Md., Ent. Dept.).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - LOUISIANA - Increasing in alfalfa. Per 100 sweeps in following parishes: Rapides 47, Natchitoches 55, Bossier 18. (Oliver).

SPITTLEBUGS - PENNSYLVANIA - Adults becoming abundant on legume hay in south central area. (Pepper). DELAWARE - Continues to injure alfalfa in Middletown area. (Milliron). MARYLAND - Meadow spittlebug adults numerous in alfalfa and clover in most sections. (U. Md., Ent. Dept.). MICHIGAN - Philaenus leucophthalmus numerous at Kalamazoo. (Hutson).

YELLOW CLOVER APHID (Myzocallis trifolii) - ARIZONA - Apparently checked in southwestern counties, also in Bowie area of Cochise County. Population drop correlated with abundance of convergent lady beetle. Still severe in Greenlee County. (Ariz. Coop. Rept.). NEW MEXICO - Continues of extreme importance. Second cutting of alfalfa in southern half being heavily attacked with every field in Mesilla Valley showing populations. Large populations at first cutting in Fort Sumner area. (Ins. Lett., May 28). KANSAS - Threatening infestations in some alfalfa fields in south central area have diminished and not problem in that area now. Parasites and predators have built up and, with weather changes, are giving some control. Aphids still being found in many alfalfa fields in that area, however. (Matthew). OKLAHOMA - Twenty-five per 125 sweeps, about same as last week, in one alfalfa field in Stillwater area. (Fenton). PENNSYLVANIA - Found on red clover in Northumberland County. (App).

PEA APHID (Macrosiphum pisi) - PENNSYLVANIA - Very heavy on alfalfa in Lehigh and Northampton Counties. (Menusan, Negley). MARYLAND - Damage to second-growth alfalfa in Harford and Worcester Counties. (U. Md., Ent. Dept.). SOUTH CAROLINA - Damage to alfalfa in Greenville, Laurens and Abbeville Counties. (Nettles). MISSOURI - Building on new-growth alfalfa following first cutting, from 8-25 aphids per sweep. (Kyd, Thomas). CAL. - Heavier than usual Merced and Stanislaus Counties. (Cal. Coop. Rept.)

APPLE GRAIN APHID (Rhopalosiphum fitchii) - MICHIGAN - Numerous on oats at Kalamazoo. (Hutson).

THRIPS - NEW MEXICO - Large populations continue on alfalfa, onions, and cotton. (Ins. Lett., May 28).

GARDEN WEBWORM (Loxostege similalis) - SOUTH DAKOTA - Moths very abundant in eastern area for past two weeks. (Lofgren, May 28).

BEAN LEAF BEETLE (Cerotoma trifurcata) - DELAWARE - Destructive to soybeans in some areas. (Milliron). ILLINOIS - Feeding extensively on newly-emerging soybeans. (Moore et al).

VETCH BRUCHID (Bruchus brachialis) - MICHIGAN - Numerous in Ingham County. Entering fields from hibernation. (Hutson).

CLOVER MITE (Bryobia praetiosa) - IDAHO - Abundant around homes in Moscow. Considerable damage to grass and clover in lawns, and severely damaging many flowers and shrubs. (Manis, May 28).

WHITE-LINED SPHINX (Celerio lineata) - TEXAS - Light widespread on vetch in Kaufman County. (Randolph). MISSOURI - Small areas of Vernon County and other widely scattered spots of southwest have very heavy numbers of larvae. Apparently feeding on a species of purslane. (Kyd, Thomas).

PLANT BUGS - ARIZONA - Very abundant, 700 per 100 sweeps, in one field of alfalfa at Buckeye, Maricopa County. Much lower than usual on alfalfa at Yuma. (Ariz. Coop. Rept.). MONTANA - Local severe infestations of Labops hesperis in crested wheatgrass and barley in Stillwater and Yellowstone Counties. (Roemhild). LOUISIANA - Per 100 sweeps in alfalfa by parish: 53 adults, 31 nymphs in Rapides; 38 adults, 23 nymphs in Natchitoches; and 6 adults and 5 nymphs in Bossier. (Oliver). PENNSYLVANIA - Adults becoming abundant on legume hay in south central area. (Pepper).

A LEAF MINER (Liriomyza sp.) - ARIZONA - Damage quite prevalent on older leaves of alfalfa in Buckeye area. Adults abundant at Yuma. (Ariz. Coop. Rept.).

FRUIT INSECTS

CODLING MOTH (Carpocapsa pomonella) - MASSACHUSETTS - Moths emerging. (Crop Pest Cont. Mess.). PENNSYLVANIA - First entrance into apples in Franklin County. (Pepper). MARYLAND - Entries in apples May 23; moth emergence light. (U. Md.). DELAWARE - Peak emergence during week. (Late News). INDIANA - Egg laying and hatch slowed. Hatch expected to increase with warm weather. (Hamilton). Entries becoming noticeable in Orleans area. (Marshall). OHIO - First entry noticed on unsprayed apples June 3; cage emergence 90 percent complete. (C. R. Neiswander). ILLINOIS - About as many moths have emerged in past week as in preceding week; hatch expected to continue into June in Carbondale area. (Chandler). MISSOURI - Number of successful entries low, control excellent. (Martin). OREGON - Adults emerged in the Milton-Freewater area May 22 (Wallace); first adult taken at Hood River May 31. (Ellertson). WASHINGTON - Retarded by cool weather. (Luce).

CURCULIOS - OHIO - Very severe on unsprayed apples. (Cutright).

PLUM CURCULIO (Conotrachelus nenuphar) - MASSACHUSETTS - Activity slowed; late injury expected with high temperatures. (Crop Pest Cont. Mess.). NEW YORK - Activity light but persistent in Monroe County. (Corey). ILLINOIS - Gradual decrease. (Chandler).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - NEW YORK - Still active in several counties. (Wkly. News Lett.). VIRGINIA - Larvae of first new generation beginning to pupate. (Hill, May 27). MARYLAND - Pupae observed May 25. (U. Md.). INDIANA - First brood more numerous than previous two seasons in central area. Larvae active and pupating. (Hamilton).

APPLE MEALYBUG (Phenacoccus aceris) - OREGON - Originally discovered in Oregon in 1951 in Brooks vicinity of Marion County, this insect now occurs over area 2 miles in diameter. It has been found only on filbert trees. Recent egg-mass counts average 28.4 per 2 feet length of branch on separate trees. Counts made on more heavily infested limbs 2-5 inches in diameter. (Roth).

CALIFORNIA PRIONUS (Prionus californicus) - NEW MEXICO - Appearing fairly abundantly at lights in the Mesilla Valley. (Ins. Lett., May 28).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - INDIANA - Twig injury high in numerous plantings; most larvae have left twigs. Second-brood attack expected heavy where heavy twig injury occurred. ILLINOIS - Very few on peaches. (Chandler). MISSOURI - Injury noted in young peach orchards in Waverly area. (Wkly. Rept. Fr. Grs.).

PEACH TWIG BORER (Anarsia lineatella) - WASHINGTON - Active in orchards of Yakima Valley where no dormant spray used. (Luce).

LEAF MINERS - MARYLAND - Increasing in some orchards in Hancock area. (U. Md., Ent. Dept.). Unspotted tentiform leaf miner (Callisto geminatella) - Adults of this year's first generation began emerging May 24; present in large numbers, May 27. (Hill).

ORCHARD MITES - NEW YORK - European red mite summer eggs beginning to hatch in Columbia County. (Poray). VIRGINIA - European red mite more prevalent than normal in localized situations in orchards of northern Virginia. (Hill). INDIANA - Mite counts per 100 leaves on three varieties of apples averaged 17 on May 31 as compared to 196 per 100 leaves on June 1, 1954; figures taken on trees with no dormant spray. (Marshall). OHIO - European red mite more abundant than last year; many second generation mature and ovipositing. (C. R. Neiswander). UTAH - Clover mite (Bryobia praetiosa) infestations moderate to severe in many apple and peach orchards of northern area where control omitted. (Knowlton). OREGON - European red mite (Metatetranychus ulmi) beginning egg deposition on apples and pears May 28 at Hood River. (Ellertson).

CHERRY FRUIT FLY (Rhagoletis cingulata) - WASHINGTON - Retarded by cool weather. (Luce). MICHIGAN - Numerous in Grand Rapids area. (Hutson).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - WISCONSIN - Defoliated wild cherry and neglected orchards in southern area. (Chambers).

APHIDS - INDIANA - Subsiding in activity in Orleans area. (Marshall). ILLINOIS - In Carbondale area green apple aphid still moderate; rosy apple aphid leaving apples. (Chandler). UTAH - Green peach aphid (Myzus persicae) moderately to severely abundant and curling foliage in some peach orchards in Washington, Weber, and Kane Counties. (Knowlton, Burningham). Black cherry aphid (Myzus cerasi) injurious in some orchards in Box Elder, Weber, Salt Lake and Washington Counties. (Knowlton). WASHINGTON - Mealy plum aphid (Hyalopterus arundinis) curling leaves of plum and requiring control measures at Parker. (Landis, Schopp). PENNSYLVANIA - Apple aphid (Aphis pomi) building up in orchards in Adams County. (Asquith). Black cherry aphid (Myzus cerasi) heavy on unsprayed sweet cherries in Centre County. (Adams).

#### Citrus Insect Conditions in Florida for Fourth Week in May, 1955

Increased rate of activity and hatching of PURPLE SCALE (Lepidosaphes beckii); 97 percent of groves inspected infested; highest activity was in West Coast and Brooksville areas. FLORIDA RED SCALE (Chrysomphalus aonidum) declining with increased activity and hatching expected in about a week; 57 percent of groves infested. Increased activity of CITRUS RED MITE (Metatetranychus citri) with 75 percent of groves infested; further

increase expected. With 52 percent of groves infested, CITRUS RUST MITE (*Phyllocoptruta oleivora*) increased activity and rapid build-up expected; highest activity in West Coast and Indian River districts. (Pratt, Thompson and Johnson).

#### Mediterranean Fruit Fly Reported from Costa Rica

The Mediterranean fruit fly (*Ceratitis capitata*) has been found established on the central plateau of Costa Rica in an area 30 x 70 kilometers. The present serious situation may increase when additional hosts develop during rainy season and when coffee berries develop on 80,000 acres. Infestation in peaches heavy, moderate in oranges and other citrus. Adults observed frequently May 26. (Christensen, Stone). This insect is not known to occur in the continental United States. It was discovered in Florida in 1929 but was successfully eradicated, and no specimens have been found there since July 1930.

#### Mexican Fruit Fly Suppression Project in California

Suppressive operations on all host trees in California within five miles of the Mexican border were initiated in April, 1954, following discovery of this pest in Tijuana, Baja California, Mexico, January 1954. Since inception of operations, 282,717 host trees have been sprayed, using 61,825 gallons of bait material. No flies have been trapped in the California area of treatment except the single specimen taken in San Ysidro in August 1954. Plans are made to continue protective measures through this season and through the summer of 1956. (Armitage). According to available records, no Mexican fruit fly has been trapped in the northwest Mexico area since 2 specimens were taken at Tijuana November 23, 1954.

#### Citrus Blackfly Found at Brownsville, Texas

The following statement was released June 3 by Plant Pest Control Branch to State Plant Quarantine Officials:

This will advise you that an incipient infestation of citrus blackfly was discovered in the United States in the vicinity of Brownsville, Texas, on May 31, 1955. This infestation was found on a single lime tree on the grounds of a tourist court located outside of the center of town. No commercial groves occur in this area. Egg spirals and unemerged pupae were present on two leaves of this tree. No emerged pupal cases were found.

An intensive survey now underway has so far failed to reveal any additional infested trees in the vicinity. Appropriate officials in the

State of Texas are aware of this discovery and an aggressive cooperative spraying program is in progress to eradicate this infestation.

WALNUT APHID (Chromaphis juglandicola) - CALIFORNIA - Heavy infestation over Stanislaus County. (Cal. Coop. Rpt.).

PECAN APHIDS - ILLINOIS - Moderate with considerable honeydew on foliage in southern area. (Chandler).

### TRUCK CROP INSECTS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - RHODE ISLAND - Eggs found on a few plants. (Kantack). DELAWARE - Injuring potatoes near Dover, Lincoln and Georgetown. Destroying tomatoes in Georgetown area. (Milliron). MARYLAND - All stages present on unsprayed potatoes and tomatoes. (U. Md., Ent. Dept.). VIRGINIA - Numerous enough to require treatment in Norfolk area and Eastern Shore; attacking tomatoes on Eastern Shore. (Morris, May 27). NORTH CAROLINA - Causing much damage to Irish potatoes and egg plant in Duplin County. (Brett).

POTATO APHID (Macrosiphum solanifolii) - DELAWARE - Generally not heavy as usual on potatoes but abundant on tomatoes some areas. (Milliron).

POTATO FLEA BEETLE (Epitrix cucumeris) - DELAWARE - Severe on potatoes at Townsend. (Milliron). RHODE ISLAND - Populations continue heavy in untreated fields. (Kantack).

POTATO LEAFHOPPER (Empoasca fabae) - DELAWARE - Present in most untreated potatoes in southern Kent and Sussex Counties. Increase in one acreage east of Dover. (Milliron).

POTATO PSYLLID (Paratrioza cockerelli) - COLORADO - First adults taken in Mesa County, May 25. (Colo. Exp. Sta.). WYOMING - Population continues to increase on non-economic host in Goshen County. (Wallis).

CUTWORMS - WASHINGTON - Damaging potatoes near Brownstown. (Landis, Schopp). VIRGINIA - Attacking cabbage Carroll County. (Price, May 28).

EGGPLANT LACE BUG (Gargaphia solani) - NORTH CAROLINA - Causing damage to eggplant in Duplin County. (Brett).

EUROPEAN EARWIG (Forficula auricularia) - WASHINGTON - First-brood nymphs injuring potatoes and flowers at Union Gap. (Landis, Schopp).

TUBER FLEA BEETLE (Epitrix tuberis) - WYOMING - Emergence from hibernation started; 5 per 100 sweeps on Lycium in Goshen County. (Wallis).

CELERY LOOPER (Anagrapha falcifera) - FLORIDA - Heavy infestations on celery in the Everglades area; about 40 acres average about a dozen loopers per plant. (Denmark).

A CELERY TORTRICID (Tortrix ivana) - FLORIDA - Considerable numbers of adults with light larval populations on celery at Belle Glade; indication of increasing populations. (Denmark).

A CELERY CUTWORM (Platysenta sutor) - FLORIDA - Decreased population on celery in the Everglades area, averaging less than one per plant. (Denmark).

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) - MINNESOTA - From 5-10 adults per 20 sweeps on carrots at Brooklyn Center. (Minn. Rpt. Ser.).

IMPORTED CABBAGEWORM (Pieris rapae) - DELAWARE - Serious injury in a commercial planting west of Dover. (Milliron). NORTH CAROLINA - Causing damage to cabbage in Duplin County. (Brett).

HARLEQUIN BUG (Murgantia histrionica) - NORTH CAROLINA - Infestations building up rapidly in Duplin County on turnip and radish. (Brett).

CABBAGE APHID (Brevicoryne brassicae) - CALIFORNIA - Increasing in most fields Whittier area. (Campbell). NEW YORK - Building up on early cabbage in Dutchess County. (O'Leary).

CABBAGE MAGGOT (Hylemya brassicae) - WISCONSIN - Abundant on cabbage and radish in southern area. (Chambers). NEW YORK - Injury severe on unprotected plantings in Niagara County. (Stevenson).

CABBAGE SEEDPOD WEEVIL (Ceutorhynchus assimilis) - IDAHO - Light to medium populations in rape seed fields; controls being used; populations lower than in previous years. (Manis).

SPINACH LEAF MINER (Pegomya hyoscyami) - DELAWARE - Damage common in spinach near Hartly. (Milliron).

SPINACH FLEA BEETLE (Disonycha xanthomelas) - DELAWARE - Injury in commercial spinach near Hartly. (Milliron).

ALFALFA WEBWORM (Loxostege commixtalis) - WYOMING - Heavy flight of moths laying eggs on beets in Goshen County. (Robb).

FLEA BEETLES - NORTH DAKOTA - Adults causing injury in seeded gardens and transplants in Fargo area. (Goodfellow). UTAH - Causing moderate damage to sugar beets in some areas. (Knowlton).

SUGAR BEET ROOT MAGGOT (Tetanops myopaeformis) - COLORADO - Showing in scattered fields in Weld County; early stages; insecticides ineffective. (Colo. Exp. Sta.).

SUGAR BEET WIREWORM (Limonius californicus) - CALIFORNIA - Eighty percent of the turnips in an untreated field in Los Angeles County were damaged. (Campbell).

BEEF LEAFHOPPER (Circulifer tenellus) - COLORADO - Reaching 0.7 adults per linear foot of beet row; some spots 1.0. (ARS, Colo. Exp. Sta.).

SWEETPOTATO FLEA BEETLE (Chaetocnema confinis) - MARYLAND - General on sweetpotatoes and doing some damage in Wicomico and Somerset Counties. (U. Md., Ent. Dept.).

TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus) - CALIFORNIA - Showing on lima beans in Orange and Los Angeles Counties; continues to build up on strawberries. (Campbell).

MEXICAN BEAN BEETLE (Epilachna varivestis) - DELAWARE - Adults feeding on snap and lima beans from Rising Sun southward. (Milliron). VIRGINIA - Adults beginning to lay eggs freely; some hatching. (Morris, May 27). PENNSYLVANIA - First adult and eggs in Adams County. (Pepper). MARYLAND - Light numbers of adults on snap beans in the Salisbury area, Wicomico County. (U. Md., Ent. Dept.).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - MISSISSIPPI - Causing damage to cowpeas in George County, May 18. (Bond).

PEA APHID (Macrosiphum pisi) - DELAWARE - Commercial peas at Middleton and Lincoln severely damaged. (Milliron). RHODE ISLAND - Heavy populations on garden peas in some areas with 20 to 30 aphids per plant in the Wakefield area. (Kantack). PENNSYLVANIA - Moderate infestation in commercial peas; some control used in Centre County. (Adams). WISCONSIN - Increasing but no serious damage. (Chambers). MINNESOTA - Pan counts ranged from 0.01 to 3.3 in southcentral. (Minn. Ins. Rpt. Ser.). UTAH - Common in canning pea fields in northern area. (Knowlton).

BEAN LEAF BEETLE (Cerotoma trifurcata) - DELAWARE - Injury to snap beans, Sussex County, and to lima beans north of Ellendale. (Milliron). MARYLAND - Heavy foliage damage by adults on snap beans in Wicomico and Somerset Counties. (U. Md., Ent. Dept.). VIRGINIA - Feeding on snap beans and blackeyed peas in King William County. (Willey, May 27). NORTH CAROLINA - Moderate foliage damage to snap and soybeans in Washington, Martin, Pitt, Franklin, and Wake Counties. (Scott).

A LEAF MINER (Liriomyza sp.) - ARIZONA - General on cantaloup in Salt River Valley, becoming severe in some fields. (Ariz. Coop. Rpt.).

SPOTTED CUCUMBER BEETLE (Diabrotica duodecimpunctata howardi) - DELAWARE - Attacking squash at Ellendale. (Milliron). OKLAHOMA - Light in cucurbits in north central. (Walton). PENNSYLVANIA - Adults feeding on bean foliage in Adams County. (Pepper).

STRIPED CUCUMBER BEETLE (Acalymma vittata) - RHODE ISLAND - Heavy infestation on cucumbers at Portsmouth with 2-3 beetles per plant. (Kantack). NEW YORK - Large numbers on cucurbits in Dutchess County. (O'Leary). MARYLAND - Damaging young squash in Montgomery County. (U. Md., Ent. Dept.). DELAWARE - Destructive to large cucumber planting west of Dover. (Milliron). OKLAHOMA - Light populations in northcentral area. (Walton).

ONION THRIPS (Thrips tabaci) - DELAWARE - Injuring onions in Ellendale-Georgetown area. (Milliron). TEXAS - Causing heavy, widespread damage to tomatoes in Cherokee County. (Gaines).

ONION MAGGOT (Hylemya antiqua) - OREGON - Adults emerging in the Lake Labish area; first maggots noted May 1. (Crowell).

SLUGS - WASHINGTON - Very damaging to home garden vegetables and perennials in South Bend area. (Tidrick).

OMNIVOROUS LEAF TIER (Cnephasia longana) - OREGON - Larvae on peas and in strawberry fields in Marion and Washington Counties. (Hanna).

RASPBERRY CANE BORER (Oberea bimaculata) - UTAH - Causing some damage in Weber County. (Burningham).

RASPBERRY SAWFLY (Monophadnoides geniculatus) - MINNESOTA - Abundant in central area. (Minn. Rpt. Ser.).

RASPBERRY ROOT BORER (Bembecia marginata) - WISCONSIN - Quite serious in raspberry regions. (Chambers).

SPITTLEBUGS - CONNECTICUT - Stunting strawberries; very abundant in local areas. (Johnson). NEW YORK - Heavy infestations in strawberries in several counties. (Wkly. News Lett.).

STRAWBERRY CROWN MOTH (Ramosia bibionipennis) - UTAH - Damaging numbers at Provo. (Knowlton, Barlow).

STRAWBERRY LEAF ROLLER (Ancyliis comptana fragariae) - IDAHO - High populations of adults in strawberries near Moscow; first evidence of season. (Manis).

A STRAWBERRY SAWFLY (Empria ignota) - MINNESOTA - Damage heavy on plantings in central Minnesota near Brainerd, Aitkin, and Nisswa. (Minn. Rpt. Ser.).

GREEN PEACH APHID (Myzus persicae) - NORTH CAROLINA - Up to 50 percent of plants with colonies in scattered fields of tobacco in Harnett, Cumberland, Robeson, and Columbus Counties, most with light infestations. (Mitchell). Light infestations in Jackson, Pitt, and Northampton Counties. (Scott).

HORNWORMS (Protoparce spp.) - NORTH CAROLINA - A survey of six southeastern counties averaged one egg or larva per ten tobacco plants. (Mitchell). Reported from Lee, Martin, Pitt, Franklin, Wake, Johnston, and Yadkin Counties. (Scott). TEXAS - Light local infestations of P. quinque maculata in Nacogdoches County. (Markwardt).

SEED-CORN MAGGOT (Hylemya cilicrura) - CONNECTICUT - A number of tobacco fields damaged and required replanting in the Connecticut valley. (Johnson).

FOUR-SPOTTED TREE CRICKET (Oecanthus nigricornis quadripunctatus) - NORTH CAROLINA - A few nymphs and adults in tobacco fields in Cumberland, Robeson, Columbus, and Sampson Counties with some evidence of damage from egg laying. (Mitchell).

TOBACCO BUDWORMS (Heliothis spp.) - NORTH CAROLINA - Twenty-five percent of plants infested in one 4-acre field in Wilson County (Guthrie); a few in Harnett, Columbus, and Sampson Counties (Mitchell); countywide in Lee and Harmon; and reported from Martin, Pitt, Franklin, and Wake Counties. (Scott).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - NORTH CAROLINA - Light in southeastern counties (Mitchell); some damage in Martin, Washington, Pitt, Wake, Franklin, and Johnston Counties. (Scott).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - NORTH CAROLINA - Attacking tobacco in Vance County; 23 adults found under one plant. (Jones).

WHITE-FRINGED BEETLES (Graphognathus spp.) - NORTH CAROLINA - Severe damage to a half-acre field of tobacco in Columbus County. (Jones, Rabb and Guthrie).

#### FOREST, ORNAMENTAL AND SHADE TREE INSECTS

ELM LEAF BEETLE (Galerucella xanthomelaena) - RHODE ISLAND - Populations light with little injury. (Kantack). DELAWARE - Hatching continues. Larval damage conspicuous some areas. (Milliron). MISSISSIPPI - Young stages defoliating large elms in Marshall County. (Hutchins). ILLINOIS - Serious damage already on Chinese elms in southern area. (Moore et al).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - WISCONSIN - Abundant in dead and dying elms in southeastern area. (Chambers). OKLAHOMA - Several hundred elms of all sizes infested at Platt National Park, Sulphur, during third week of March. Problem serious as elms major tree species in park. (South. For. Pest Repr.).

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - ALABAMA - Outbreak in northern area continuing. Most serious infestations in Franklin, Marion, Lawrence, Winston, Talladega, Clay, Calhoun, and Cleburne Counties. Control continued. (South. For. Pest Repr.).

BARK BEETLES - Ips engraver beetles and black turpentine beetles noted in LOUISIANA in DeSoto and Rapides Parishes; in ALABAMA in Talladega and Covington Counties; and in east TEXAS. Increased Ips activity in Yell, Polk, Grant, and Bradley Counties, ARKANSAS. Although rains in northern ALABAMA and MISSISSIPPI may reduce Ips broods, both black turpentine beetles and Ips beetles may be expected in dry areas, particularly in stands recently cut or severely burned. Latter pest may become quite serious if drought persists. (South. For. Pest Repr.). WISCONSIN - More abundant than usual in central area. (Chambers).

WHITE-PINE WEEVIL (Pissodes strobi) - WISCONSIN - Causing injury to white and jack pine and Norway spruce in north central area. (Chambers).

CALIFORNIA OAKWORM (Phryganidia californica) - CALIFORNIA - Severe damage on live oaks in Marin County. (Cal. Coop. Rept.).

JACK PINE BUDWORM (Choristoneura pinus) - MINNESOTA - Third-instar larvae in Brainerd, Bimidji, and Park Rapids triangle; heavy near Bimidji on staminate flowers; larvae, 1-3 per shoot feeding in new shoots of jack pine in reproduction near Brainerd. (Minn. Ins. Rpt. Serv.).

PINE TORTOISE SCALE (Toumeyella numismaticum) - WISCONSIN - Continues abundant in several counties in northeastern area. (Chambers).

PINE SPITTLEBUG (Aphrophora parallela) - MINNESOTA - Masses and nymphs abundant on jack pine reproduction north of Wilton. (Minn. Ins. Rpt. Serv.). MARYLAND - Extremely heavy on young loblolly pine on Eastern Shore. (U. Md., Ent. Dept.).

INTRODUCED PINE SAWFLY (Diprion simile) - WISCONSIN - Feeding heavily in northwestern area, indicating spread. (Chambers).

LEAF-CUTTING ANTS - Caused more than the usual amount of damage to young pines in east TEXAS and central LOUISIANA. New colonies appeared in low areas normally too wet for the ants. This resulted in increased control costs prior to planting. (South. For. Pest Repr.).

BIRCH LEAF MINER (Fenusa pusilla) - CONNECTICUT - Severe, causing browning and defoliation of gray birches in many sections. (Johnson).

FOREST TENT CATERPILLAR (Malacosoma disstria) - WISCONSIN - Defoliation of much of birch and poplar in northwest. (Chambers). MINNESOTA - Larvae nearly mature in Pine and Carlton Counties June 1. (Minn. Ins. Rpt. Serv.).

NORWAY MAPLE APHID (Periphyllus lyropictus) - IDAHO - First winged adults found on maple in Moscow. (Manis).

GREEN-STRIPED MAPLEWORM (Anisota rubicunda) - KANSAS - Adults taken in light traps in Doniphan County May 13 and 18. Moths also found on maple trees in Brown County. (Matthew).

MAPLE BLADDER-GALL MITE (Vasates quadripedes) - RHODE ISLAND - Galls very abundant on maple leaves in Cranston area (Mathewson); moderate throughout State (Kantack).

FALL CANKERWORM (Alsophila pometaria) - VIRGINIA - Defoliating forest trees and shrubbery in Floyd County. (Morris, May 27).

A PLANT BUG (Neoborus illitus) - CALIFORNIA - Severe damage to new growth of ash in Marin County. (Cal. Coop. Rpt.).

SPRUCE BUDWORM (Choristoneura fumiferana) - MINNESOTA - Fifth-instar larvae at Bimidji. (Minn. Ins. Rpt. Serv.).

UGLY-NEST CATERPILLAR (Archips cerasivorana) - PENNSYLVANIA - Fairly common Potter County on wild cherry and chokeberry. (Adams).

A SCALE (Aonidiella taxus) - FLORIDA - Collected on Podocarpus for the first time in Florida. (Denmark).

BLACK VINE WEEVIL (Brachyrhinus sulcatus) - RHODE ISLAND - Light numbers on yew. (Mathewson). Moderate numbers with damage especially on Taxus. (Kantack).

SPIDER MITES - NEBRASKA - Building up on juniper and spruce in eastern area. (Andersen). PENNSYLVANIA - Considerable infestation of Paratetranychus ununquus in some plantings of juniper in Westmoreland County. (Udine).

BAGWORM (Thryidopteryx ephemeraeformis) - DELAWARE - Hatching from Frederica southward. (Milliron). ILLINOIS - Small larvae feeding on foliage of trees in southern area. (Moore et al).

AZALEA LACE BUG (Stephanitis pyrioides) - DELAWARE - Nymphs appearing in Wilmington-Newark area. (Milliron).

AZALEA LEAF MINER (Gracilaria azaleella) - MARYLAND - Damaging azaleas in Prince Georges and Montgomery Counties. (U. Md., Ent. Dept.).

HOLLY LEAF MINERS (Phytomyza sp.) - RHODE ISLAND - Moderate numbers common throughout the State. (Kantack, Mathewson). OREGON - P. ilicis infestation serious on planting of 25 trees in Portland; adults mating June 1. (Roth).

JAPANESE BEETLE (Popillia japonica) - VIRGINIA - One adult taken on rose June 5 in Fairfax County. First report of season for area. (Gentry).

SLUGS - PENNSYLVANIA - Very abundant, severely injuring and killing petunias and other flowers in Westmoreland County. (Udine).

NARCISSUS BULB FLY (Lampetia equestris) - WASHINGTON - First adult noted in San Juan County May 1. (Baker).

RHODODENDRON LACE BUG (Stephanitis rhododendri) - PENNSYLVANIA - Considerable on ornamental plantings of rhododendron in Westmoreland County. (Udine).

SCALE INSECTS - MINNESOTA - Heavy local infestations on elm, ash, oak, and other deciduous trees and shrubs. (Minn. Ins. Rpt. Serv.). NEBRASKA - Oystershell scale (Lepidosaphes ulmi) very abundant on lilac, crawler stage present. (Andersen).

IMPORTED WILLOW LEAF BEETLE (Plagioderia versicolora) - RHODE ISLAND - Six to eight adults per leaf in Cranston area (Mathewson); heavy in the Scituate area (Kantack).

EUROPEAN ELM SCALE (Gossyparia spuria) - WISCONSIN - More abundant than usual. (Chambers). NEBRASKA - Very abundant on elms in western area. (Andersen).

ELM BORER (Saperda tridentata) - NEBRASKA - General infestation of elms in Lincoln and Scottsbluff areas. In some areas of Lincoln, three-fourths of trees are infested to the point where a reinfestation would kill the trees. (Hamilton, Andersen).

### COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Slow build-up generally in lower Rio Grande Valley. (Deer). Survival in hibernation cages at Waco June 3 was 7.8 percent as compared with 2.5 at same time in 1954. Weevils were found in 18 of 20 fields at average of 75 per acre. For corresponding week 1954 average of 45 per acre in 44 fields. (Parenica et al). Overwintered weevils reported entering fields in increasing numbers in the east, central, northeast, and north central areas. (Davis, Martin). LOUISIANA - Average number of weevils per acre in fields examined in Tallulah area was 131 as against 465 for the corresponding period in 1954. (Gaines et al). MISSISSIPPI - First weevils reported in delta counties ranged from 0-264 and averaged 52 per acre. (Merkl et al). SOUTH CAROLINA - Percent survival to June 3 in cages in Florence County was 4.24 compared to 0.14 for the same date in 1954. (Walker, Hopkins, Jernigan). TENNESSEE - Only one adult weevil found in fields in west Tennessee. (Locke). NORTH CAROLINA - Infestations in Scotland County ranged from 0 to 166 per acre. (Mistic).

BOLLWORMS - ARIZONA - Occasional egg on cotton in Pima County. (Ariz. Coop. Rpt.). TEXAS - Slight increase over last week in lower Rio Grande Valley. (Deer). MISSISSIPPI - Some adults in cotton in delta counties. (Merkl et al). SOUTH CAROLINA - Eggs present in some fields in Florence County. (Walker, Hopkins, Jernigan). NORTH CAROLINA - Observed on cotton in Scotland County with 19 injured terminals and 2.5 larvae per 100 feet of row in three fields. (Mistic).

PINK BOLLWORM (Pectinophora gossypiella) - TEXAS - Bloom inspection in lower Rio Grande Valley indicates more general infestations than last year. (Davis, Martin, May 31).

APHIDS - ARIZONA - Decreasing. (Ariz. Coop. Rpt.). MISSOURI - Increasing in scattered spots in fields, generally; only a few leaves infested to point of curling. (Kyd, Thomas). TEXAS - Declining in lower Rio Grande Valley. (Deer). SOUTH CAROLINA - Very light infestations in most fields. (Walker, Hopkins, Jernigan).

FLEAHOPPERS - TEXAS - Infestation in McLennan and Falls Counties exceeded 25 per 100 terminals in 5 of 20 fields. During corresponding week last year infestation averaged 2.1 per 100 terminals. (Parenchia et al). Found in destructive numbers in scattered fields of upper coastal, south central, east, central, and northeast areas. (Davis, Martin, May 31). LOUISIANA - Appearing at 5-10 per 100 feet of row in Bossier, Red River, and Natchitoches Parishes. (Oliver). MISSISSIPPI - Infestations range from light to medium in delta counties. Some small squares being blasted in older cotton south of Greenville. (Merkl et al). TENNESSEE - Nymphs and adults increasing. (Locke).

BROWN COTTON LEAFWORM (Acontia dacia) - TEXAS - Considerably decreased. (Davis, Martin, May 31).

GRASSHOPPERS - TENNESSEE - Heavier than usual around fields; possibility of damage later. (Locke).

SPIDER MITES - ARIZONA - Tetranychus atlanticus and T. bimaculatus appearing in scattered places in the Eloy area. TEXAS - Damaging numbers in lower Rio Grande Valley. (Deer).

THRIPS - ARIZONA - Increasing at Buckeye, 15-20 per plant; lower counts in other areas. (Ariz. Coop. Rpt.). TEXAS - Injurious infestations continue in untreated fields in McLennan and Falls Counties. (Parenchia et al). Most destructive insect in east, central, northeast, and north central areas. (Davis, Martin, May 31). MISSISSIPPI - Light to heavy in all fields examined in delta counties, with damage still occurring in fields treated 5 times. (Merkl et al). SOUTH CAROLINA - Infestations ranged from light to heavy in the Piedmont section. (Walker, Hopkins, Jernigan). TENNESSEE - Decreasing from damaging numbers of last week. (Locke). NORTH CAROLINA - Infestations on cotton in Halifax, Cleveland, Union, and Scotland Counties ranged from 0.4 to 8.0 per plant, with average of 2.2. (Mistic).

WHITEFLIES - ARIZONA - Abundant and causing some concern. (Ariz. Coop. Rpt.).

INSECTS AFFECTING MAN AND ANIMALS

MOSQUITOES - SOUTH CAROLINA - Problem at Fort Jackson. (Everts).  
MISSISSIPPI - Outbreak in one section of Forrest County. Aedes sticticus,  
A. vexans, Psorophora ferox, and P. varipes involved. (Broome).  
LOUISIANA - Aedes sp. infestation very severe in rice and sugarcane  
belt. (Oliver).

HORN FLY (Siphona irritans) - LOUISIANA - Fifty to 500 per head on  
50 cattle, East Baton Rouge. (Oliver).

CATTLE GRUBS - MONTANA - Hypoderma lineatum adults becoming  
active in warmer sections. (Roemhild).

CONENOSE BUGS (Triatoma spp.) - FLORIDA - Three engorged adults  
of T. sanguisuga on bedding material at Alachua. (Tissot, Hunter).  
ARIZONA - T. probably uhleri abundant and annoying at San Manuel,  
Pinal County. (Ariz. Coop. Rpt.).

HOUSE FLIES - SOUTH CAROLINA - Abundant at Clemson, May 25.  
(Nettles). PENNSYLVANIA - Becoming abundant in homes and barns  
in south central area. (Pepper). ARIZONA - Flies, mainly house flies,  
average of 5 highest grill counts in 2 towns in Maricopa and Pinal  
Counties: May 16-20 (29.4), May 23-27 (58.4). (Ariz. Coop. Rpt.).

A FILTER FLY - SOUTH CAROLINA - This psychodid a problem at  
Fort Jackson. (Everts).

FALSE STABLE FLY (Muscina stabulans) - IDAHO - Two puparia  
and one full-grown larva obtained from a hospital patient in Lewiston.  
Specimens apparently passed in feces. According to M. T. James,  
who made the determination, this is a common species in intestinal  
myiasis. (Merkeley, Manis, May 28).

TICKS - MONTANA - Wood ticks abundant on sheep in northern Custer  
and Rosebud Counties. Rocky Mountain wood tick abundant at lower  
elevations in western part of State. (Roemhild). WISCONSIN - Derma-  
centor variabilis abundant in north central counties. (Chambers).  
VIRGINIA - Very heavy on a 40 to 50-acre pasture in Lunenburg  
County. Control measures applied but cattle again covered with ticks  
in a day or two. (Powers).

BENEFICIAL INSECTS

MANTIDS - NEW MEXICO - Noticeable numbers in shrubbery through-  
out southern half of State. (Ins. Lett., May 28).

LADY BEETLES - NEW MEXICO - Large numbers, principally Hippodamia convergens, throughout aphid-infested alfalfa fields; however, not controlling yellow clover aphid. (Ins. Lett., May 28).

### STORED PRODUCTS INSECTS

#### Stored Grain Insects in Arkansas

During a survey of new grain going into storage on farms in east central area the predominant species found was Oryzaephilus surinamensis, followed by Rhyzopertha dominica, Sitophilus oryza, Sitotroga cerealella, Tribolium sp., Laemophloeus sp., and Tenebroides mauritanicus. Potential for new infestations on some farms. (Warren).

ANGOUMOIS GRAIN MOTH (Sitotroga cerealella) - LOUISIANA - Several cribs of corn over State have severe infestations. (Oliver).

### RECENT INTERCEPTIONS AT PORTS OF ENTRY

Living adults of the Chinese rose beetle (Adoretus sinicus (Burm.)) were intercepted recently in airplane baggage and as a stowaway on airplanes during preflight inspection of aircraft leaving Hawaii for the mainland at Hickam Field and Honolulu airport, T. H. (Macdougall, Mason, Wakefield). This insect has been reported injurious to a variety of plants in Hawaii, including rose, grape, okra, string beans, sweet potatoes, canna, sugarcane, and others. Injury is due to the adults feeding on the foliage. Affected leaves are peppered with holes and more or less skeletonized. The adults also feed on the buds and flowers.

Observations on the bionomics of the Chinese rose beetle indicate the eggs are deposited in the soil. They hatch in about 4 days. The larvae develop in the soil and feed on decaying plant material. Pupation occurs in earthen cells in the soil. A life cycle may be completed in 6-7 weeks. Adults hide in leaves, plant debris, or in loose soil during the day, coming out to feed at night. A. sinicus is said to occur throughout southern Asia. It is believed to have been introduced into Hawaii sometime before 1896, probably with soil around the roots of plants. It has been intercepted on a number of occasions in airplane baggage, cargo and mail, and as a stowaway in planes leaving Hawaii for the mainland, and with cut flowers and plants from Hawaii at west coast ports. It is not known to occur in the continental United States.

(Compiled - Plant Quarantine Branch).

## LIGHT TRAP COLLECTIONS

		Pseudal. unipun.	Prod. ornith.	Agrotis ypsilon	Perid. marg. subter.	Feltia armig.	Heliothis vires.	Protoparce sexta quin.
TEXAS								
Waco	5/28-6/3	3	7		1	9	8	
LOUISIANA								
Bat. Rouge *	5/27-6/3	8	181	2		583	18	
Franklin	5/26-31		7		6	14	5	
Curtis	5/26-30	54	80	10	11	3	20	
Bunkie	5/23-6/1	5			6	2	26	
Tallulah*	5/27-6/3	52	158	10	35	30	49	4
ARKANSAS								
Hope	5/20-5/26	13		16	34		3	
Stuttgart	5/26-6/2	341		40	28		1	
Van Buren	5/19-6/2	58		42	23		10	
Varner	5/20-6/2	84		12	29		31	
Fayetteville	5/30-6/2	7		3	7		15	52 sp.
Clarksville	5/26-6/2	47	54	32	14		6	
MISSISSIPPI (Counties)								
Coahoma	5/27-6/3	49	9	3	9	1	3	
Humphreys		95	25	1	18	1	9	1
Oktibbeha		71	167	8	28	9	13	
Pearl River		9	2				6	
Washington*	5/27-6/3	672	173	39	140	9	45	17 spp.

\* Two traps at Baton Rouge, 3 at Tallulah, 2 in Washington County.

LIGHT TRAP COLLECTIONS

		Pseudal. unipun.	Prod. ornith.	Agrotis ypsilon	Period. marg.	Feltia subter.	Heliiothis armiq.	Protoparce sexta
<u>ALABAMA</u>								
Auburn	5/28-6/3	1	12				4	
<u>GEORGIA (Counties)</u>								
Clarke	5/21-27	20	9		60		4	
Tift	5/22-28	2	5					5
Spalding	5/21-27		1	1	4		9 sp.	3
<u>SO. CAROLINA (Counties)</u>								
Oconee	5/29-6/4	36	5	2	4		7 sp.	9
Charleston	5/24-30		4	1	3			9
<u>NO. CAROLINA (County)</u>								
Duplin	5/30-6/5		2	1				14
<u>MARYLAND (County)</u>								
Montgomery		4		3				2
<u>KANSAS</u>								
Manhattan	5/23-6/3	331						
Hays	5/26-31	72						
Wathena	5/15-24	64						
<u>COLORADO (County)</u>								
Otero	5/22	110 (peak)					1 (first of season)	

Some other collections of interest: LOUISIANA (Tallulah) Loxostege similalis 2311; ARKANSAS (Stuttgart) Laphygma frugiperda 21 - first of season for area; GEORGIA (Spalding) Elasmopalpus lignosellus 1; SOUTH CAROLINA (Charleston) Conoderus vagus 1427; KANSAS (Manhattan) Chorizagrotis auxiliaris 52, (Hays) 53; COLORADO (Otero) Loxostege sticticalis 4000 May 20, 5000 May 23; C. auxiliaris 156 May 20, 225 May 22.

MISCELLANEOUS INSECTS

WHARF BORER (Naccerdes melanura) - NEW YORK - Heavy infestation in underpinning of dwelling in the Bronx. Adults active. (Ramsey, P. C. Branch). PENNSYLVANIA - Numbers in basement of house in Allegheny County. (Udine).

BLACK CARPENTER ANT (Camponotus herculeanus pennsylvanicus) - WISCONSIN - Unusually annoying to home owners throughout southern part of State. (Chambers).

TERMITES - IDAHO - Reports from widely scattered areas on damage from subterranean termites. Either infestations are increasing or home owners are becoming conscious of them. (Portman, May 28).

ADDITIONAL NOTES

TENNESSEE - Light trap records for the week ending June 5:  
Protoparce spp. - 196; P. quinquemaculata - 168; P. sexta - 52;  
Euctheola rugiceps - 3000.

ARKANSAS - PEA APHID infestations on alfalfa increased in central counties. Second growth alfalfa carrying populations up to 350 per 20 sweeps. Three-cornered alfalfa hopper causing some damage to alfalfa in this area. (Warren).

TENNESSEE - ARMYWORM outbreak over. GRASSHOPPER nymphs moderately abundant over State. SUGARCANE BEETLE continues to cause serious damage to corn plantings, particularly in western area. Considerable corn replanted. Cotton and strawberries also attacked locally. BLISTER BEETLES numerous in scattered alfalfa fields in middle Tennessee. Light infestations of first-instar EUROPEAN CORN BORER in corn plantings across State. (Mullett).

IOWA - EUROPEAN CORN BORER as of June 4 - 100 percent pupation and 40 percent emergence of moths in northwest Iowa. Moth flight very heavy in central section with 55 egg masses per 100 plants on 20-inch corn. Northeast Iowa - no eggs found on 20-inch corn on June 2. Cool nights slowed activity slightly. Anticipate hatching to be general in central area by June 10 and in northern by June 18. CORN LEAF APHIDS building up on corn. CORN FLEA BEETLES damaging 8-inch corn in Delaware County. POTATO LEAFHOPPERS in large numbers in central Iowa, June 1. GRASSHOPPERS damaging soybeans in Page County, in one field at the rate of 10 per square foot. First adults lesser migratory grasshoppers observed in southwest Iowa. Majority in third to fifth instar. (Harris).

MINNESOTA - EUROPEAN CORN BORER pupation and moth emergence advanced sharply in south-central and southwest districts with pupation almost complete (27 percent moth emergence). Reports from east-central district indicate about 30 percent pupation and 1-2 percent moth emergence for same period. Corn heights in relation to borer development very low and egg deposition, already begun, should be of little consequence in corn for the next week or 10 days. GRASSHOPPERS beginning to cause some crop damage in southeastern, central, and northwestern areas. In northwestern area Melanoplus bivittatus and M. mexicanus hatch practically complete. Warm weather has promoted high survival in general. ARMYWORMS - Adults continue to appear in light traps. (Minn. Ins. Rpt. Serv.).

MISSOURI - GRASSHOPPERS - Hatch of Melanoplus differentialis continues over northern half of State. Hatch of other species practically complete. Infestations general in southwest, northwest, and central areas. Overall situation is considered severe to critical in all areas of State. (Kyd, Thomas).

WYOMING - GRASSHOPPERS developing in some range areas of Johnson, Goshen, Campbell, and Platte Counties. (Spackman).

VIRGINIA - SEED-CORN MAGGOTS and SOUTHERN CORN ROOTWORMS causing moderate to severe damage to corn in Pittsylvania County. (Dominick). Next brood of RED-BANDED LEAF ROLLERS expected to be heavy in several apple orchards in Rappahannock County. (Lyne). HORNWORM adults found in 6 light traps in Pittsylvania County for the week ending May 28 were Protoparce quinquemaculata 894 and P. sexta 136. (Dominick). ARMYWORM infestations continue to be reported but severe damage not expected. (Morris).





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*Cooperative*  
**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL BRANCH**

**AGRICULTURAL RESEARCH SERVICE**

**UNITED STATES DEPARTMENT OF AGRICULTURE**



# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

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Economic Insect Survey Section  
Plant Pest Control Branch  
Agricultural Research Service  
United States Department of Agriculture  
Washington 25, D. C.

## COOPERATIVE ECONOMIC INSECT REPORT

## Highlights of Insect Conditions

GRASSHOPPERS becoming heavier southwest and central Missouri, most damage to alfalfa. Increasing in northeast Arkansas, 20-70 per square yard in western Oklahoma, 75-100 some areas of Nebraska, and 60-120 in eastern Kansas. Heavy populations continue in areas of Texas and New Mexico. Hatching continuing in several States with mature Melanoplus mexicanus appearing in Nebraska, Kansas, Utah. (p. 533).

EUROPEAN CORN BORER damage appearing in Delaware and some treatment in early fields in Massachusetts. Heavy egg deposition in New Jersey. Thirty-inch corn in Illinois has 200 egg masses per 100 plants, and 18-inch corn in northeast Nebraska has 18 egg masses per 100 plants. Cool weather retarding activity in Iowa but 10 percent of corn in central and northern area may have heavy first-brood damage if weather favors oviposition and hatching. First economic damage to corn in northern Alabama by this insect. (pp. 533, 554).

CORN EARWORM unusually abundant in Georgia. Damaging corn in areas of South Carolina, Florida and Missouri. Unusually abundant on alfalfa at Yuma, Arizona. (p. 534). CHINCH BUG damaging corn in several areas, especially South Carolina, Georgia, Alabama, and Oklahoma. (p. 534).

The ARMYWORM situation is generally better than in recent weeks or at the same time last year. Delaware reports increasing populations in forage, however, and light population showing up in eastern Nebraska and moderate numbers in several Minnesota counties. Weather has been favorable in Wisconsin. Infestations have been lighter in southern Indiana than last year and parasites have almost eliminated problem in central Missouri. (pp. 534, 554).

ALFALFA WEEVIL reported from Washington for first time, specimens taken in Asotin County. Widespread damage to alfalfa in New Jersey and Delaware. (p. 537).

ARMY CUTWORM moths heavy in areas of Washington and Oregon. (p. 535). SUGARCANE BEETLE still causing damage to corn in Tennessee, Georgia and Mississippi. (p. 535). SOUTHERN CORN ROOTWORM adults heavy in Nebraska corn fields. (p. 536). FALSE WIREWORM adults more abundant in central Kansas than since 1943 and large numbers in southern Oklahoma. (p. 536). GARDEN WEBWORM causing some damage to alfalfa at Stillwater, Oklahoma, moths in large numbers for several weeks at Tallulah, Louisiana. (pp. 537, 556). THRIPS have damaged peanuts in areas of Georgia and North Carolina. (p. 538).

(Continued next page)

PEA APHID increasing in southern Missouri, southern Wisconsin, northern Utah; low spring population at Walla Walla, Washington. (pp. 538, 544). YELLOW CLOVER APHID continues light in Oklahoma, Kansas, and Arizona, but building up in Mesilla Valley, New Mexico. (p. 539). LESSER CLOVER LEAF WEEVIL is heavy on clover in wide areas of Nebraska and two counties of Maryland (pp. 537, 554), and plant bugs are numerous or increasing in several States. (p. 539). Light population of POTATO LEAFHOPPER in Nebraska, 5-20 per sweep in southern Illinois (p. 529) and increasing in Delaware (p. 542).

CODLING MOTH increasing in New Jersey, activity at peak in Michigan and continuing in southern Illinois and Indiana. (p. 540). Second-brood PLUM CURCULIO expected southern Illinois July 1. (p. 540). CHERRY FRUIT FLY adults emerging in Oregon and Washington. (p. 541).

COLORADO POTATO BEETLE hatching at Yakima, Washington; laying eggs in Red River Valley, North Dakota; adults active in southwestern Idaho; larvae abundant Delaware and Maryland. (p. 542). SUGAR-BEET ROOT MAGGOT continues of concern in Larimer and Weld Counties, Colorado, and adults heavy in Walsh County, North Dakota. (p. 543). DIAMONDBACK MOTH more abundant than usual in Delaware. (p. 543). CUCUMBER BEETLES very numerous in New York. (p. 544). LOOPER attack on tobacco in South Carolina unusual. (p. 546). HORNWORMS hatching as far north as Maryland. (p. 546). GREEN PEACH APHID infesting tobacco North and South Carolina, two weeks later than usual on potatoes at Yakima, Washington. (p. 546).

BOLL WEEVIL heavier than last year at this time in Texas, large numbers of adults in spots in Arkansas and at Florence, South Carolina, but populations and infestations generally light in most other areas. (p. 546). BOLLWORM adults common in some areas, larvae showing up as far north as North Carolina. (p. 547). Incomplete cotton bloom inspections for PINK BOLLWORM show considerable increase over 1954 in coastal bend counties of Texas. (p. 547). COTTON FLEAHOPPER increasing in Texas, heavier than usual for time of year in Arkansas. (p. 548). THRIPS damage to cotton continues in many areas. (p. 548). First COTTON LEAFWORM of season reported from San Patricio County, Texas, June 9 (p. 549); first of season 1954, May 31 from Cameron County, Texas.

Some of the outstanding FOREST INSECT activity includes abundance of RED-PINE SAWFLY in Wisconsin (p. 549); widespread severe infestation of EUROPEAN PINE SHOOT MOTH in Michigan and increase of this insect in Wisconsin (p. 550); expected recurrence of defoliation by FALL CANKERWORM in western North Carolina (p. 550); and heavy BIRCH LEAF MINER injury in Rhode Island (p. 550).

Survey methods for JAPANESE BEETLE. (p. 559).

WEATHER SUMMARY. (p. 555).

States reporting this week - 40.

CEREAL AND FORAGE INSECTS

GRASSHOPPERS - WISCONSIN - Checked by continuous cold rain. (Chambers). ILLINOIS - Melanoplus sp. still concentrated in fence rows; control underway. (Petty et al). ARKANSAS - Melanoplus sp. infestation increasing in northeast area; counts up to 50 per square yard. (Warren). MISSOURI - Melanoplus spp. damage becoming gradually heavier in both southwest and central areas. Alfalfa being most heavily damaged in most of the infested area with margins of corn and soybean fields, oats, pastures and gardens also being attacked. From 12-85 nymphs per square yard in alfalfa. Counts in field margins range from 20 to as high as 300 to 400 per square yard. Melanoplus differentialis hatch continuing over northern half of State; dispersal from hatching areas continuing in southern half. (Kyd, Thomas). NEBRASKA - Some early species maturing, especially M. mexicanus. Some areas report 75-100 nymphs per square yard. (Roselle, Andersen). OKLAHOMA - From 20-70 per square yard throughout western part of State; heaviest infestations in Jackson and Comanche Counties. (Flora). KANSAS - Melanoplus spp. continue to hatch. Many areas of eastern part have 60-120 per square yard; adult M. mexicanus in nearly all fields in north-east; nymphs still in field margins; some alfalfa showing injury. (Matthew). TEXAS - Heavy widespread infestations, mostly M. differentialis, in pastures and feed crops in Comanche County. (Dean). Heavy widespread infestations in Kaufman County (Simmons), medium to heavy widespread infestations in Collin County (Dahlberg). NEW MEXICO - Numerous in Lea and Chaves Counties, where 176,000 acres of range land being sprayed; about 42,000 acres in Roosevelt County heavily infested. (Durkin, June 4). WYOMING - Range species second to fourth instar average 30 per square yard on 16,000 acres in Johnson County; control operations expected to begin about June 15. (Spackman). UTAH - Hatch continuing. Some M. mexicanus adults. (Knowlton). NEVADA - Hatch underway in most agricultural areas of western section. Camnula pellucida hatch in White Pine County complete. (Galloway).

EUROPEAN CORN BORER (Pyrausta nubilalis) - MASSACHUSETTS - Some hatching, requiring treatment in early fields. (Crop Pest Cont. Mess.). NEW JERSEY - Egg deposition heavy, especially in southern area. (Merrill, June 7). DELAWARE - Damage to corn by small borers appearing extensively in Kent and Sussex. (Milliron). VIRGINIA - Medium infestation in a wheat field in Hanover County. (Morris). ALABAMA - Damage to corn in Cullman, Morgan and Marshall Counties; believed to be the first economic damage to corn by this insect in Alabama. (Ruffin). ILLINOIS - Corn about 30 inches high averages 200 egg masses per 100 plants; shorter corn has 70-150 per 100 plants. Sweetcorn planted in late April averages as high as 400 egg masses per 100 plants in some fields. One to 2 percent of total corn acreage in north half may warrant treatment. Emergence practically complete

south, 80 percent in central, and 60 percent in north except at Lake Michigan. (Petty et al). NEBRASKA - Forty-nine percent emergence with an average of 18 egg masses per 100 plants in northeast on 18-inch corn; 56 percent emergence in central area with 5 egg masses per 100 plants on 10-15-inch corn; 60 percent emergence in the southeast area and 9 egg masses per 100 plants on 20-inch corn. (Andersen).

CORN EARWORM (Heliiothis armigera) - DELAWARE - Adults much in evidence in crops and at lights; few first-instar larvae on corn near Little Creek. (Milliron). VIRGINIA - Feeding on alfalfa in Appomattox County. (Morris, Smith). SOUTH CAROLINA - Damage to corn in Anderson and Saluda Counties. (Nettles). GEORGIA - Damaged 10 percent of stalks of corn in two fields in Tattnall County. (Vanderford). Unusually abundant this year; damaging whorls of corn. (Jordan). FLORIDA - Larvae medium to heavy on corn in Bradford County. (Hunter). MISSOURI - Corn in southwest and west central area has 4-16 percent of stand infested with third to fifth instar larvae working in whorls. (Kyd, Thomas). ARIZONA - Feeding on young tassels of 50 percent of corn in one field in Pima County and eating into whorls of corn in Avra Valley. Unusually abundant on alfalfa at Yuma; one small larva per 10 sweeps. (Ariz. Coop. Rept.).

CHINCH BUG (Blissus leucopterus) - SOUTH CAROLINA - Causing damage to corn over much of coastal area; source of infestation involves wheat. (Kirk). NORTH CAROLINA - Infestations in Duplin and Chatham Counties. (Jones). GEORGIA - Heavy infestations in corn in Clarke and Jackson Counties (Jordan); heavy infestation in Walton County (Youngblood). ALABAMA - Causing damage to corn in Lamar, Tuscaloosa, Pickens, Autauga and Wilcox Counties. (Moore, Arant). MISSOURI - Scattered fields of corn in southwest area moderately infested with average of two adults and 5-11 nymphs per stalk. (Kyd, Thomas). OKLAHOMA - Large numbers migrating into corn in Tulsa and Creek Counties. (Howell).

SUGARCANE BORER (Diatraea saccharalis) - LOUISIANA - Deadhearts appearing in increasing numbers over most of cane belt; counts per acre ranged from 285 in West Baton Rouge Parish to 1174 in Rapides Parish. (Oliver).

ARMYWORM (Pseudaletia unipuncta) - NEBRASKA - Light and spotted in eastern area; more damage to corn than to wheat; 15 of 25 corn plants show feeding. (Andersen). KANSAS - No infestation found in the northeast counties. (Matthew). WISCONSIN - Weather conditions have been ideal for development and reports received from two sections of State. (Chambers). MISSOURI - Parasites all but eliminated armyworm problem through most of central area; light in widely-scattered areas of northern third. (Kyd, Thomas). MINNESOTA - Moderate numbers of second and third instar larvae in LeSeuer, Goodhue,

Benton, Washington, Freeborn, McLeod, Mahanomen and West Polk Counties. (Minn. Ins. Rept. Serv.). ILLINOIS - Occasional fields with 10 armyworms per linear foot of row in southeastern area. (Petty et al). INDIANA - Larval infestations in Vincennes area lighter and much less frequent than in 1953 and 1954, though adult populations earlier were comparatively high. (Hamilton). DELAWARE - Small to large larvae increasing in all forage legumes, especially those with grass combinations; migrations from recently-mowed fields into corn observed near Slaughter Beach, Hazlettville; damaging rye in southern New Castle County. Causing marginal injury to corn at some places. (Milliron). VIRGINIA - Severe infestation attacking 35 acres of rye and 2 acres corn in Washington County (Gersline); medium infestation on a farm in southwest Bland County. (Morris).

WHEAT HEAD ARMYWORM (Proteoleucania abilinea) - NEBRASKA - Moderate to heavy infestations in east-central and eastern areas in wheat. Average 22 per 25 heads; feeding damage. Range from 14-28 per sweep. (Andersen).

ARMY CUTWORM (Chorizagrotis auxiliaris) - WASHINGTON - Heavy invasion of moths. Larvae very abundant on range and dry land wheat around Wallula and Pasco. (Cook). OREGON - Tentatively identified; moths in numbers in the Milton-Freewater area June 7. (Roth). WYOMING - Damaging corn in Goshen County. (Spackman). UTAH - Damaging range plants in Utah County. (Knowlton).

STALK BORER (Papaipema nebris) - DELAWARE - Light injury to corn at several locations in Sussex County. (Milliron). NEBRASKA - Light damage to margins of late-planted corn in southeastern area. (Andersen).

SOUTHERN CORNSTALK BORER (Diatraea crambidoides) - ALABAMA - Heavy infestation in early corn in Cullman, Morgan, Marshall, DeKalb and Cherokee Counties. (Ruffin).

SUGARCANE BEETLE (Euetheola rugiceps) - GEORGIA - Heavy infestation in corn in Newton County May 26 (Beckham) and in corn in Wilkes County June 6 (Jordan). MISSISSIPPI - Adults caught in one night in a light trap in Oktibbeha County totaled 350; report of damage to corn from Panola County. (Hunsucker, Hutchins). TENNESSEE - Still causing widespread damage to corn in State. (Mullett).

CORN FLEA BEETLE (Chaetocnema pulicaria) - NEW JERSEY - Active but less so than in 1954. (Merrill, June 7). DELAWARE - Bacterial wilt following flea beetle infestations conspicuous in field corn but more pronounced in sweet corn throughout Kent and Sussex Counties. (Milliron).

CORN BILLBUGS - WISCONSIN - Calendra spp. reported abundant in corn in southern area. (Chambers). KANSAS - Causing destruction of early-seeded corn in some fields along Missouri River in northeast area; from 40-140 per 100 plants; some stands require replanting. (Matthew). DELAWARE - Approximately one-third of plants injured in a large corn acreage near Masten Corner. (Milliron). ALABAMA - A 100-acre corn field destroyed by C. maidis in Montgomery County. Other fields in this river bottom area showed damage. (Moore, Arant).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - NEBRASKA - Great numbers in corn fields; from 20-53 per 100 plants in northeast and southeast areas. (Andersen).

FALSE WIREWORMS (Eleodes spp.) - OKLAHOMA - Large numbers of adults in corn in southern area. (Flora). KANSAS - Adults more abundant in central area than since 1948 outbreak; damage to fall-seeded, untreated wheat expected. (Gates).

SAND WIREWORM (Horistonotus uhlerii) - MISSOURI - Scattered infestations in extreme southeast area causing moderate to heavy damage to corn and some garden crops. (Jenkins). First report of damage from this pest in several years. (Kyd, Thomas).

A FLEAHOPPER (Spanogonicus albofasciatus) - GEORGIA - Damaging corn in Laurens County May 16. (Duke).

HESSIAN FLY (Phytophaga destructor) - PENNSYLVANIA - Moderate to very heavy infestation in most wheat fields in Lycoming County (Gesell); as high as 7 puparia per stem in wheat in Fulton County (Udine).

SEED-CORN MAGGOT (Hylemya cilicrura) - DELAWARE - Adults very abundant generally. (Milliron). WISCONSIN - Damage more than usual in southern area. (Chambers).

ENGLISH GRAIN APHID (Macrosiphum granarium) - NEBRASKA - Moderate infestation in wheat and oats in eastern and southeastern areas; from 0-8 per head in many fields. (Andersen). UTAH - Common in small grain. (Knowlton).

SOD WEBWORMS - PENNSYLVANIA - Considerable damage to corn in Schuylkill County (Menusan); noticeable damage to corn in Fulton County (Udine).

VAGABOND CRAMBUS (Crambus vulgivagellus) - COLORADO - As many as 40 larvae per square foot damaging lawn sod at Loveland. (Exp. Sta.).

WHITE-FRINGED BEETLE (Graphognathus sp.) - GEORGIA - First adults near Manassas May 31, Vidalia June 1, and Brunswick June 3. (Vanderford).

BROWN WHEAT MITE (Petrobia latens) - UTAH - Damaging dry land wheat fields east and south of Monticello. (Knowlton, Rudd).

ALFALFA WEEVIL (Hypera postica) - NEW JERSEY - Defoliated many unsprayed fields and damaged some sprayed fields in southern area. (Merrill, June 7). DELAWARE - Abundant adults seriously retarding growth most places; where second growth advanced, larvae and adults injurious. (Milliron). WASHINGTON - Larvae recovered from roadside alfalfa near Clarkston, Asotin County. First record for State. (Portman, Telford). PENNSYLVANIA - Few larvae, many pupae and few adults in York and Franklin Counties; many pupae dead. (Pepper).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - NEBRASKA - Heavy infestations still in east-central and eastern areas. From 20-25 adults per sweep in red and alsike clover. (Andersen). KANSAS - Adults in all fields of red clover surveyed in northeast; 14-43 per 100 sweeps. (Matthew).

PEA LEAF WEEVIL (Sitona lineata) - WASHINGTON - Numerous on various legumes in Puyallup Valley, especially on vetches and broad beans. (Doucette).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - IDAHO - Heavy adult feeding on roadside and volunteer plants north of Coeur d'Alene and feeding on margins of sweetclover fields in Tensed area. (Barr, June 4).

CLOVER ROOT CURCULIO (Sitona hispidula) - MISSOURI - Light to moderate damage by adults appearing in 3-5 year old stands of alfalfa in southwest area. From 3-12 weevils per square foot. (Kyd, Thomas). MARYLAND - Adults seriously damaging foliage of soybeans planted after clover in St. Marys County. Damage to soybeans by this insect unusual. (U. Md., Ent. Dept.).

A GRAPE COLASPIS (Colaspis sp.) - LOUISIANA - Collected at 81 per 100 sweeps of white clover and 32 per 100 sweeps of red clover, East Baton Rouge Parish. (Oliver).

GREEN CLOVERWORM (Plathypena scabra) - DELAWARE - Moderately abundant in legumes. (Milliron).

A WEBWORM - SOUTH CAROLINA - Causing some damage to lespedeza in Sumter County and appearing in Anderson County. (Nettles).

GARDEN WEBWORM (Loxostege similalis) - OKLAHOMA - Some damage to spotted areas in alfalfa near Stillwater. (Bieberdorf).

CUTWORMS - WASHINGTON - Damaging first cutting of alfalfa and threatening cuttings left for seed near Harrah. (Landis, Schopp). PENNSYLVANIA - Combined with sod webworms have reduced stands of corn 75 percent in some fields in Fulton County. (Udine). DELAWARE - Variegated cutworm (Peridroma margaritosa) common in alfalfa and clover everywhere. Black cutworm (Agrotis ypsilon) continues to destroy corn at Brenford and near Slaughter Beach. (Milliron). WASHINGTON - A yellow-headed cutworm (Apamea amputatrix) damaging bluegrass seed; first report for several years of larval damage by this insect. (Cook). CORRECTION: Under cutworms, CEIR 5(23):507, change "Tennessee" to read "Texas."

ALFALFA CATERPILLAR (Colias philodice eurythema) - DELAWARE - Numerous in alfalfa at Mt. Pleasant and Middletown. (Milliron).

RED-NECKED PEANUTWORM (Stegasta bosquella) - GEORGIA - Moderate to heavy infestations in peanuts in Albany-Dawson area June 2-3. (Maxwell).

WHITE-LINED SPHINX (Celerio lineata) - GEORGIA - Feeding principally on weeds in pastures, small grains and corn fields in Burke, Screven, Bleckley, Laurens, Treutlen, Jenkins and Houston Counties; tremendous numbers in armies in some areas May 10-20. (Duke, Fortson, Jordan).

THRIPS - NEVADA - Severe populations in alfalfa fields of Clark County; migrating to onions following cutting first crop. (Gallaway). MISSOURI - Light silvering of leaves of soybeans in extreme southeast area; from 2-6 per leaf. (Jenkins). GEORGIA - Heavy damage to peanuts in Albany-Dawson area June 2-3. (Maxwell). NORTH CAROLINA - Rather heavy infestations on peanuts reported from Carteret and Columbus Counties. (Jones).

APHIDS - UTAH - Damaging dry land wheat east and south of Monticello. (Knowlton, Rudd). ARIZONA - Populations on alfalfa still abundant in Greenlee County but decreasing. (Ariz. Coop. Rept.).

CORN LEAF APHID (Rhopalosiphum maidis) - MISSOURI - A few scattered fields of corn and grain sorghum have approximately 35-70 per plant; no damage. (Kyd, Thomas).

PEA APHID (Macrosiphum pisi) - DELAWARE - Light to moderate in some alfalfa fields; heavy one field. (Milliron). NEBRASKA - Building up on new growth alfalfa; from 55 to over 100 per 25 sweeps. (Andersen). UTAH - Increasing in northern area on alfalfa. (Knowlton). MISSOURI - Infestation building steadily on second cutting and spring-seeded alfalfa over southern two-thirds of State. From 9-32 per

sweep; considerable yellowing and curling of leaves in heavily infested fields. (Kyd, Thomas). KANSAS - Light to moderate infestations in several alfalfa fields in northeast area; from 80-275 in heavily infested fields. (Matthew).

YELLOW CLOVER APHID (Myzocallis trifolii) - ARIZONA - Generally decreasing on alfalfa in the Yuma and Roll areas and in Salt River Valley due mainly to convergent lady beetle. (Ariz. Coop. Rept.). NEVADA - Severe populations in most alfalfa fields during first cutting. Increasing; lady beetles numerous. (Gallaway). NEW MEXICO - Continue to build up in Mesilla Valley on alfalfa. (Durkin). KANSAS - Light infestations on all fields of sweetclover and red clover surveyed in northeast; very few found in alfalfa. (Matthew). NEBRASKA - Light populations still occur in red, alsike and sweetclover in eastern area; average 35 per 25 sweeps. (Andersen). OKLAHOMA - Small populations in alfalfa in Canadian and Payne Counties. (Flora). LOUISIANA - Collected in substantial numbers in spring of 1951 at Baton Rouge and Bossier City. (CEIR 5(21):449). (Newsom).

A FALSE CHINCH BUG (Nysius sp.) - GEORGIA - Moving from grass into corn and peanuts in swarms in Wilcox County, June 1. (Campbell, Geiger).

A MIRID - WASHINGTON - Heavy populations damaging an untreated field of fescue grown for seed near Dishman. (Johansen).

LYGUS BUGS - NEVADA - Severe populations in alfalfa in southern Nye County. (Gallaway). UTAH - Numerous in alfalfa in northern counties. (Knowlton). NEW MEXICO - Becoming more abundant in alfalfa in Mesilla Valley; 40-50 per 100 sweeps in some fields. (Durkin).

TARNISHED PLANT BUG (Lycus lineolaris) - DELAWARE - Very abundant in forage legumes generally. (Milliron). LOUISIANA - Populations increasing in clovers and alfalfa; 306 per 100 sweeps of white clover and 126 per 100 sweeps of red clover, East Baton Rouge Parish; 72 per 100 sweeps in Natchitoches Parish. (Oliver).

POTATO LEAFHOPPER (Empoasca fabae) - NEBRASKA - Light populations, 10 per 25 plants, in alfalfa, corn and early potatoes. (Andersen).

ILLINOIS - In northern and north-central area 1 to 1-1/2 per sweep; 5 to 20 per sweep in southern half. (Petty et al). MD. - Two adults per 50 sweeps in alfalfa in St. Marys and Prince Georges Counties. (U. Md., Ent. Dept.).

MEADOW SPITTLEBUG (Philaenus leucophthalmus) - MICHIGAN - Lighter than usual in southern section. (Hutson).

SPITTLEBUGS - PENNSYLVANIA - Adults becoming very abundant on clover and alfalfa generally. (Pepper).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - LOUISIANA - Occurring at 18-36 per 100 sweeps in alfalfa in Bossier, Natchitoches and Rapides Parishes; 62 per 100 sweeps of white clover and 51 per 100 sweeps of red clover in East Baton Rouge Parish. (Oliver). TEXAS - Heavy widespread infestation on alfalfa in Wharton County. (Gunter).

A LEAFHOPPER (Dikraneura carneola) - WASHINGTON - Damaging wheat, barley and fescue near Pullman. (Telford).

### FRUIT INSECTS

CODLING MOTH (Carpocapsa pomonella) - OREGON - First eggs on pear leaves in sheltered location May 28 in Medford area. (Gentner). MISSOURI - Scarce in most sprayed orchards. (Wkly Rept. Fr. Grs.) MICHIGAN - Activity at its peak during week. (Hutson). ILLINOIS - Hatch continuing in southern area. (Chandler). INDIANA - Emergence from packing houses high; heavy hatch building toward a peak in the Orleans area. (Marshall). Emergence tapering off rapidly but considerable activity expected in next 15 days in the Vincennes area; first-brood eggs laid prior to May 29 have hatched; first larvae to enter fruit are mature and leaving apples. (Hamilton). NEW JERSEY - Increasing throughout State; peak of entry expected about mid-June. (Merrill, June 7). NEW YORK - Emergence continues in several counties; first entries in Rockland County June 8 (Clark); first entry in Lake area June 9, in Niagara County (McNicholas); emergence and egg laying heavy in Orleans County (West).

PLUM CURCULIO (Conotrachelus nenuphar) - NEW JERSEY - Activity on peaches subsiding in northern area; completed in southern. (Merrill, June 7). PENNSYLVANIA - Considerable injury to plums, apples, peaches in unsprayed orchards in Fulton County. (Udine). VIRGINIA - Considerable damage to apples in one orchard in Rappahannock County. (Lyne). ILLINOIS - Moderate to severe and generally greater than in 1954. As heavy or heavier infestation expected with the second brood about July 1 in southern area. (Chandler).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - NEW YORK - Very severe in Columbia County where improperly treated. (Poray). Damage to fruit up to 10 percent in some orchards in Niagara County. (McNicholas). NEW JERSEY - In pupal stage. (Merrill, June 7). ILLINOIS - Increasing in the Centralia area. (Chandler).

APPLE APHID (Aphis pomi) - ILLINOIS - Increasing moderately in southern area. (Chandler). MICHIGAN - Becoming more numerous at Battle Creek and Keeler. (Hutson). NEW JERSEY - Increasing. (Merrill, June 7).

CURCULIOS - RHODE ISLAND - As much as 75 percent of fruit injured on neglected apple trees in Scituate and Allenton areas. (Kantack). NEW YORK - Moderate infestations of plum curculio on prunes in Oswego County. (Lum). Activity continuing in Onondaga County. (Vuillemot).

EUROPEAN RED MITE (Metatetranychus ulmi) - NEW JERSEY - Maturing in southern area. (Merrill, June 7). MICHIGAN - Populations declining. (Hutson).

AN APPLE SAWFLY - NEW JERSEY - Emerging in considerable numbers in Bergen County. (Merrill, June 7).

LEAFHOPPERS - ILLINOIS - Marked increases in unsprayed orchards having crops, in southern area. (Chandler).

PEAR-SLUG (Caliroa cerasi) - WASHINGTON - First adult May 25; numbers by June 10. (Frick, Bry).

ROSY APPLE APHID (Anuraphis roseus) - OREGON - Winged migrants leaving apple trees in numbers June 8 in Medford area. (Gentner).

TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus) - MICHIGAN - Populations declining. (Hutson).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - SOUTH CAROLINA - Damage to peach terminals in Spartanburg County. (Nettles). IDAHO - Larvae causing damage to twigs in fruit in Homedale area. (Walz, June 4).

EUROPEAN FRUIT LECANIUM (Lecanium corni) - WASHINGTON - Damaging apricots at Wenatchee June 1. (Telford).

CHERRY FRUITWORM (Grapholitha packardii) - NEW JERSEY - Heavy in poorly-dusted plantings or where application was late. (Merrill, June 7).

CHERRY FRUIT FLY (Rhagoletis cingulata) - OREGON - Adults began emerging at The Dalles June 2 (Burts), at Hood River June 6 (Ellertson). WASHINGTON - First adult trapped June 2. Full bloom and first emergence of fly about 2 weeks later than normal. (Frick, Bry).

BLACK CHERRY FRUIT FLY (Rhagoletis fausta) - MICHIGAN - Appeared in numbers at Traverse City June 6. (Hutson).

BLACK CHERRY APHID (Myzus cerasi) - UTAH - Increasing and some damage in several counties. (Knowlton et al).

PECAN NUT CASEBEARER (Acrobasis caryae) - OKLAHOMA - Eggs appearing throughout State. (Flora).

BLACK PECAN APHID (Melanocallis caryaefoliae) - GEORGIA - Heavy on pecans in Ben Hill County, May 20. (Geiger).

### TRUCK CROP INSECTS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - WASHINGTON - Hatching at Yakima. (Landis, Schopp). IDAHO - Entering potato fields in southwestern area. (Walz, June 4). NORTH DAKOTA - Some egg laying in Grand Forks area. (Goodfellow). MARYLAND - Larvae abundant on potatoes and tomatoes in St. Marys County. (U. Md., Ent. Dept.). DELAWARE - Prevalent on potatoes and tomatoes generally; heavy larval injury many places Sussex County; about 50 acres on Primehook Neck being ruined. (Milliron). RHODE ISLAND - Still light in unsprayed fields. (Kantack).

POTATO LEAFHOPPER (Empoasca fabae) - DELAWARE - Increasing on potatoes, particularly in Kent and Sussex Counties; appearing in large acreage of snap beans near Bridgeville and in smaller plantings near Harrington. (Milliron). NORTH CAROLINA - Empoasca sp. probably fabae appearing in numbers in light trap in Duplin County. Light on potatoes, beans and squash). (Brett, Mitchell).

POTATO APHID (Macrosiphum solanifolii) - DELAWARE - On potatoes from Middletown southward, most abundant in the Leipsic-Smyrna-Dover area. (Milliron).

TOMATO PSYLLID (Paratrioza cockerelli) - COLORADO - Development on matrimonyvine in Larimer County slowed by weather. Fifty adults per 100 sweeps, eggs common but no late-instar nymphs. (Colo. Exp. Sta.). UTAH - Numerous on matrimonyvine at Brigham, Woodscross and Spanish Fork. (Knowlton).

TOMATO RUSSET MITE (Vasates lycopersici) - GEORGIA - Damaging tomatoes in home garden in Dougherty County. (Osburn).

TOMATO FRUITWORM (Heliothis armigera) - SOUTH CAROLINA - Damage to tomato fruit increasing in Anderson County. (Nettles).

LEAFHOPPERS - NEW YORK - "Hopperburn" on potatoes observed in one area. (Kriner). Building up in unsprayed potato fields in Niagara County. (Stevenson).

TARNISHED PLANT BUG (Lygus lineolaris) - DELAWARE - Unusually prevalent in potatoes generally; much injury near Cheswold. (Milliron).

THRIPS - TEXAS - Heavy widespread infestation on tomatoes in Cherokee County. (Hunby). SOUTH CAROLINA - Large numbers in tomato flowers in 300 acres and may be factor in flower set. (Nettles). NEW YORK - Becoming problem where dry weather persists. (Kriner).

A SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) - COLORADO - Continues of concern to beet growers in Larimer and Weld Counties. Loss of stands has caused replacement with corn in some instances. Infestation averaging 12 maggots per beet plant. (Colo. Exp. Sta.). NORTH DAKOTA - Adults in considerable numbers in sugar beet fields in Auburn area, Walsh County, first week in June. (Goodfellow).

CUTWORMS - UTAH - Reduced sugar beet stands 10-20 percent in recent nights in beet-growing areas of Carbon County. (Knowlton).

BEEET WEBWORM (Loxostege sticticalis) - WYOMING - Ovipositing on beets in Goshen County. (Spackman).

IMPORTED CABBAGEWORM (Pieris rapae) - DELAWARE - Adults very abundant throughout State; eggs numerous on cabbage generally; second-generation larvae at Georgetown. (Milliron). RHODE ISLAND - One per plant in Wickford area, light damage. (Kantack).

DIAMONDBACK MOTH (Plutella maculipennis) - DELAWARE - More abundant than usual on cabbage in most locations; injury conspicuous several areas. (Milliron).

SPINACH LEAF MINER (Pegomya hyoscyami) - COLORADO - Widespread in sugar beet fields of northeastern area. (Colo. Exp. Sta.).

CABBAGE APHID (Brevicoryne brassicae) - DELAWARE - Ruining cabbage at Townsend; destructive in Sussex County. (Milliron).

CABBAGE SEEDPOD WEEVIL (Ceutorhynchus assimilis) - IDAHO - Low in comparison with previous years but requiring control in some fields. (Manis, June 4).

CABBAGE MAGGOT (Hylemya brassicae) - MICHIGAN - Especially abundant on radishes around Lansing. (Hutson).

CARROT BEETLE (Ligyrus gibbosus) - ILLINOIS - Severe damage to carrots, other vegetables and ornamental plants. (Petty et al).

SEED-CORN MAGGOT (Hylemya cilicrura) - TENNESSEE - Heavy damage in commercial bean area, Johnson County, on untreated seed. (Mullett). MARYLAND - Some concern on snap beans in Caroline County. (U. Md., Ent. Dept.).

MEXICAN BEAN BEETLE (Epilachna varivestis) - NEW JERSEY - Increasing in activity. (Merrill, June 7). MASSACHUSETTS - Requiring control. (Crop Pest Cont. Mess.). NEW YORK - Egg laying underway in Rockland County. (Clark).

PEA APHID (Macrosiphum pisi) - DELAWARE - Increasing on treated commercial peas near Middletown and Brenford. (Milliron). WASHINGTON - Migration from alfalfa to peas not complete until last week in May. Average population in peas in areas usually most subject to infestation was about 11 aphids per 100 sweeps, which is very low spring population. A few fields have around one aphid per sweep. No enation virus observed. (Cook). WISCONSIN - Populations building up in southern area. Some fields required treatment in Green Lake and Iowa Counties. (Chambers).

GREEN CLOVERWORM (Plathypena scabra) - DELAWARE - Prevalent in some commercial peas near Slaughter Beach. (Milliron).

PEA WEEVIL (Bruchus pisorum) - WASHINGTON - First adults collected on alfalfa at Pullman, June 3. (Johansen).

CABBAGE MAGGOT (Hylemya brassicae) - NEW YORK - Damage more common than usual in Wayne County. (Pease). Very little damage in Rockland County. (Clark).

A TORTOISE BEETLE (Metriona sp.) - LOUISIANA - Seven per 100 sweeps of sweetpotato foliage in St. Landry Parish. (Oliver).

SWEETPOTATO FLEA BEETLE (Chaetocnema confinis) - LOUISIANA - Sixty-four per 100 sweeps on sweetpotatoes in St. Landry Parish. (Oliver).

SPOTTED ASPARAGUS BEETLE (Crioceris duodecimpunctata) - MARYLAND - Adults numerous on asparagus ferns, Montgomery County. (U. Md., Ent. Dept.).

HOP APHID (Phorodon humuli) - WASHINGTON - Spring migrants leaving prune trees for hops at Wapato. (Landis, Schopp).

CUCUMBER BEETLES - NEW YORK - Extremely numerous. (Kriner).

LEAF MINERS - FLORIDA - Liriomyza sp. averaging 15-30 larvae per leaf on tomatoes at Oxford, Sumter County. First time leaf miners noticed as serious pest on tomatoes in this area. (Hunter, May 19). ARIZONA - Four to 6 or more adults per leaf on watermelon at Litchfield Park, Maricopa County. (Ariz. Coop. Rept.).

FLEA BEETLES - NORTH CAROLINA - Moderately heavy in eggplant in Duplin County. (Brett). RHODE ISLAND - Epitrix cucumeris populations still heavy with 10-30 per plant in unsprayed potatoes over State. (Kantack). IDAHO - Abundant and causing extensive damage in gardens in Moscow area. (Manis, June 4). NEW YORK - Considerable damage to recently-set tomatoes and other plants. (Kriner).

STRIPED CUCUMBER BEETLE (Acalymma vitatta) - DELAWARE - Destructive to squash at Rising Sun and near Georgetown. (Milliron).

SQUASH BUG (Anasa tristis) - NORTH CAROLINA - Light infestation on squash in Duplin County. Eggs hatching. (Brett).

PICKLEWORM (Diaphania nitidalis) - GEORGIA - Moderate infestation in squash and cucumbers in Tift County May 30. (Morgan).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - SOUTH CAROLINA - Commonly attracted to lights for the first time in three years. (Kirk).

A RASPBERRY SAWFLY (Priophorus morio) - WASHINGTON - Raspberry foliage injured in fields in Puyallup Valley but damage not great. (Doucette).

ORANGE TORTRIX (Argyrotaenia citrana) - WASHINGTON - First emergence on raspberries in Snohomish County observed May 23. (Johanson).

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) - WASHINGTON - Damaging peppermint near Grandview. (Landis, Schopp).

STRAWBERRY LEAFROLLER (Ancylis comptana fragariae) - PENNSYLVANIA - Moderate infestation in strawberries in Northumberland County. (Menusan).

RASPBERRY SAWFLY (Monophadnoides geniculatus) - WISCONSIN - Abundant in raspberry plantings. (Chambers).

TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus) - NEW YORK - Still problem in many strawberry fields. (Wells).

WIREWORMS - KENTUCKY - Sixty-two percent of 400 tobacco plants from 4-acre field severely injured. Tobacco after sod. (Boush).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - NORTH CAROLINA - Very light in tobacco in southeastern counties. (Mitchell). VIRGINIA - Light and declining on tobacco in Pittsylvania County. (Dominick). MARYLAND - Heavy on field plants in St. Marys County. (U. Md., Ent. Dept.).

LOOPER ON TOBACCO - SOUTH CAROLINA - A looper, presumably cabbage looper (Trichoplusia ni) occurring on tobacco in outbreak numbers in parts of Williamsburg and Horry Counties; this is an unusual occurrence. (Allen, June 4).

HORNWORMS (Protoparce spp.) - NORTH CAROLINA - Apparently between broods on tobacco, only 8 eggs and larvae in 15 fields in southeastern counties. (Mitchell). GEORGIA - Moderate infestations rather general on pimiento pepper in Spalding and Meriwether Counties, May 20. (Beckham). VIRGINIA - Light in most fields in Chatham area, Pittsylvania County. Light trap catches from 6 traps for week ending June 4 - P. sexta 300, P. quinquemaculata 790. (Dominick). MARYLAND - Hatching on tomatoes in Prince Georges County. (U. Md., Ent. Dept.).

GRASSHOPPERS - GEORGIA - Heavy infestation damaging tobacco in Mitchell, Tift, and Cook Counties, May 30. (Morgan).

GREEN PEACH APHID (Myzus persicae) - SOUTH CAROLINA - General in a large number of tobacco fields. (Allen, Lewis). NORTH CAROLINA - Small scattered colonies in most fields, but quite heavy in Columbus County. (Mitchell). WASHINGTON - Colonization on spring crop of potatoes increasing slowly and about 2 weeks later than usual at Yakima. (Landis, Schopp).

FOUR-SPOTTED TREE CRICKET (Oecanthus nigricornis quadripunctatus) - NORTH CAROLINA - Considerable activity in tobacco in Cumberland and Robeson Counties, one field severely damaged, apparently by combination of egg punctures and wind. (Mitchell).

#### COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Increasing rapidly in lower Rio Grande Valley and migrating. (Deer). Found at rate of 66 per acre in 14 untreated fields and 21 per acre in 13 treated fields, with average of 36 per acre in McLennan and Falls Counties. (Parenchia et al). Much larger numbers than at this time last year in the weevil areas of State. (Davis, Martin). ARKANSAS - Infestations ranged from 0 - 2850 in Ashley-Chico County area and in Lincoln County in cotton beginning to square; up to 1500 per acre in southwest area. (Warren).

LOUISIANA - In 31 of 36 fields inspected in Tallulah area an average of 222 weevils found per acre compared with 419 in 1954; emergence in survival cages completed. (Gaines et al). Up to 108 per acre in Ouachita Parish and to 55 in Rapides Parish. (Oliver). ALABAMA - Not very numerous in some sections; however, two fields in Lee County have 248 and 1,364 weevils per acre. (Arant). Twenty-two fields examined in 3 southeastern and 2 central counties, and 19 found infested. (Moore). MISSISSIPPI - First punctured square in Oktibbeha County this year June 9. (Hester). In most fields in delta counties average of 65 per acre compared with 52 last week. Three fields had infestation of 2-5 percent punctured squares. (Merkl et al). GEORGIA - Infestation in 68 of 71 fields examined in 15 southern counties. Twenty-two untreated fields examined and all infested with average of 8.3 percent punctured squares. Forty-six of 49 treated fields found infested with average of 3.4 percent punctured squares. (J. C. and C. R. Jordan). SOUTH CAROLINA - Total of 258 weevils taken in trap plot at Florence. Total taken to June 10, 1955 - 876; to same date in 1954 - 69. Average of 92 weevils per acre in 4 of 6 fields examined in Florence County. Eleven untreated fields examined and all found infested with average of 14 percent square infestation. Ten treated fields examined and all infested at rate of 10 percent punctured squares. (Walker et al). NORTH CAROLINA - Boll weevil generally very light with counts negative in many fields, but a few fields have counts of 10 or more per 100 plants. (Jones).

BOLLWORMS - ARIZONA - Early this year at Sahuarita; flared squares found in 7 or 8 plants. (Ariz. Coop. Rept.). TEXAS - Increasing in some fields in lower Rio Grande Valley. (Deer). Light populations common in southwest and a few medium populations. (Davis, Martin). LOUISIANA - At Tallulah two fields averaged 3.2 eggs and 1.3 larvae per 100 terminals. (Gaines et al). MISSISSIPPI - Adults common in fields of delta counties; eggs common with occasional larva; requiring some treatment in area. (Merkl et al). ALABAMA - Average number of eggs per 100 terminals in all fields examined; 1.27 percent with 15 of 22 fields infested. (Arant). SOUTH CAROLINA - Showing up in coastal plain counties. (Cott. Lett. June 7). NORTH CAROLINA - Very few larvae in fields surveyed. (Jones, Mistic).

PINK BOLLWORM (Pectinophora gossypiella) - TEXAS - Percent infestation of squares in counties were: Burleson 4.7; Robertson 0.7; Falls 1.0; and McLennan 0.5; Williamson, 2.1 percent of blooms infested in 7 fields. (Parencia et al). High counts of infested squares and rosetted blooms continue in the east, south-central and central areas. (Davis, Martin). In the last half of May, systematic bloom inspections for pink bollworm were made in 25 municipios of Mexico and 22 counties of south Texas. Tabulations show that for the State of Tamaulipas there are only about one-half as many infested blooms

as were found last year; about one-third of the fields show some infestation in blooms. In the 4 Rio Grande Valley counties of Texas, the final figures show a more general bloom infestation than that found last year at the same date. Twenty-four percent of the fields examined this year showed light bloom infestations as compared with 12 percent in 1954. In the coastal bend counties, incomplete inspections show a considerable increase in infestation over 1954. There is also an abnormal number of late planted fields compared to the average year, which should bring about some rather heavy populations in the late crop. All inspections of okra fields continued to show negative results. (P. B. W. Cont. Proj.).

Pink Bollworm is reported for the first time from the interior of Colombia according to a report by Carlos Marin H., entomologist with the Instituto de Fomento Algodonero, Bogota, Colombia. (Bishopp). This insect has been reported previously from Atlantic coastal areas of Colombia.

COTTON FLEAHOPPER (Psallus seriatus):- TEXAS - Infestation exceeded 25 per 100 terminals in three untreated fields in McLennan and Falls Counties and averaged 7.3 in treated and untreated fields. (Parenchia et al). Still migrating from hosts into fields; increasing over much of State. (Davis, Martin). ARKANSAS - Heavier than usual this time of year, rather severely damaging some fields in southeast and southwest areas; counts ranged up to 135 per 100 terminals. (Warren). LOUISIANA - Found in 11 of 12 fields, Tallulah, and averaging 14 per 100 terminals. (Gaines et al). Light to heavy in Ouachita and Rapides Parishes. Per linear foot of row, 0-45 in Tensas and 3-6 in Bossier Parishes. (Oliver). MISSISSIPPI - Infestations range from light to medium in untreated fields in delta counties; damage to south delta cotton reported. (Merkl et al).

THRIPS - ARIZONA - Some increase in Pima County in fields treated earlier; slight decline in Maricopa County, June 3. (Ariz. Coop. Rept.). NEW MEXICO - Still general throughout Mesilla Valley fields. (Durkin). TEXAS - Injurious infestations continue in untreated late-planted fields in McLennan and Falls Counties. (Parenchia et al). Injurious infestations continue in east, north half of south-central, central, north-central and northeastern areas; peak of migrations passed. (Davis, Martin). ARKANSAS - General but variable. (Warren). LOUISIANA - Some injury continues in late fields; population decreasing. (Gaines et al). MISSISSIPPI - Reported heavy on most young cotton not treated in delta area. (Merkl et al). NORTH CAROLINA - Heavy infestation in Union County; rather moderate in Cleveland and light in Halifax County. (Mistic). Heavy populations in Scotland County. (Cott. News Lett.). SOUTH CAROLINA - Damaging cotton in all Piedmont counties. (Cott. Lett.).

APHIDS - ARIZONA - Cowpea aphid (Aphis medicaginis) doing damage in limited areas near Marana, week of June 1; aphids showing general decline. (Ariz. Coop. Rept.). NEW MEXICO - Cotton aphids light to abundant in Mesilla Valley. Cowpea aphid (Aphis medicaginis) still present in Mesilla Valley. (Durkin). MISSOURI - Aphis gossypii damage occurring in widely-scattered spots in individual fields. (Jenkins). SOUTH CAROLINA - Damaging cotton in all Piedmont Counties. (Cott. Lett.).

SPIDER MITES - TEXAS - Causing damage in some untreated fields in lower Rio Grande Valley. (Deer).

PLANT BUGS - TEXAS - A mirid similar to Lygus bug causing damage in a few fields near Los Fresnos. (Deer).

COTTON LEAFWORM (Alabama argillacea) - TEXAS - First specimen of year found in San Patricio County in a field 7 miles southeast of Taft on June 9. (Greer).

WHITEFLY (Trialeurodes sp.) - ARIZONA - Still abundant near Sahuarita. (Ariz. Coop. Rept.).

A LEAF ROLLER (Platynota stultana) - TEXAS - Feeding on and cutting terminals of cotton. (Martin).

CABBAGE LOOPER (Trichoplusia ni) - TEXAS - An infestation reported in Elsa area in lower Rio Grande Valley. (Deer).

#### FOREST, ORNAMENTAL AND SHADE TREE INSECTS

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - TENNESSEE - Approximately 400 acres of pine in Unicoi, Carter and Johnson Counties have been killed. (Dozier).

DEODAR WEEVIL (Pissodes nemorensis) - MISSISSIPPI - Heavy mortality to experimental pine seedlings at Saucier. (Forest Serv.).

RED-PINE SAWFLY (Neodiprion nanulus) - WISCONSIN - Very abundant in some areas, causing complete defoliation of old needles of many trees in plantations in Dane, Columbia and Waupaca Counties. (Chambers).

RED-HEADED PINE SAWFLY (Neodiprion lecontei) - PENNSYLVANIA - Moderate infestation on pine throughout Luzerne County; some control begun. (Gesell).

PINE SPITTLEBUG (Aphrophora parallela) - WISCONSIN - Reported building up in northern area. (Chambers).

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) - NEW JERSEY Emerging in central area. (Merrill, June 7). OHIO - Vigorously attacking a planting of 6 to 8-year old red pine near Toledo. (Forst Serv.). MICHIGAN - Infestation widespread and severe; adults and pupae are present over southern Michigan as far north as Clare and Grand Rapids. (Hutson). WISCONSIN - Reported building up in nurseries in eastern area. (Chambers).

PINE NEEDLE MINER (Exoteleia pinifoliella) - MICHIGAN - Heavy infestations damaging pitch pine in Muskingum watershed district. (Forest Serv.).

A TORTRICID (Archips fervidana) - PENNSYLVANIA - Thousands of acres of scrub oak in Adams County with considerable defoliation. (Sleesman).

ENGRAVER BEETLES (Ips spp.) - ARKANSAS - Although no appreciable difference in overall occurrence and activity noted since last month, reports from Pope County to the Louisiana line indicate some increase in activity. (Ark. St. Forest. Comm., June 1).

PALES WEEVIL (Hylobius pales) - ARKANSAS - Most active damage in south-central areas and most severe in burned areas planted last winter. In Malvern area 200-acre infestation reported. (Ark. St. Forest. Comm., June 1).

FOREST TENT CATERPILLAR (Malacosoma disstria) - Defoliating tupelo, black and sweet gum in southwest ALABAMA and southwest LOUISIANA. (Forest Serv.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - DELAWARE - Adults numerous at lights in northern area. (Milliron).

FALL CANKERWORM (Alsophila pometaria) - NORTH CAROLINA - Egg mass surveys indicate moderate to heavy defoliation can be expected to recur in western areas which have been infested for past 3 or 4 years. (Forest Serv.).

BIRCH LEAF MINER (Fenusa pusilla) - PENNSYLVANIA - Birch leaves showing larval injury in Franklin, York, and Centre Counties. (Pepper). RHODE ISLAND - Injury very heavy over State with many trees showing severe injury and almost 100 percent of gray birch showing noticeable injury. (Kantack).

LINDEN LOOPER (Erannis tiliaria) - TENNESSEE - The cankerworm reported in CEIR 5(21):468 has been identified as this species. (Mullett).

GREAT BASIN TENT CATERPILLAR (Malacosoma fragilis) - COLORADO - Causing heavy damage to aspen in LaVeta Pass, Huerfano County. (Colo. Ex. F.).

A WOOLLY APHID (Neoprociophilis aceris) - DELAWARE - Destroying foliage at tips of branches of hard maple at Newark. (Milliron).

PLANT BUGS (Plagiognathus albus and Orthotylus sp.) - DELAWARE - Abundant on sycamore throughout the State and causing severe foliage damage. (Milliron).

WALKINGSTICK (Diapheromera femorata) - WISCONSIN - Reported very abundant in Marinette and Oconto Counties, causing serious defoliation of oak and other deciduous trees. (Chambers).

SARATOGA SPITTLEBUG (Aphrophora saratogensis) - WISCONSIN - Apparently more abundant than last year in north central Wisconsin. (Chambers).

JAPANESE BEETLE (Popillia japonica) VIRGINIA - First adult in Norfolk County May 31, taken on rose. (Raine).

SPRUCE BUD SCALE (Physokermes piceae) - WISCONSIN - More abundant than usual in nursery plantings and parks. (Chambers).

COOLEY SPRUCE GALL APHID (Chermes cooleyi) - UTAH - Damaging some ornamental trees in Ogden area. (Knowlton).

SPRUCE NEEDLE MINER (Taniya albolineana) - WISCONSIN - Reported abundant in some nurseries of State. (Chambers).

BOXWOOD PSYLLID (Psylla buxi) - DELAWARE - Causing deformity of terminal leaves of American boxwood in New Castle and Kent Counties. (Milliron).

SPRING CANKERWORM (Paleacrita vernata) - WYOMING - Infesting boxelder trees in Goshen County. (Spackman).

ELM LEAF BEETLE (Galerucella xanthomelaena) - TENNESSEE - Heavy widespread infestation continues over State. (Mullett).

JUNIPER WEBWORM (Dichomeris marginella) - PENNSYLVANIA - Moths emerging from juniper in centre County. (Gesell).

WOOLLY ELM APHID (Eriosoma americanum) - UTAH - Attack on elms noticeable in several areas. (Knowlton).

BAGWORMS - IOWA - Young bagworms active on arborvitae and juniper. (Harris).

MAPLE BLADDER-GALL MITE (Vasates quadripedes) - RHODE ISLAND - Galls quite common on maples over the State; some trees quite heavily infested. (Kantack).

SPIDER MITES - NORTH DAKOTA - Building up in evergreen foundation plantings. (Goodfellow).

SAWFLIES - RHODE ISLAND - More than usual number encountered in nursery inspection this year. (Mathewson).

NARCISSUS BULB FLY (Lampetia equestris) - WASHINGTON - Emergence from concentrators at Sumner started May 29, latest ever noted in area. Peak emergence started June 6. (Doucette).

APHIDS - NEW MEXICO - Heavy populations on American elm in Mesilla Valley. (Durkin, June 4). COLORADO - Increasing to extent on ornamentals and warranting control in northeastern area. (Exp. Sta.). PENNSYLVANIA - Very heavy population of an aphid (Amphorophora crataegii) on Crataegus in an ornamental grove, Blair County; 50 percent of leaves dropped. (Udine).

A BORER (Oberea myops) - TENNESSEE - Damage to ornamental plantings of rhododendron in Unicoi County. (Dozier).

#### INSECTS AFFECTING MAN AND ANIMALS

BLOOD-SUCKING CONENOSE (Triatoma sanguisuga) - OKLAHOMA - Infestations found in apartment houses in Oklahoma City. (Thomas).

CATTLE GRUBS - UTAH - Heel flies have been running cattle in a number of areas and since May 1 in Utah County. (Knowlton).

LITTLE HOUSE FLY (Fannia canicularis) - MICHIGAN - Large populations on the Michigan State campus. (Hutson).

MOSQUITOES - COLORADO - Larval counts in drainage ditches at Ft. Collins 40-50 per cup; increasing. (Exp. Sta.). NORTH DAKOTA - Populations increasing following rains. (Goodfellow).

STABLE FLY (Stomoxys calcitrans) - OKLAHOMA - Populations average 30-40 per animal in central area. (Howell).

TICKS - RHODE ISLAND - Populations of Dermacentor variabilis remain heavy over the entire State. (Kantack). IOWA - Wood ticks observed on cattle in timber pasture in Shelby County in numbers up to 100 per animal. (Harris).

### BENEFICIAL INSECTS

Populations of lady beetles, robber flies, syrphid larvae, and ichneumonids generally abundant in RHODE ISLAND. (Kantack).

LADY BEETLES - NEW MEXICO - Building up in alfalfa fields; Hippodamia parenthesis 30-100 per 100 sweeps; H. convergens 6 per 100 sweeps. (Durkin).

A BEETLE (Collops vittatus) - NEW MEXICO - A beneficial beetle has been collected from alfalfa in Mesilla Valley, 6 per 100 sweeps. (Durkin).

NABIDS - NEW MEXICO - Building up in alfalfa; from 50-100 per 100 sweeps reported in some fields. (Durkin).

### MISCELLANEOUS INSECTS

EUROPEAN EARWIG (Forficula auricularia) - UTAH - Annoyance increasing in many areas. (Knowlton).

### RECENT INTERCEPTIONS AT PORTS OF ENTRY

Of interest recently was the interception of living specimens of a fig wax scale (Ceroplastes rusci (L.)) on fig cuttings in the mails from Italy at Chicago, Illinois. (Walton). This insect has been reported injurious to figs in parts of Europe, Asia, Australia, and South America. It is said to occur periodically, appearing in considerable numbers in occasional years, then practically disappearing for long periods. Severe injury has been reported in certain years in France, Egypt, and Israel. Economic injury to figs is due to the development of sooty mold in the honey dew excreted by the scales rather than actual insect feeding. The sooty mold mars the appearance and hinders the functions of the leaves, reduces the market value of the fruit, and makes the figs unsuitable for drying.

Observations on the biology of the insect in Israel indicate the young larvae appear in late April or early May. They are very active, wander about on twigs and leaves for about a week looking for a suitable feeding place, then settle down to feed on the upper side of the leaves near the veins. In about a month they migrate to the stems or young shoots and

continue feeding. They mature in about 70-80 days, when winged adults appear. A second generation develops that matures in late fall to overwinter as adult scales and produce larvae in the spring.

In addition to fig, C. rusci has been reported feeding on citrus, holly, myrtle, pistachia, ruscus, chrysanthemum and other plants. It has been intercepted on a number of occasions at various ports on fig cuttings, plants, and fruit from the Azores, France, Germany, Greece, Israel, Italy, Japan, Portugal and Spain. It is not known to occur in the United States.

( Compiled by:  
Plant Quarantine Branch)

### ADDITIONAL NOTES

MARYLAND - ARMYWORMS have passed peak; heavy feeding on grain and corn at Ridge, St. Marys County. CUTWORMS causing moderate to heavy damage to corn in St. Marys County. EUROPEAN CORN BORER damaging wheat in Carcline County. SOD WEBWORM (Crambus sp.) has damaged two-thirds of a 7-acre corn field in Garrett County.

Adults of LESSER CLOVER LEAF WEEVILS causing considerable damage to second-growth red clover in Kent and Queen Annes Counties. (U. Md., Ent. Dept.).

NORTH DAKOTA - CUTWORMS damaging vegetable transplants in several localities. (Goodfellow).

NEW YORK - Eggs of EUROPEAN CORN BORER found June 7 in Niagara County 12 days ahead of last year. (Stevenson). Light populations in Hudson Valley. (Adams).

IOWA - EUROPEAN CORN BORER - Activity retarded; about 10 percent of corn in central and northern areas susceptible now to heavy first brood damage with warm weather; up to 200 per 100 plants on 20-40 inch corn but some eggs scaling off. PEA APHID building up in red clover and alfalfa, ranging from 50-100 per sweep in heaviest infested areas. CLAY COLORED BILLBUGS destroyed sections of fields of corn in Pottawattamie and Harrison Counties. ALFALFA LOOPERS and caterpillars doing damage in some alfalfa fields. (Harris).

WEATHER FOR THE WEEK ENDING JUNE 13, 1955

Last week's weather east of the Rocky Mountains was unseasonably cool with frequent showers and much cloudiness in middle and northern areas. A few scattered damaging hail storms were reported in Iowa and Pennsylvania. The rains of last week replenished moisture in some northeastern areas, further improved subsoil moisture in the northern Great Plains, and maintained an adequate soil moisture supply elsewhere east of the Rockies except in extreme southern and southwestern parts of Texas, where drought still persists, and in parts of Florida and southern Georgia, where more rain would be beneficial.

Cool polar air overspread the area between the Continental Divide and the Mississippi River about midweek, reducing temperatures to near record low levels for June in Texas. The weather was unusually cool in north-central areas on the 12th and 13th, when maximum temperatures were generally in the 50's and 60's, and minimum temperatures in the upper 30's were recorded as far south as Iowa. Temperatures for the week averaged 10° to 13° below normal in the east-central Great Plains and central Mississippi Valley. In the Northeast cloudy weather held daytime temperatures to about 10° below normal, while nighttime temperatures averaged near normal. Warm, dry weather prevailed west of the Continental Divide. This was the first week with generally above normal temperatures west of the Continental Divide in several months. On the 8th and 9th maximum temperatures of 90° to 100° were recorded in Oregon and Washington. Seattle, Wash., reported a high of 100° on the 9th; Portland, Oreg., 95°; and Fresno, Calif., 98°; and Medford, Oreg., recorded 101° on the 8th. Dry north and east winds in the Pacific Northwest about midweek rapidly dried range lands. (Summary Supplied by U. S. Weather Bureau).

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Reports in this issue are for the week ending June 10, 1955 unless otherwise designated.

LIGHT TRAP COLLECTIONS

	Pseudal. unipunc.	Prod. ornith.	Period. marg.	Agrotis Feltia ypsilon subter.	Heliothis armig. vires.	Proto. quin. sex.
<u>ARKANSAS</u>						
Hope	5		4		7	
Stuttgart	14		13	1	6	
Van Buren	29		11	5	25	
Varner	6		12	2	26	
Fayetteville	35		13	13	31	
Clarksville	15		6	13	6	
<u>LOUISIANA</u>						
Baton Rouge*		233	6	14	13	
Bunkie	5	9	6	2	26	
Franklin	1	4	5	41	.2	
St. Joseph		31				
Curtis	48	103	17	9	20	1556
Tallulah*	18	163	18	1	30	3
<u>MISSISSIPPI (Counties)</u>						
Coahoma	36	10	16	3	16	
Humphreys	18	35	7	2	1	
Oktibbeha	84	187	9	4	4	
Pearl River	12		2		3	
Washington*	197	360	175	56	63	7 spp.
<u>ALABAMA</u>						
Auburn		23			19	2

\* Two traps at Baton Rouge, 3 at Tallulah, 2 in Washington County.

LIGHT TRAP COLLECTIONS

GEORGIA (Counties)		Pseudal unipunc.	Prod. ornith.	Period. marg.	Agrotis ypsilon	Feltia subter.	Heliothis armig. vires.	Proto. quin. sex.
Tift	5/30-6/4		3					2
Clarke	5/30-6/3	5	3		6		4	
Spalding	5/30-6/3	13	4		6		25 sp.	1
TENNESSEE (Counties)								
Madison	6/2-8							
Lawrence		32			4			11 spp.
Maury		1,684	24	156	8			9
Robertson								9
Cumberland		1						22
Knox								14 spp.
Greene		8	4	2			5	9
							16	1
								3
SO. CAROLINA (Counties)								
Oconee	6/5-11	21	4					
Charleston	5/30-6/6			2	1		2 sp.	2
KANSAS								
Wathena	6/1-7	38						5

-557-

Some other collections of interest: LA. Loxostege similalis 1756, (Tallah), Laphygma frugiperda 4 (Tallah), 7 (Baton Rouge). GA. Elasmopalpus lignosellus 24 (Spalding), 9 (Tift). KANS. Chorizagrotis auxiliaris 19 (Manhattan), 175 (Hays).

Notes: ARK. - Bollworm moth flights continue to increase, armyworm moth flight declining. LA. - Bollworm moths increasing, Feltia subterranea has been heavy at Baton Rouge. TENN. - Hornworm moths and sugarcane beetle reduced, second-generation armyworm moths in Maury County. Correction: S. C. (CEIR 5(23):528) number of C. vagus taken at Charleston should read 1090 not 1427.



## SURVEY METHODS

### JAPANESE BEETLE (POPILLIA JAPONICA)

#### Methods Used by the Japanese Beetle Laboratory, Entomology Research Branch

The presence of the Japanese beetle in an area can be detected by placing bait traps at suitable sites during the period of flight of the adults. The density of the population can be estimated by observing the extent of feeding by the adults on favored food plants and by the examination of soil at selected sites to determine the number of grubs present.

Traps are of value in determining the presence of beetles in areas remote from the generally infested region. In these areas traps attract and capture beetles even when a diligent search often fails to reveal their presence. Beetles are drawn from the leeward to a trap by means of an attractant. Most of those captured fly into the superstructure of the trap and fall into a receptacle from which they can not escape. The trap consists of a four-winged baffle mounted on top of a funnel, a device for holding the dispenser of the attractant, and a receptacle for holding captured beetles, and is painted a high luster yellow. The attractant is a 10:1 mixture of technical geraniol and U.S.P. eugenol by volume or a 9:1 mixture of technical anethole and U.S.P. eugenol by volume and is dispensed by means of a bottle and wick. The details with reference to the trap are given in U.S.D.A. Circular 594. The best results are obtained when a trap is hung on a rod or other suitable support in a sunny location so that it is 4 to 5 feet above the ground and to the windward of plants most subject to attack. It should not be closer than 10 to 25 feet to plants on the leeward. If located so that the odor of the attractant is carried across an open field, a trap may attract beetles from a distance of 500 yards. When trees, buildings and other obstacles deflect and impede the movement of air, the zone of attraction is reduced considerably. When a trap is favorably placed, it can be expected to capture about three-fourths of the beetles attracted to it.

The density of the adult population in an area can be estimated when the beetles are present in the greatest numbers or when the injury by feeding is the most noticeable. The tree hosts most useful in estimating feeding damage are elm, horsechestnut, linden, Lombardy poplar, Norway maple, planetree, white birch, willow, apple, cherry, peach, and plum. The low-growing plants and vines most useful for this purpose are elder, grape, sassafras, smartweed, and Virginia creeper or woodbine. Althea, dahlia, rose, and zinnia are often good indicators, and asparagus, alfalfa, clover, corn, and soybeans are sometimes useful when examining fields and gardens. In some areas other plants may be used in estimating the

feeding; a complete list of the food plants of the beetle is given in U.S.D.A. Circular 547. The lacy appearance of the damaged leaves on most plants within the infested area may be attributed to feeding by the Japanese beetle, but the foliage on representative plants should be carefully examined to determine that the injury was caused by the beetle. Of course, estimates of feeding should not be made on plants that have been sprayed or dusted with an insecticide. Usually in making a survey of an area, observations are made from a car driven slowly along the roads, and the extent of feeding is recorded at various points on a map according to the following numerical system:

- (1) Very severe. Over 50 percent of the host trees entirely brown from beetle feeding; vine hosts completely defoliated.
- (2) Severe. From 25 percent to 50 percent of tree hosts mostly brown; nearly all vines defoliated.
- (3) Moderately severe. From 10 percent to 25 percent of tree hosts brown; heavy feeding on vines.
- (4) Moderate. Less than 10 percent of host trees partly brown; moderate feeding on vines.
- (5) Light. Tree hosts not showing brown though there may be evidence of light feeding on close examination; light feeding on vines apparent from a short distance.
- (6) Very light. Occasional light feeding that is apparent only on close examination. The beetles or eaten leaves are located only after a search.

With the symbols indicating the extent of feeding on the map, it is then possible to make a general estimate of the density of the Japanese beetle population in the area.

The examination of soil for the immature stages of the beetle is usually limited to a specific lawn, golf course, park or pasture, and is conducted to determine whether the injury to the grass is caused by the grubs feeding on the roots and to determine the density of the population in the soil. Many areas of turf in the eastern part of the United States have been ruined by these grubs. In making the examination, a square foot of sod is removed to a depth of 3 or 4 inches and placed in a large tray or other suitable container. The soil is removed from the roots and examined carefully to determine the number of grubs present. The procedure is repeated at other spots until a sufficient area has been examined to establish approximately the severity of the infestation. Usually 12 or 15 spots are enough to obtain a general estimate of the density of the population in a suburban lawn. (W. E. Fleming).





VOL.5 No.25

JUNE 24, 1955

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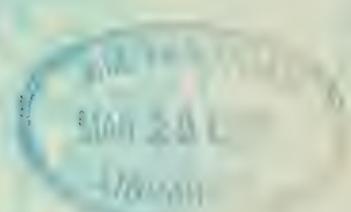
*Cooperative*  
**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL BRANCH**

**AGRICULTURAL RESEARCH SERVICE**

**UNITED STATES DEPARTMENT OF AGRICULTURE**



# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Economic Insect Survey Section  
Plant Pest Control Branch  
Agricultural Research Service  
United States Department of Agriculture  
Washington 25, D. C.

## COOPERATIVE ECONOMIC INSECT REPORT

## Highlights of Insect Conditions

The GRASSHOPPER situation is the outstanding insect problem this week according to reports. Threat to crops in Missouri remains with damage increasing. Destructive populations, where not controlled, continue to develop in Kansas but mostly confined to fence rows and margins now. Nebraska is having damage to alfalfa, sweetclover and margins of corn fields. Rains not affecting populations in latter two States. Infestations serious on pastures and crops in northeast and north central Texas and on rangeland in northern panhandle. Menace to rangeland continues in several counties of New Mexico and populations building up in cultivated crops. Serious increase reported from southwestern Colorado with some crop damage. Oklahoma, Kentucky and Delaware have abundant populations in some sections but infestations remain spotted in Illinois. (p. 563).

EUROPEAN CORN BORER egg-laying complete in Illinois south of line from Quincy to Champaign, nearing peak in northern counties. Egg masses per 100 plants (tallest corn) in Iowa: southern 200-600, central 20-300, northern 12-100. Up to 2 egg masses per stalk of large corn in northwest corner of Missouri, from 12 to 60 egg masses per 100 plants in eastern Nebraska and feeding evident in Kansas but few egg masses. A few second instars in Pennsylvania, third instars in sweet-corn in Kansas and some half-grown larvae in central Iowa. (pp. 564, 582).

CORN EARWORM moths and eggs abundant in Manhattan, Kansas, from 4-60 percent of stalks injured in many fields of southern Missouri, one egg per silk on sweetcorn at East St. Louis, Illinois, and heavy damage some fields in Virginia. (p. 564).

CHINCH BUG in outbreak proportions in some central and southeast areas of Kansas, damage to seedling sorghum and milo. (p. 565). ARMYWORM continues damage in Delaware but declining or scattered in other areas. (p. 565). Iowa reported its first larval activity of season. (p. 582).

SOUTHERN CORN ROOTWORM adults very numerous on corn in southeast South Dakota and eastern Nebraska. Virginia expects heavy infestations in peanuts. (p. 565). CORN ROOT APHID heavier than normal in Nebraska, damaging corn in some western and southern counties of Iowa and in Delaware. (pp. 566, 582). ENGLISH GRAIN APHID unusually abundant throughout Wisconsin. (p. 537). POTATO LEAFHOPPER active on alfalfa in Delaware, Maryland, Missouri, and Illinois (p. 567) and common on potatoes in Wisconsin and areas of Pennsylvania and building up on this crop in Nebraska (p. 572).

(Continued next page)

Heavy populations of PEA APHID persist on alfalfa western Nebraska and central Kansas but Idaho has unusually low population in south-western area. (p. 567). Threatening to peas Cache Valley, Utah; counts in central and southern Minnesota remain high; large number of winged forms at Yakima, Washington; widespread control measures in Wisconsin. (p. 573). YELLOW CLOVER APHID continues mostly light in alfalfa in Arizona, Kansas and Texas but still problem in New Mexico and very heavy in Murray County, Oklahoma. (p. 569).

CODLING MOTH between broods in Indiana and activity decreasing other areas but could be heavy in western New York until end of June; emergence later than 1954 in Colo. (p. 569). First known infestations of PEAR PSYLLA in commercial pear orchards in California. Insect first recorded in State May, 1953. (p. 570). ORIENTAL FRUIT MOTH injury to peach terminals in Pennsylvania, Mississippi and California but first brood low in northern Ohio. (p. 570). Second-brood CURCULIOS expected heavy in southern Illinois. Adults abundant untreated orchards in Ohio and Minnesota and activity continues high in western New York. Severe on apples some areas of Indiana. (p. 570). EUROPEAN RED MITE increasing in Massachusetts, some damage in New Jersey but cool weather checking activity in Ohio. (p. 570). APPLE MAGGOT flies emerging in New York. (p. 571).

COLORADO POTATO BEETLE worse than 1954 in New Jersey on tomatoes and potatoes and continues problem on these crops in Delaware. Also active on potatoes in Virginia, North Dakota and Washington. (p. 571). POTATO APHID warrants treatment on potatoes in Delaware, prevalent on tomatoes in Twin Cities area, Minnesota. (p. 572). STRIPED CUCUMBER BEETLE heavy in areas of North Dakota, Rhode Island and New York; moderate in central Oklahoma. (p. 573). PEA WEEVIL heavier than usual in Utah and abundant in Idaho, though peas may escape heavy attack in latter State due to lack of vine growth. (p. 573). MEXICAN BEAN BEETLE causing serious damage in areas of Maryland. (p. 573). Very heavy populations of SUGAR-BEET ROOT MAGGOT adults in north-eastern North Dakota. (p. 574). BEET LEAFHOPPER-transmitted curly top of tomatoes averaged 24 percent in southeastern Utah. (p. 574).

BOLL WEEVIL increasing in several areas of Texas, but only a few found in Oklahoma. With exception of South Carolina, other areas also report light weevil populations and infestations (p. 575). BOLLWORMS increasing in southern Texas and some areas of South Carolina, threatening in many fields in south Georgia, and extent of infestation in Arkansas unusual for time of year. (p. 576). FLEAHOPPERS (p. 576) and THRIPS (p. 577) continue of concern in several areas. APHIDS continue heavy on cotton in New Mexico, non-economic numbers widespread in Arkansas and weather favorable for build-up. (p. 577).

FOREST TENT CATERPILLAR has defoliated large areas in northwest Wisconsin. (p. 578). JAPANESE BEETLE adults out as far north as Rhode Island. (p. 580).

States reporting this week - 40.  
WEATHER Outlook and Summary. (p. 585).

CEREAL AND FORAGE INSECTS

GRASSHOPPERS - PENNSYLVANIA - Nymphs beginning to appear in moderate numbers in hay and pasture in Clearfield and Centre Counties. (Adams). MARYLAND - Small nymphs average 15 per square foot in timothy and Ladino clover field in eastern Talbot County. (U. Md., Ent. Dept.). DELAWARE - Melanoplus spp. nymphs numerous in alfalfa at Cedar Creek. (Milliron). KENTUCKY - Nymphs, mostly Melanoplus spp., abundant and still hatching in bluegrass pastures and legume fields. (Thurston). ILLINOIS - Melanoplus spp. extremely spotted; from 0 to as many as 40 per sweep. Two to four per sweep in field margins in most places. (Petty et al). MISSOURI - Crop damage increasing throughout State. Nymphs well distributed throughout soybeans, alfalfa, pastures and some corn fields, while marginal injury is becoming heavy on cotton, corn and spring oats. M. differentialis peak hatch passed and nymphs range from second to fourth instars. M. bivittatus largely fifth instar and adults. M. mexicanus mostly adults and some egg laying under way in southwest area. Serious threat to crops throughout State. (Kyd, Thomas). LOUISIANA - Melanoplus spp. increasing rapidly in sodland adjoining rice fields; 1-5 per square foot in 4 parishes. (Oliver). TEXAS - Serious on pastures, small grains, legumes and row crops in northeast and north central areas. Heavy on rangeland in northern part of panhandle. (Randolph, Garner, Davis, Mann and Dorman). OKLAHOMA - Owners of approximately 169,000 acres of crops have applied for spraying for control of grasshoppers in southern half of State. (Rogers). M. differentialis and M. bivittatus very numerous in local areas in southeastern counties, 3 to 40 third and fourth instars per square yard, average 15. Checking growth in some fields. (Stiles). NEW MEXICO - Continue to menace rangelands in Lea, Chaves, Lincoln, Roosevelt, DeBaca, Quay, Harding, Union and Colfax Counties. Becoming abundant on cultivated crops in Dona Ana, Sierra, Socorro, Bernalillo and Santa Fe Counties, but most still on ditch banks, roadsides and fence rows. (Durkin, June 11). COLORADO - Populations increasing in serious numbers in southwestern area. Some crop damage. (Colo. Exp. Sta.). KANSAS - Destructive populations of Melanoplus spp. continue to develop, where not controlled, in many areas. Although heavier populations chiefly in eastern third of State, threatening populations in many local areas in central and western counties. Most infestations still in fence rows, margins and ditches. From 30 to 120 per square yard in infested areas in eastern counties and from 15 to 90 per square yard in central and western areas. Moving into alfalfa fields in some instances in Sedgwick County. Rains not reducing populations. (Matthew). NEBRASKA - M. mexicanus maturing in all sections, M. femur-rubrum from first to fourth instar. Rains have not affected populations. From 18 to over 100 per square yard in weed margins. Damage to alfalfa, sweetclover and some field corn margins. Garden crops heavily infested most areas. (Andersen, Roselle). Range

species (Ageneotettix deorum 90 percent, Amphitornus coloradus 5 percent, Melanoplus angustipennis 5 percent) range from 1 to 50 per square yard from North Platte River on south, middle of Garden County on west, hwy. #2 on north and hwy. #83 on east. (Burge). SOUTH DAKOTA - Hatch about complete in central area. (Lofgren, June 11). NORTH DAKOTA - Concentrations in southwestern Sargent County about 50 percent non-economic species but M. bivittatus involved. Mostly confined to meadows and roadsides. (Goodfellow).

EUROPEAN CORN BORER (Pyrausta nubilalis) - RHODE ISLAND - Adults noted June 13, no eggs on corn. (Kantack). PENNSYLVANIA - A few second instars in early-planted corn in Blair County. (Udine). DELAWARE - Damage to corn heavy some areas, moderate in others. (Milliron). ILLINOIS - In area south of line from Champaign to Quincy, moth emergence and egg laying finished. Only in very rare instance is treatment warranted for field corn in this area. In the area between a line from Champaign to Quincy and hwy. #6 moth emergence and egg-laying about complete. As high as 200 egg masses per 100 stalks on field corn over 30 inches tall. Between 1 and 5 percent of corn may warrant treatment in this area. North of hwy. #6, moth emergence from 85 percent in west to 60 near Lake Michigan, with egg-laying nearing peak. (Petty et al). MISSOURI - Early corn in southeast area from 4-28 percent infested with average of 2 third instars per stalk. Corn in central third shows 4-55 percent stalks with leaf feeding injury. Egg count high in extreme northwest corner where large corn average 0.5 to 2 egg masses per stalk. (Kyd, Thomas). KANSAS - Feeding activity in many fields in Kansas River Valley and northeast counties, although few egg masses found. From 16-36 percent of plants infested in field corn and as high as 90 percent in some sweetcorn. Third-instar larvae in sweetcorn. (Burkhardt). NEBRASKA - From 12 to 60 egg masses per 100 plants in eastern area. Larvae in about 20 percent of early corn in southeast counties. Cool, wet weather delaying activity; 80 percent of corn less than 12 inches high. (Andersen, Roselle). SOUTH DAKOTA - Egg-laying well underway, June 11. (Lofgren).

CORN EARWORM (Heliothis armigera) - NEW MEXICO - Large numbers in alfalfa in one field in Dona Ana County. (Durkin). KANSAS - Not as heavy in eastern area as in Riley County, central area. Moths and eggs abundant at Manhattan. (Burkhardt). MISSOURI - Many fields in south half of State show from 4-60 percent of stalks injured by nearly full-grown larvae. Early field corn in extreme southeast has average of 2-3 eggs per shoot. (Kyd, Thomas). ILLINOIS - One egg per silk on market garden corn at East St. Louis. (Petty, et al). VIRGINIA - Heliothis sp. heavily damaging corn in some fields in Campbell, Pulaski, Montgomery and Madison Counties. (Morris).

CHINCH BUG (Blissus leucopterus) - KANSAS - Has built up to outbreak proportions in some central and southeast areas. Great reduction in stand of seedling sorghum and milo adjacent to barley and wheat fields. Destructive infestations in Saline, Dickinson, Morris, Chase, Marion, Osage and southern Shawnee Counties. Barrier control practices will be necessary to save some fields although some will need replanting. (Gates). From 50 per linear foot of row to highs of 800-1000 per square foot. (Matthew).

MORMON CRICKET (Anabrus simplex) - WYOMING - Excellent control on 5,000 acres treated in Crook County and on 1,000 acres in Johnson County. (Spackman, Chinn). UTAH - Control by aircraft successful over 4,368 acres in San Juan County. (Thornley, Acord, Knowlton).

SUGARCANE BORER (Diatraea saccharalis) - LOUISIANA - Deadhearts in sugarcane ranged from 319 to 1407 per acre on 8 farms examined in 7 parishes. Newly-hatched second-generation larvae noted. (Oliver).

ARMYWORM (Pseudaletia unipuncta) - NEW JERSEY - Reports continue. (Merrill). DELAWARE - First-generation adults appearing. Larvae (one-third to full-grown) continue active in southern New Castle County, eastern Kent and northern half of Sussex, especially in wheat. Injury to barley heavy south of Mt. Pleasant. Large acreages of timothy severely damaged one area. (Milliron). PENNSYLVANIA - A few in barley in Chester County. (Pepper). Twelve half-grown larvae per square foot in hay being cut in Westmoreland County. (Udine). VIRGINIA - Attacking grain in scattered fields in Washington County, infestations light. (Gorsline). Medium infestations on barley and corn in Caroline County. (Eager).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - SOUTH DAKOTA - Adults extremely numerous in southeast area. Feeding injury to corn. Also heavy in alfalfa. (Lofgren, June 11). NEBRASKA - Very abundant on corn plants, 18 per 25 plants, in eastern area. (Andersen). VIRGINIA - Infestations in peanuts expected heavy this year. (Davich).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - ARIZONA - Numerous in one 160-acre field of corn in Maricopa County, 1 per 4 or 5 stalks. (Ariz. Coop. Rept.).

SUGARCANE BEETLE (Euetheola rugiceps) - MISSISSIPPI - Damage to corn in Yazoo County. (Hutchins).

SAP BEETLES (Carpophilus lugubris and C. antiquus) - DELAWARE - Adults appearing in corn plants injured by other pests. (Milliron).

SAND WIREWORM (Horistonotus uhlerii) - MISSOURI - Damage continues to corn and gardens in sandy regions on extreme southeast. Considerable pupation. (Kyd, Thomas).

WEBWORMS - VIRGINIA - Corn webworms causing severe damage to five acres of corn in Pittsylvania County, many fields showing damage. (Dominick).

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - DELAWARE - Common in corn in some areas. (Milliron).

STALK BORER (Papaipema nebris) - NEBRASKA - Building up in margins of corn fields in eastern area. (Andersen).

CORN ROOT APHID (Anuraphis maidi-radici) - DELAWARE - Injuring corn at many locations. (Milliron). NEBRASKA - Moderate damage in several eastern counties. Indications infestations much heavier and general than normal. (Roselle, Andersen).

CORN LEAF APHID (Rhopalosiphum maidis) - ARIZONA - Severe on 60 acres of grain sorghum in Pinal County. (Ariz. Coop. Rept.). KANSAS - Higher for time of year than last year; 300-500 aphids per corn plant in several fields in Marion County, 5-70 per infested plant in sorghum and milo in Saline and Dickinson Counties. (Matthew). OKLAHOMA - Prevalent on corn in Stillwater vicinity. (Arbuthnot).

CUTWORMS - MISSOURI - Some small corn in extreme southeast from 2-4 percent damaged by Agrotis ypsilon and A. gladiaria. Apparently indicates some second generation does occur. (Kyd, Thomas). NEBRASKA - Decreasing, 4 to 5 per linear foot of wheat in Cheyenne, Kimball and Banner Counties. (Andersen).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - SOUTH CAROLINA - Damaging soybeans at Florence, June 10, first report of season for area. (Nettles). MISSISSIPPI - Four acres grain sorghum 90 percent destroyed in Pearl River County. (Hunsucker). LOUISIANA - Damaging corn in Tensas Parish. (Oliver).

WHEAT HEAD ARMYWORM (Proteoleucania albilinea) - NEBRASKA - Continuing to damage wheat in east central and scattered parts of southeast and northeast counties. (Andersen). KANSAS - An armyworm, probably P. albilinea, destroying some heads of wheat in Saline, Lincoln, and Ottawa Counties. Populations light and larvae pupating. (Gates).

BROWN WHEAT MITE (Petrobia latens) - WASHINGTON - Moderately heavy damage to dry-land wheat and barley in Yakima County but hot dry weather causing decline. (Harwood).

EUROPEAN WHEAT STEM SAWFLY (Cephus pygmaeus) - DELAWARE - Moderately heavy injury on wheat, slight on barley, throughout New Castle and Kent Counties. (Milliron).

FALSE WIREWORMS (Eleodes spp. ) - TEXAS - Medium numbers of adults in north plains area. (Daniels). KANSAS - Heavy infestations of adults continue to appear in nearly all fields from central area west; heavier than since 1948. (Matthew).

ENGLISH GRAIN APHID (Macrosiphum granarium) - WISCONSIN - Unusually abundant statewide. (Chambers).

HESSIAN FLY (Phytophaga destructor) - DELAWARE - Puparia common in wheat in Townsend-Clayton area. (Milliron).

SAY STINK BUG (Chlorochroa sayi) - NEW MEXICO - Infesting barley fields in Dona Ana, Socorro and Grant Counties, as many as 1500 per 100 sweeps in one field. (Durkin, June 11).

POTATO LEAFHOPPER (Empoasca fabae) - DELAWARE - Slight increase on second-growth alfalfa generally; numerous at lights June 15. (Milliron). MARYLAND - From 1-11 adults per 10 sweeps in 10 alfalfa fields in Howard, Carroll and Talbot Counties. No noticeable damage. (U. Md., Ent. Dept.). ILLINOIS - Populations vary from 50 to 2000 adults per 100 sweeps, heaviest in area between Bloomington and Danville. (Petty et al). MISSOURI - Common on alfalfa and garden crops. From 2-11 per sweep in extreme southeast, where some yellowing occurring. (Kyd, Thomas).

PEA APHID (Macrosiphum pisi) - NEW MEXICO - Large numbers still reported in Socorro County. (Durkin, June 11). IDAHO - Lowest population in last five years in southwestern area. Less than one per sweep in many fields. (Walz, June 11). NEBRASKA - Very heavy infestation in alfalfa fields in western area, 425 to well over 600 per 25 sweeps. (Andersen). KANSAS - Heavy populations in many alfalfa fields in central area, 80 to 300 aphids per sweep of 15-inch net. Weather has apparently hindered biological control. (Matthew). ILLINOIS - Fifty to 200 per sweep on alfalfa. (Petty et al).

ALFALFA WEEVIL (Hypera postica) - COLORADO - Damage in southwestern area. (Colo. Exp. Sta.). OHIO - Forty alfalfa fields examined in northeastern area showed no evidence of alfalfa weevil. (Goleman, Weaver). MARYLAND - In general, very little damage to second-growth alfalfa. (U. Md., Ent. Dept.). VIRGINIA - Newly infested counties include Accomac, Northampton, Warwick and Hampton. (Muka). Medium infestation in northern Fairfax County (Beard), general in Essex County, where first and second cuttings damaged (Morris).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - PENNSYLVANIA - Many clover fields in Warren County showing moderate to heavy injury. (Adams). MARYLAND - Adults damaged second-growth red clover in Kent County. (U. Md., Ent. Dept.). NEBRASKA - Continues to damage red clover fields. Moderate to heavy infestations in east, 22 per 25 sweeps. (Andersen).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - LOUISIANA - Per 100 sweeps on alfalfa by parish: Natchitoches 48, Bossier 57, Rapides 26. (Oliver). ARIZONA - Adults building up on alfalfa at Theba, Yuma County, June 10. (Ariz. Coop. Rept.).

BLISTER BEETLES - MISSOURI - Soybeans, alfalfa and gardens damaged in local areas over southern two-thirds of State. (Kyd, Thomas).

CLOVER LEAF WEEVIL (Hypera punctata) - MISSOURI - Adults continue to feed rather extensively on new-growth alfalfa in southwest area, from 0-4 adults per plant. (Kyd, Thomas).

CLOVER ROOT CURCULIO (Sitona hispidula) - MISSOURI - Considerable adult leaf feeding damage in old fields of red clover, from 2-9 adults per square foot. (Kyd, Thomas).

GREEN CLOVERWORM (Plathypena scabra) - DELAWARE - Common in alfalfa and clover. (Milliron).

PLANT BUGS - DELAWARE - Tarnished plant bug (Lycus lineolaris) unusually prevalent in legumes. (Milliron). LOUISIANA - L. lineolaris infestations in alfalfa continue: 41 adults, 9 nymphs per 100 sweeps in Bossier Parish, 32 adults and 14 nymphs per 100 sweeps in Natchitoches Parish. (Oliver). MISSOURI - L. lineolaris range from 2-8 adults and nymphs per sweep in alfalfa and red clover in central and southeast areas. (Kyd, Thomas). ARIZONA - Lycus bugs becoming abundant on alfalfa in Salt River Valley, 500 per 100 sweeps in one field, mostly nymphs. From 85-100 per 100 sweeps at Safford, Graham County. (Ariz. Coop. Rept.).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - NEBRASKA - Greatly reduced in sweetclover, 5 per 100 sweeps. (Andersen).

A LEAF MINER (Liriomyza sp.) - ARIZONA - Particularly abundant on alfalfa some areas; more numerous than last year in Phoenix and Yuma areas. (Ariz. Coop. Rept.).

RICE STINK BUG (Solubea pugnax) - LOUISIANA - Increasing in grasses near rice fields; 11 adults and 3 nymphs per 100 sweeps in 3 parishes. (Oliver).

YELLOW CLOVER APHID (Myzocallis trifolii) - ARIZONA - Low on alfalfa in southern area, except for isolated fields. Convergent lady beetle seems mainly responsible for decline. Increasing temperatures may also be involved. (Ariz. Coop. Rept.). NEW MEXICO - Still major insect in alfalfa. (Durkin, June 11). TEXAS - Light to medium rather widespread in Denton County on alfalfa and clover. Extremely light in Brazos River bottoms of Brazos and Burleson Counties. (Randolph). OKLAHOMA - Very heavy in Murray County. Also noted in McClain County. (Stiles). Total 832 per 250 sweeps in one alfalfa field at Stillwater. (Fenton). NEBRASKA - Found as far west as Keith County on sweetclover, 5 per 25 sweeps. (Andersen). KANSAS - Light or insignificant infestations found in nearly all alfalfa fields surveyed in south central and central areas. (Matthew).

FALL ARMYWORM (Lachygma frugiperda) - FLORIDA - One larva per square foot on grass at Fort Lauderdale. (Kerr).

A CHINCH BUG (Blissus leucopterus insularis) - FLORIDA - Up to 80 per square foot on St. Augustine grass at Ft. Lauderdale, marginal damage. (Kerr).

A CUTWORM (Apamea amputatrix), a MEALYBUG and A MITE (Paratetranychus pratensis) causing severe damage to Merion bluegrass in Garfield County, WASHINGTON. The cutworm is pupating and a wilt disease is common in the larvae. (Harwood).

THRIPS - SOUTH CAROLINA - Damage to peanuts was severe at Florence but has been controlled. (Holdeman, Hall).

CARROT BEETLE (Ligyrus gibbosus) - GEORGIA - Six to 10 per plant on sunflower roots in Spalding County, May 27. (Beckham, Dupree). INDIANA - Adults apparently causing extensive damage to experimental plantings of sunflowers at Bloomington. Wilting and blowing-over principal effects. Field in sod last year. (Heiser, Young).

## FRUIT INSECTS

CODLING MOTH (Carpocapsa pomonella) - NEW YORK - Entries could be heavy in western area until end of June. (Glass). DELAWARE - Entries observed in several orchards. (Late News). NEW JERSEY - Activity decreasing. Peak expected in southern area about June 20. (Merrill). INDIANA - Activity subsiding generally; between broods. (Hamilton). ILLINOIS - Later than last year in southern area. Not over 5 percent of most advanced group have left apple. (Chandler). OHIO - Slow entry rate on untreated fruit. Numerous stragglers emerging. (Cutright). MISSOURI - Light as end of first brood approaches. (Wkly. Rept. Fr. Grs.). COLORADO - Emergence slow; two weeks behind 1954 in Delta and Montrose Counties. (Exp. Sta.)

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - ILLINOIS - Mostly emerged in southern area. (Chandler). INDIANA - Part of first-brood adults have emerged in Greene County and most of others are in pupal stage. (Hamilton).

PEAR PSYLLA (Psylla pyricola) - CALIFORNIA - Four pear orchards in Potter Valley\*heavily infested; 200 of 400 acres with medium to heavy infestations. First known infestations in commercial pear orchards in State. (Lockwood).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - NEW JERSEY - First major flight of new brood June 8 at Moorestown. (Merrill). PENNSYLVANIA - Considerable injury to peach terminals in Centre (Adams) and Juniata Counties (Udine). OHIO - Populations of first brood low in northern area. (Rings). MISSISSIPPI - Injury to peach twigs reported from Panola County. (Hutchins). CALIFORNIA - Full-grown larvae in serious numbers infesting terminals of peaches in Tulare County early in June. (Lockwood).

CURCULIOS - ILLINOIS - Plum curculio (Conotrachelus nenuphar) decreasing. Heavier second brood expected than in the past three seasons in southern Illinois. (Chandler). OHIO - Plum curculio adults abundant in untreated peach and plum orchards. Spring-brood larvae maturing and most egg deposition completed. (Rings). INDIANA - Attack severe on apples in many orchards in Lawrence and Orange Counties. (Marshall). MINNESOTA - Populations high in some neglected orchards. (Minn. Ins. Rept. Serv.). MO. - Expect damage from next brood if not controlled. (Wkly. Rept. Fr. Grs.). NEW YORK - Plum curculio activity continues at high rate in western area. (Smith).

APHIDS IN ORCHARDS - MASSACHUSETTS - Apple aphid now appearing on terminals. (Crop Pest Cont. Mess.). OHIO - Apple aphid and rosy apple aphid light. (Cutright). MINNESOTA - Several high populations reported. (Minn. Ins. Rept., June 13). COLORADO - Apple aphid (Aphis pomi) and rosy apple aphid (Anuraphis roseus) abundant on apples and pears in Delta County, and green peach aphid (Myzus persicae) causing injury in unsprayed peach orchards in Mesa County. (Exp. Sta.). ARIZONA - Woolly apple aphid on almost all apple trees from Elfrida to Wilcox, Cochise County. (Ariz. Coop. Rept.)

SPIDER MITES - MASSACHUSETTS - European red mite (Metatetranychus ulmi) increasing in some orchards. (Crop Pest. Cont. Mess.). NEW JERSEY - European red mite (M. ulmi) bronzing foliage in some orchards Burlington County. (Merrill). INDIANA - Two-spotted spider mite (Tetranychus bimaculatus) averaged 0.21 per leaf in Lawrence and Orange Counties. (Marshall). OHIO - European red mite held in check by cool weather. (Cutright). MINNESOTA - Populations high in some orchards. (Minn. Ins. Rept. Serv.). COLORADO - Conspicuously absent

\*Mendocino County

in Delta, Montrose and Mesa Counties. (Exp. Sta.). NEW YORK - Numerous in untreated orchards in Onondaga County; very heavy egg populations. (Vuillemot).

APPLE MAGGOT (Rhagoletis pomonella) - NEW YORK - Flies emerging in cages at Poughkeepsie. (Dean). Began emerging at Geneva in cages June 17. (Glass).

CAT-FACING INSECTS - OHIO - First brood (Euschistus servus and E. variolarius) nearly mature in southern Ohio. Severe injury caused by oak plant bug (Neolygus quercalbae) and hickory plant bug (N. caryae) to peaches at Wooster. (Rings).

FOREST TENT CATERPILLAR (Malacosoma disstria) - UTAH - Attacking apple trees at Logan. (Lieberman).

LESSER PEACH TREE BORER (Synanthedon pictipes) - PENNSYLVANIA - Considerable emergence with light to moderate infestation of peaches in Centre County. (Adams).

SHOT-HOLE BORERS - SOUTH CAROLINA - Severe infestation in an untreated orchard in Florence County. (Kirk).

BLACK CHERRY APHID (Myzus cerasi) - UTAH - Most serious aphid pest in Weber County. (Knowlton, Burningham).

BLACK-MARGINED APHID (Monellia costalis) - NEW MEXICO - Increasing in pecan groves and in ornamental pecans and producing large amounts of honeydew. (Durkin).

#### TRUCK CROP INSECTS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - DELAWARE - Continues as problem on untreated potatoes in several areas. Destructive to tomatoes in Ellendale-Georgetown area. (Milliron). NEW JERSEY - Worse than in 1954 on potatoes and tomatoes; some damage and great number of beetles in untreated fields. (Merrill). VIRGINIA - Adults numerous on some fields of Irish potatoes in eastern section. (Brubaker, Greenwood, Hofmaster). NORTH DAKOTA - Populations one adult beetle per 5 plants in commercial fields from Grand Forks through Grafton and also near Carrington. (Goodfellow). WASHINGTON - Larvae damaging potatoes at Yakima. (Landis, Schopp).

TUBER FLEA BEETLE (Epitrix tuberis) - COLORADO - Causing damage to early potatoes and cabbage in Weld County. (Chem. Ind.).

POTATO LEAFHOPPER (Empoasca fabae) - MINNESOTA - Adults 0-4 per 20 sweeps on potatoes at Brooklyn Center. (Minn. Ins. Rept. Serv., June 13). WISCONSIN - Common. (Chambers) - PENNSYLVANIA - Moderate to abundant in Dauphin County (Menusan) and appearing in numbers in Centre County (Adams). NEBRASKA - Building up on potatoes generally; average 15 per 25 plants. (Andersen).

POTATO APHID (Macrosiphum solanifolii) - DELAWARE - On potatoes from Clayton southward and on tomatoes generally. Numbers warrant control in several areas. (Milliron). MINNESOTA - Prevalent on tomatoes in Twin Cities area. (Minn. Ins. Rept. Serv., June 13).

POTATO STALK BORER (Trichobaris trinotata) - DELAWARE - In conspicuous numbers on potatoes in Townsend and Little Creek areas. (Milliron).

TARNISHED PLANT BUG (Lygus lineolaris) - DELAWARE - Numerous in potato fields generally, causing extensive injury. (Milliron).

SYMPHYLIDS - PENNSYLVANIA - One 6-acre tomato field badly damaged and other fields with large spots showing injury in Luzerne County. (Gesell).

GRASSHOPPERS - DELAWARE - Melanoplus spp. numerous in potatoes in the Townsend-Clayton area and at Little Creek. (Milliron). NORTH CAROLINA - Damage light in tobacco in Person, Robeson and Columbus Counties. (Mitchell).

FLEA BEETLES - DELAWARE - Potato flea beetle (Epitrix cucumeris) increasing on potatoes at Ellendale. (Milliron). VIRGINIA - Damaging vegetable crops generally in Carroll County. (Price). WISCONSIN - Common. (Chambers). IDAHO - Adults common in sugar beets in outlying edges of Magic Valley. (Douglass).

EUROPEAN EARWIG (Forficula auricularia) - WASHINGTON - Spreading to irrigated potato fields in central section; light in Yakima and Kittitas Counties. (Landis, Schopp).

CUTWORMS - DELAWARE - Black cutworm (Agrotis ypsilon) causing some injury to potatoes and tomatoes in some areas. (Milliron). SOUTH CAROLINA - Reported damaging 18 acres of watermelons in Barnwell County. (Nettles). VIRGINIA - Medium damage to cabbage and peppers throughout Carroll County. (Price). IDAHO - Red-backed cutworm requiring treatment in south-central area sugar-beet fields and are a problem in upper Snake River Valley. (Douglass).

STALK BORER (Papaipema nebris) - CONNECTICUT - Ruining first planting of 6000 tomato plants at Hamden. (Johnson).

TOMATO RUSSET MITE (Vasates lycopersici) - VIRGINIA - Severe on tomatoes in Norfolk greenhouse. (Hofmaster).

TOMATO PSYLLID (Paratrioza cockerelli) - COLORADO - Eggs well-distributed on early potatoes in Weld County. (Chem. Ind.).

STRIPED CUCUMBER BEETLE (Acalymma vittata) - OKLAHOMA - Moderate numbers in melon plantings in central area. (Walton).  
NORTH DAKOTA - Heavy infestation on cucurbits in Wahpeton area, June 13. Considerable damage in some plantings. (Goodfellow).  
RHODE ISLAND - Heavy infestations in Portsmouth area. (Kantack).  
NEW YORK - Quite heavy on vine crops in Westchester County. (Androsko).

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - DELAWARE - Injuring limas in several areas. (Milliron). OKLAHOMA - Moderate numbers in melon plantings in central area. (Walton).

GARDEN FLEAHOPPER (Halticus bracteatus) - DELAWARE - Numerous on squash at Ellendale. (Milliron).

PEA WEEVIL (Bruchus pisorum) - UTAH - Populations higher than usual. (Knowlton). IDAHO - Heavy adult populations in grain fields in northern area. Very little vine growth of peas, so a high percent of weevils may die before depositing eggs. (Manis).

PEA APHID (Macrosiphum pisi) - PENNSYLVANIA - Light to moderate on peas in Centre County. (Adams). WISCONSIN - More than half of acreage treated in southern counties. Indications that balance will need treatment. (Chambers). MINNESOTA - Pan counts in central and south central areas remain high. (Minn. Ins. Rept. Serv., June 13). WASHINGTON - Large numbers of winged forms on Austrian winter peas at Yakima. (Landis, Schopp). UTAH - Very threatening in some Cache Valley canning peas; less numerous other areas. (Knowlton).

MEXICAN BEAN BEETLE (Epilachna varivestis) - MARYLAND - Adults doing serious damage to snap and lima beans in Carroll and Montgomery Counties. Populations heavier this year than last at this time. (U. Md., Ent. Dept.). RHODE ISLAND - Light infestation over most of State. (Kantack). VIRGINIA - Infestations on snap beans range from light to moderate, about normal for this time of year. (Brubaker, Greenwood, Hofmaster). NEW YORK - Eggs in Dutchess County June 15. (O'Leary).

BEAN LEAF BEETLE (Cerotoma trifurcata) - DELAWARE - Injury to lima beans throughout Sussex County. (Milliron). VIRGINIA - Injury in most plantings but infestations decreasing. (Brubaker, Greenwood, Hofmaster).

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) - NORTH DAKOTA - Peak emergence reached in severely infested areas of northeastern section. Exceptionally heavy populations in fields from Neche to Minto. About 50 percent sexually mature. (Goodfellow).

BEEF LEAFHOPPER (Circulifer tenellus) - UTAH - Idaho line to Mendon; 0.37 per foot of row from Garland to Payson in tomato-growing area and 1.4 from Gunnison to Joseph. Curly top of tomatoes in southern section averaged 24 percent first week in June with additional disease expected. (Dorst). Moderately numerous on Russian-thistle and beets in parts of Emery County. (Knowlton).

IMPORTED CABBAGEWORM (Pieris rapae) - DELAWARE - Increasing in Sussex County. Destructive in Ellendale-Georgetown area. (Milliron). MARYLAND - Adults extremely numerous from Talbot to Carroll Counties. (U. Md., Ent. Dept.).

CABBAGE MAGGOT (Hylemya brassicae) - MINNESOTA - Causing damage to cabbage and cauliflower in Twin Cities area in untreated fields. (Minn. Ins. Rept. Serv., June 13). WISCONSIN - Common. (Chambers). IDAHO - Severe injury on untreated cabbage at Twin Falls. (Douglass).

CABBAGE LOOPER (Trichoplusia ni) - DELAWARE - Numerous on cabbage near Georgetown). (Milliron).

CABBAGE APHID (Brevicoryne brassicae) - PENNSYLVANIA - Becoming a problem on mid-season cabbage in Schuylkill County. (Menusan).

THRIPS - DELAWARE - Onion thrips (Thrips tabaci) causing injury to onions in Sussex County. (Milliron). ARIZONA - Abundant in all onion fields in Greenlee County, up to 15 per plant. (Ariz. Coop. Rept.)

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) - MINNESOTA - Adults 4-20 per 20 sweeps in Twin Cities area on lettuce. (Minn. Ins. Rept. Serv., June 13).

ONION MAGGOT (Hylemya antiqua) - MASSACHUSETTS - Causing heavy losses in onions in some areas. (Crop Pest Cont. Mess.).

STRAWBERRY LEAF ROLLER (Ancylis comptana fragariae) - WISCONSIN - Very abundant. (Chambers). IDAHO - Causing injury in a few scattered fields throughout southwest area. (Walz).

A LOOPER ON TOBACCO - SOUTH CAROLINA - Some loopers continue on tobacco in Florence County. (Allen).

A NITIDULID (Lobiopa insularis) - LOUISIANA - Exclusive of the strawberry belt the beetle was found in these parishes: Assumption, Lafayette, Iberville and St. Mary. Not found in other areas surveyed in central and northern area. (Oliver).

HORNWORMS (Protoparce spp.) - FLORIDA - Average one larva per 50 plants. (Denmark). NORTH CAROLINA - Eggs and small larvae; populations on tobacco very light in eastern portions. (Mitchell). VIRGINIA - Adults in light traps in Pittsylvania County for week ending June 11 were: P. sexta 87, P. quinquemaculata 57. (Dominick). MARYLAND - Small larvae doing light damage to tobacco in St. Marys County. (U. Md., Ent. Dept.).

APHIDS - NORTH CAROLINA - Green peach aphid (Myzus persicae) on tobacco light generally. (Jones). MISSOURI - Attacking numerous crops and ornamentals generally. (Wkly. Rept. Fr. Grs.).

TOBACCO BUDWORMS (Heliothis spp.) - NORTH CAROLINA - A 2-3 percent infestation of H. virescens in Forsyth County and a 75 percent infestation in Warren County. (Jones). FLORIDA - Average one larva per 25 plants in Union County in 3-acre block. (Denmark).

### COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Increasing in lower Rio Grande Valley, south central, east, central, north central and northeast areas. First-generation weevils as far north as McLennan County. (Gaines). Percent survival in cages at Waco to June 17 was 10.2; to same date last year 2.8. Twenty-four percent punctured squares in 17 untreated fields and 6.5 percent in 16 treated fields in McLennan and Falls Counties. (Parenchia et al). OKLAHOMA - Only a few adults being found. (Stiles). ARKANSAS - Total of 1305 fields scouted and 197 found infested with infestations generally very light. Weather favorable to larval development, some noted. (Warren, Turney). LOUISIANA - Becoming heavier in older cotton: from 2 to as high as 35 percent infestations in some fields in Pointe Coupee, Rapides, Caldwell, Bossier and Natchitoches Parishes. (Oliver). In Tallulah area 5.7 percent square infestation in 3 early fields; weevils in 23 of 31 fields inspected at rate of 193 per acre, which compares with 323 for same time in 1954. (Gaines, Pfrimmer et al). ALABAMA - Twenty-one fields examined in 4 northern and 2 eastern counties and 2 fields found infested at rate of 6 and 2 weevils per acre. (Moore). GEORGIA - Eighty-one of 90 fields examined in 18 southern counties found infested. Twenty-seven untreated fields examined, all infested at average rate of 6.2 percent punctured squares. Fifty-four of 63 treated fields inspected found infested at rate of 2.1 percent punctured squares. (J. C. and C. R. Jordan). MISSISSIPPI - Reported in most fields of

fruiting cotton in delta counties. Average number of weevils per acre was 76 and percent of punctured squares was 3.2. (Merkl et al). SOUTH CAROLINA - Coming out of hibernation in larger numbers than in any of past four years. (Cott. Lett., June 14). Number found to June 17 in trap plot at Florence was 1,131 compared with 73 to same date in 1954. Five percent infestation in 14 treated fields in Florence County, 14 of 16 fields infested. (Walker et al). NORTH CAROLINA - Only 4 live weevils in 58 fields in Jackson, Cleveland, Bertie, Edgecombe, Union and Gaston Counties. Average of 6.6 percent square infestation 46 fields in Wilson, Montgomery, Anson, Scotland, Robeson and Sampson Counties. (Jones). VIRGINIA - Total of 25 per acre in one Mecklenburg County field and 50 per acre in one Southampton County field. (Morris).

BOLLWORMS - TEXAS - Increasing in lower Rio Grande Valley and in southwest area. (Gaines). LOUISIANA - Small numbers of eggs on cotton in Caldwell, St. Landry, Bossier, Ouachita and Natchitoches Parishes. (Oliver). ARKANSAS - Infestations in 225 of 1305 fields scouted. While not economic numbers, extent of infestations at this time of year somewhat unusual. (Warren, Turney). ALABAMA - Average of 3 eggs per 100 terminals in one field in Chambers County. (Moore). MISSISSIPPI - Eggs in 8 of 20 fields examined in delta counties; 1.2 per 100 terminals. Larvae, 1 per 100 terminals, in 2 of 20 fields. Moth activity increasing. (Merkl). GEORGIA - Threatening infestation in terminal examinations in number of fields. Trace damage to squares. (J. C. and C. R. Jordan). SOUTH CAROLINA - Increasing in cotton fields in tobacco areas. (Cott. Lett., June 14). Total of 178 Heliothis armigera moths taken in light trap at Florence during week. Average of 1.1 eggs per 100 terminals in 6 fields in Florence County. (Walker et al). VA. - Noted in one Mecklenburg County field. (Morris).

PINK BOLLWORM (Pectinophora gossypiella) - TEXAS - Infestations increasing in certain fields in lower Rio Grande Valley, Grimes, Burleson, Brazos and in some counties of coastal bend areas. (Gaines).

FLEAHOPPERS - TEXAS - Infestations generally low in central area southward except in some fields of upper coastal area. Heavy infestations in some fields of central, east, north central and northeast areas. (Davis, Martin, June 14). Average of 4.8 per 100 terminals in 51 treated and untreated fields in McLennan and Falls Counties. (Parenica et al). ARKANSAS - Psallus seriatus infestations continue high in some fields of southeastern counties; up to 211 per 100 terminals. (Warren, Turney). LOUISIANA - Cotton fleahopper found in 31 of 34 fields examined in Tallulah area, 5.8 per 100 terminals. (Gaines, Pfrimmer et al). From 5-30 per 100 linear feet of row in Caldwell, Bossier and Natchitoches Parishes. (Oliver). MISSISSIPPI - Infestation ranges from none to heavy in delta counties. (Merkl et al).

TENNESSEE - Still light in fields in west Tennessee. (Locke). SOUTH CAROLINA - Noted in fields throughout Piedmont. (Cott. Lett., June 14).

THRIPS - ARIZONA - General decrease in Maricopa County but heavy in most fields in Greenlee County. (Ariz. Coop. Rept.). TEXAS - Damaging many fields in northeast, north central and northwest areas, but decreasing in most fields from south central area southward. (Davis, Martin, June 14). OKLAHOMA - Many fields show damage, but infestations declining. (Stiles). ARKANSAS - Much local damage in eastern counties. (Warren, Turney). MISSISSIPPI - Damage still common on small, late-planted cotton in delta counties but overall situation improved. (Merkl et al). TENNESSEE - Light damage to cotton in west Tennessee. (Locke). SOUTH CAROLINA - Damage continues in cotton in Piedmont and some coastal plain counties. (Cott. Lett., June 14). NORTH CAROLINA - Minor damage to cotton in Hoke County, more serious in Cleveland and Union. (Jones). VIRGINIA - Damage light to heavy in 12 fields examined in 4 counties. (Morris).

COTTON LEAFWORM (Alabama argillacea) - TEXAS - Found in Cameron County June 11. (Gaines).

APHIDS - NEW MEXICO - Large numbers on cotton continue. Many growers treating in Socorro County. (Durkin, June 11). MISSOURI - Small widely-scattered spots in cotton fields becoming moderately infested with from 4-23 aphids per leaf. (Kyd, Thomas). ARKANSAS - Aphis gossypii infestations more widespread than at same time last year but numbers not economic. Weather favorable for build-up. (Warren, Turney). TENNESSEE - Decreasing most fields in west Tennessee, predators numerous. (Locke). GEORGIA - Light to very light in 15 fields in southern area. (J. C. and C. R. Jordan).

GRASSHOPPERS - OKLAHOMA - Destroyed 11 of 15 acres of cotton in McCurtain County. Threat to cotton in many areas. (Stiles). TENNESSEE - Heavier than normal around fields. (Locke).

CUTWORMS - NORTH CAROLINA - Attacking cotton in Anson and Hoke Counties. Agrotis malefida involved in Hoke County. (Jones, Williford). GEORGIA - Destroyed about one-third of foliage in 20-acre field in Morgan County in 3-day period, 4 to 5 cutworms in soil under each plant. (J. C. and C. R. Jordan).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Moderate on 90 acres of cotton at Roll, Yuma County, 1 per 3 plants. (Ariz. Coop. Rept.).

SPIDER MITES - ARIZONA - Light populations on cotton in many fields in Maricopa County and at Sahuarita Pima County. (Ariz. Coop. Rept.). TENNESSEE - Scattered, very light, predators numerous. (Locke).

A LEAF ROLLER (Platynota stultana) - TEXAS - Damaging terminals in a few fields in Burleson County. (Davis, Martin, June 14).

LYGUS BUGS - ARIZONA - Have increased on cotton, correlated with cutting of alfalfa. Reported from Yuma, Maricopa and Graham Counties. (Ariz. Coop. Rept.).

Note on Cotton Stem Moth (Platyedra vilella) in France

In 1953 hollyhock and Malva sylvestris were heavily attacked, 30-50 percent of pods, in a garden at Rueil-Malmaison. Several other plants of Althaea sp. (not rosea) growing nearby had no larvae. Parasites reared from specimens of P. vilella taken from A. rosea and M. sylvestris were as follows: Ichneumonidae - Horogenes rufipes, H. fenestralis, Itoplectis maculator; Chalcididae - Trichomalus sp., Habrocytus sp.; Braconidae - Bracon piger, Chelonus sp., Apanteles sp.; Larvaevoridae - Voria ruralis. (Parker).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

SPRING CANKERWORM (Paleacrita vernata) - PENNSYLVANIA - General in forests in Erie and Warren Counties. (Adams). Defoliated 10 acres of hawthorn in Tioga County. (Gesell).

CANKERWORMS - WISCONSIN - Abundant scattered areas. (Chambers).

A BEETLE (Colaspis pini) - TEXAS - Infestations reported on pine plantations in western Jasper County. (Goen).

ROSE LF. BEETLE (Nodonota puncticollis) - PENNSYLVANIA - Very abundant in Dauphin County, feeding on a wide range of deciduous shrubs and trees. (Negley).

ELM LEAF BEETLE (Galerucella xanthomelaena) - DELAWARE - Larval injury increasing throughout State. (Milliron). MARYLAND - Heavy damage to elms in Talbot and Calvert Counties. (U. Md., Ent. Dept.). VIRGINIA - Medium infestation on elms in Hampton (Adams) and King and Queen County (Morris and Hall). NORTH CAROLINA - Attacking many Chinese elms in Iredell County. (Franklin).

FOREST TENT CATERPILLAR (Malacosoma disstria) - WISCONSIN - Completely defoliating large areas in northwest counties. (Chambers).

RED-HEADED PINE SAWFLY (Neodiprion lecontei) - TEXAS - Light infestations reported in San Augustine and Rusk Counties. (Tex. For. Pest Com.).

PINE NEEDLE SCALES - SOUTH DAKOTA - Heavy and widespread in State. (Lofgren).

SAWFLIES - MARYLAND - Heavy defoliation of pitch and loblolly pine in Talbot and Dorchester Counties. (U. Md., Ent. Dept.). NORTH DAKOTA - Defoliating willow in shelter-belts. (Goodfellow).

A TUSSOCK MOTH - NEBRASKA - A larva (probably Hemerocampa leucostigma) feeding heavily on pin oak nursery seeding. (Walstrom).

SCALES - PENNSYLVANIA - A lecanium scale, probably Lecanium corni general in drupes and ornamentals in southeast section. (Menusan).

VIRGINIA - A scale (Kermes, probably pettiti) severe on white oak in west end of Richmond; damaging shade trees. (Matheny).

SPRUCE BUDWORM (Choristoneura fumiferana) - NORTH DAKOTA - Larvae damaging new growth of spruce at several locations. (Goodfellow).

TURPENTINE BEETLES - TEXAS - Active in some recently cut-stands in Montgomery and Anderson Counties. (Goen).

WALKINGSTICKS - WISCONSIN - Abundant scattered areas. (Chambers).

EUONYMOUS SCALE (Unaspis euonymi) - RHODE ISLAND - Crawlers heavy on Euonymus in West Warwick. (Mathewson).

LEAF MINERS - PENNSYLVANIA - Birch leaf miners heavier than in 1954 on birch, northwest area. (Adams).

HOLLY LEAF MINERS (Phytomyza spp.) - DELAWARE - Injury prevalent generally. (Milliron).

NORWAY-MAPLE APHID (Periphyllus lyropictus) - IDAHO - Extremely abundant on maple throughout city of Moscow, requiring control. (Manis).

COTTONWOOD LEAF BEETLE (Chrysomela scripta) - NEBRASKA - Heavy feeding of adults on yellow cottonwood in nursery plantings. (Walstrom).

BOXELDER APHID (Periohyllus negundinis) - UTAH - Severe infestation in Box Elder and Salt Lake Counties. (Knowlton).

BAGWORMS - MARYLAND - Young larvae damaging arborvitae and beech in Talbot County. (U. Md., Ent. Dept.).

A CARPENTER BEE (Ceratina dupla) - PENNA. - Infesting stems of pruned roses in Franklin County. (Pepper).

JAPANESE BEETLE (Popillia japonica) - VIRGINIA - Light to severe damage in Henry County; damage to flowers, shrubs, trees and small fruit. (Morris). MARYLAND - Damage to roses in St. Marys County, June 12. One adult found on weeds in Talbot County. First record of season. (U. Md., Ent. Dept.). RHODE ISLAND - Adult taken on rose on College Campus June 14. (Larmie).

ROSE CHAFER (Macrodactylus subspinosus) - WISCONSIN - Abundant in scattered areas. (Chambers). PENNSYLVANIA - Common on roses in Clearfield County and numerous in Centre County. (Adams). RHODE ISLAND - Very abundant on roses, averaging two per flower in Kingston area. Lighter populations northern section but increasing. (Mathewson).

A ROSE GRASS APHID (Macrosiphum dirhodum) - WASHINGTON - Abundant on cultivated roses at Union Gap. (Landis, Schopp).

ROSE LEAFHOPPER (Typhlocyba rosae) - UTAH - Discoloring rose foliage at Logan, Blanding, Price, Provo and Ogden. (Knowlton).

WHITE-FRINGED BEETLES - TENNESSEE - Found in iris bed at Millington, new area in Shelby County. (Locke).

A GEOMETRID (Melanchroia cephise) - FLORIDA - Defoliated snow bushes at Fort Pierce in St. Lucie County. (Campbell).

#### INSECTS AFFECTING MAN AND ANIMALS

HORN FLY (Siphona irritans) - PENNSYLVANIA - One hundred to two hundred per animal on cattle in Clearfield County. (Adams). OKLAHOMA - Numerous on cattle in southeast section. (Rogers). TEXAS - Light to medium infestation on cattle in Floyd and Harrison Counties. (Jeffress, Rose).

CATTLE GRUBS - IDAHO - Heel flies ovipositing in southwestern area. (Walz). WYOMING - Causing annoyance in Crook County. (Spackman).

HOUSE FLIES - NEW JERSEY - Increasing in dairy barns and around homes. (Merrill). NORTH CAROLINA - Musca domestica fewer than for several previous years in the Piedmont area at this date. (Scott).

LONE STAR TICK (Amblyomma americanum) - TEXAS - Light infestation on all types of livestock in Harrison County. Infestation decreasing. (Rose).

MOSQUITOES - FLORIDA - Averaging one bite per minute under field conditions in Dade County; infestation increasing as usual for this time of year. (Wolfenbarger). UTAH - A serious outbreak of Aedes dorsalis in Weber County with some A. vexans at Taylor and Marriott. (Fronk).

### BENEFICIAL INSECTS

LADY BEETLES - NEW MEXICO - Hippodamia sp. building up large populations in untreated alfalfa, but not controlling yellow clover aphid. (Durkin, June 11).

### MISCELLANEOUS INSECTS

OLD HOUSE BORER (Hylotrupes bajulus) - MARYLAND - Damaging timbers at police barracks, Waterloo, Howard County; adults found. (U. Md., Ent. Dept.). VIRGINIA - Damaging sill of a new home in Staunton. (Rowell).

TERMITES - OKLAHOMA - Reticulitermes sp. have seriously damaged, and in some cases have girdled, oaks in Payne County. (Howell, June 11).

PHALAENIDS - IDAHO - Adults unusually abundant near Moscow. One of most common species is Spaelotis havigae. (Manis).

### RECENT INTERCEPTIONS AT PORTS OF ENTRY

Of interest recently was the interception of living specimens of a red wax scale (Ceroplastes rubens Mask.) on the leaves of birds' nest fern (Asplenium sp.) in the preflight inspection of airplane cargo leaving Hawaii for the mainland at Honolulu, T. H. Airport. (Davidson). This insect has been reported injurious to citrus and a wide variety of plants in Hawaii, many Pacific islands and parts of Asia and Australia. Serious injury to citrus has been reported in Queensland. Insect feeding reduces the vitality of the plant and promotes the formation of sooty mold.

Observations on the biology of this insect in Queensland indicate the larvae hatch beneath the parent scale, wander over the leaves of the host plant for a day or so, then settle down to feed and secrete wax on a leaf usually near the vein. Development is gradual with adult scales appearing after three molts. A complete generation develops in 4-6 months in the spring and in 6-8 months in the fall. Adults deposit as many as 900 eggs during an egg-laying period of 2-5 months. One female may deposit 5-50 eggs per day. Two egg-laying periods occur, one from January to July and the other from September to December. Larvae hatch in 2-3 days, and emerge from under parent scales in series of waves, so that great numbers may be found on the host plant at intervals.

C. rubens, the red wax scale or pink wax scale, as it is sometimes called, has been intercepted on frequent occasions at various ports

from Hawaii and Japan on Aglaonema, Allamanda, Alyxia, Anthurium, Aralia, Aucuba, Buxus, Camellia, Citrus, Coffea, Crataegus, Euonymus, Fatsia, Gardenia, Ilex, Litchi, Magnolia, Prunus, Rhododendron, Smilax, Wisteria, Zinziber, and other plants. It is not known to occur in the continental United States.

(Compiled -- Plant Quarantine Branch)

#### ADDITIONAL NOTES

NORTH CAROLINA - CHINCH BUG infesting corn and milo in Lee, Stanly, Union, Duplin, Chatham and Lenoir Counties. (Scott).

SOUTH CAROLINA - CHINCH BUG moderate to heavy on corn in Horry County, June 1. (Watts).

ALABAMA - EUROPEAN CORN BORER infestations in all fields examined in Blount, Limestone and Madison Counties, mixed 50 percent with SOUTHERN CORNSTALK BORER; 11 fields examined. (Moore).

IOWA - First reports of ARMYWORM; in rye in Plymouth County. EUROPEAN CORN BORER with egg mass counts June 17 on tallest corn varying from 200-600 per 100 plants southern area; 20-300 masses per 100 plants central area and 12-100 masses per 100 plants in northern area. CORN ROOT APHIDS abundant and damaging in some western and southern counties. WIREWORMS still active in many areas; requiring some replanting. APHIDS unusually abundant on vegetable and flower garden plants. Large numbers of CABBAGE WORMS on various crucifers. HORN FLIES range from 200-300 per animal in some herds. (Harris).

OREGON - Adults of CHERRY FRUIT FLY began emerging June 11 in Willamette Valley. Adults of CODLING MOTH began emerging in Willamette Valley June 7. (Jones). WESTERN HARVESTER ANT damaging dry land grain in the Clarno area on range bottom land. (Roth). A MITE, probably Petrobia latens, damaging barley in southeastern section. (Every).

WISCONSIN - No serious outbreaks of ARMYWORMS found. LARCH SAWFLY very abundant in several northwestern counties. (Chambers).

LIGHT TRAP COLLECTIONS

		Pseudal. unipun.	Prod. ornith.	Perid. marg.	Agrotis ypsilon subter.	Feltia	Heliothis	Proto.
								armig. vires. quin. sex.
TEXAS								
Waco	6/11-17		3	3	24	13		
ARKANSAS								
Hope	6/10-16	4			1	27		
Stuttgart	6/10-16	14		12	7	7		
Van Buren	6/10-16	11		7	9	11		
Varner	6/10-16	7		6	7	27		
Fayetteville	6/11-17	254		63	31	111		
Clarksville	6/10-16	6		2	25	7		
LOUISIANA								
Baton Rouge*	6/11-17	5	39	5	9	142	7	
Franklin	6/10-15	19	36	13	3	36	3	3 spp.
Ponchatoula	6/6-14	1	72	10	3	46	25	
Tallulah*	6/11-17	21	233	30	23	49	63	1
MISS. (Counties)								
Pearl River	6/11-17	19	11	5	3	6	4	
Coahoma		85	142	36	14	14	172	
Humphreys		27	67	6	5	8	3	
Oktibbeha		116	625	12	18	20	4	
Washington*		90	256	59	55	56	141	3 spp.
ALABAMA								
Auburn	6/11-17	5	26		11		8	

\* Two traps at Baton Rouge, three at Tallulah, 2 in Washington County.

(Continued on next page)

LIGHT TRAP COLLECTIONS

		Pseudal. unipun.	Prod. ornith.	Perid. marg.	Agrotis ypsilon	Feltia subter.	Heliiothis armiq. vires.	Proto. quin. sex.
GEORGIA								
Tift	6/4-11		4			47 spp.	2	3
Spalding	6/3-10		5			11		73 spp.
Clarke	6/3-10	4	9			16		
TENN.								
Shelby	6/9-15	32					4	3
Madison	6/13-15	44	12				12	2
Lawrence	6/8-15	240	40	32	16			3
Maury	6/8-15	560	16	16				8
Robertson	6/11-15	40	2	7	4			3
Cumberland	6/9-15	108	18	2	8		6	13
Knox	6/9-15	94	52	12	32		30	f 6
Greene	6/9-15	32	12		4			4
S. C. (Counties)								
Oconee	6/12-18	16	14				8	3
Charleston	6/14-20		21	1	3	13	1	2
N. CAROLINA								
Faison	6/12-18		3					
MARYLAND								
Fairland	6/13-17	32	2	2	5		1	20
KANSAS								
Manhattan	6/12-17	306						

Other light trap collections of interest: KAN. - Chorizagrotis auxiliaris 285 (Hays); 356 (Manhattan). SO. CAR. - Tetralopha scortealis 69 (Clemson).

WEATHER BUREAU'S 30-DAY OUTLOOK  
Mid-June to Mid-July 1955

The Weather Bureau's 30-day outlook for the period from mid-June to mid-July calls for temperatures to average above seasonal normals over the northern half of the nation from the northern Plains eastward to New England, with greatest departures in the Great Lakes region. Below normal temperatures are expected in the West Coast States and over the Southeastern quarter of the country. In unspecified areas values not far from normal are anticipated.

Precipitation is expected to exceed seasonal normals in the western Mountain and Plateau States. Subnormal rainfall is indicated over the northeast quarter of the nation and in West Gulf States. In other areas near normal amounts are predicted.

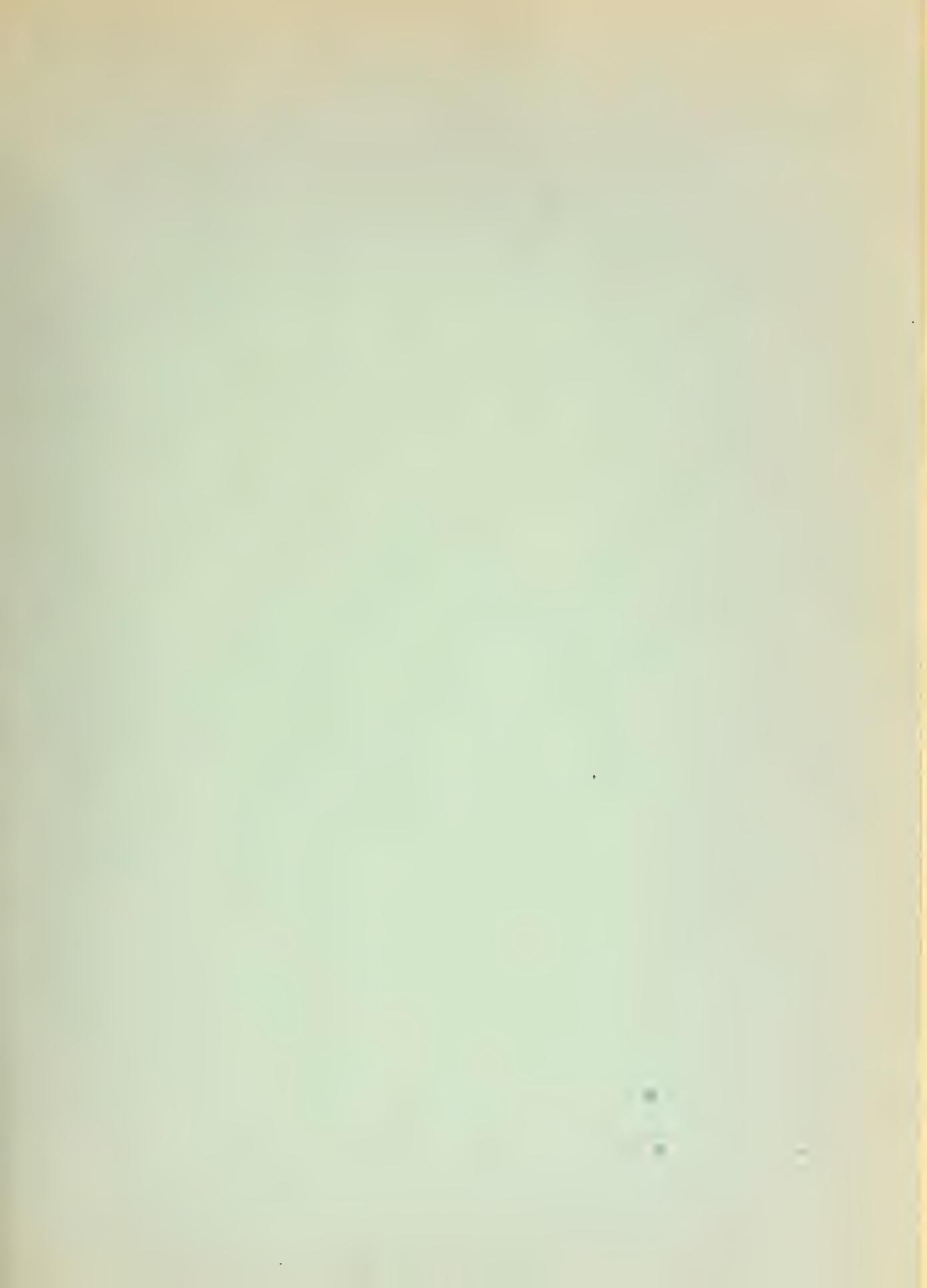
This report released by the Weather Bureau on June 17, 1955.

Weather forecast given here is based on the official 30-day "Resume and Outlook", published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price: \$4.80 a year, \$2.40 for six months.

WEATHER FOR THE WEEK ENDING JUNE 20, 1955

East of the Rocky Mountains temperatures for the week averaged below normal for the second consecutive week, with anomalies of 6° to 10° in the Ohio and central Mississippi Valleys and Southeast. In the latter area the nights were too cool for the best growth of cotton. The coolest weather occurred during the first part of the week, but slowly rising temperatures thereafter reached normal or above normal levels over virtually the entire nation by the close of the period. About mid-week minima were unseasonably low in the western interior, when a low of 36° was recorded at Reno, Nev., and 27° at Fraser, Colo.\* Precipitation occurring in nearly all sections of the country during the week was sufficient to maintain ample soil moisture in most areas east of the Continental Divide. Drought still persisted in southern Texas, more rain was needed in the southern High Plains of that State, and dry soil was reported in southern North Carolina. The week's most extensive moderate to heavy rainfall occurred over the Great Plains, where showers from the 14th to 17th produced weekly totals of 1 to over 2 inches over large areas. On the 15th and 16th severe thunderstorms and a few tornadoes were reported in the Texas Panhandle - southwestern Oklahoma area. Heavy showers also fell in parts of Arizona, Nevada and Utah from the 12th to 14th. Rainfall totaled 1 to over 4 inches in east-central, northern, and eastern portions of Arizona. On the 13th a heavy shower in the vicinity of Las Vegas, Nev., resulted in a flash flood which caused \$2,000,000 damage to houses and other buildings. On the 16th a tornado destroyed several buildings in Sandpete, Utah. (Summary Supplied by U.S. Weather Bureau). \* Frost reported to have damaged some fruit in Colorado.







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SURVEY METHODS

1955

*Cooperative*  
ECONOMIC INSECT  
REPORT

*Issued by*

PLANT PEST CONTROL BRANCH

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

# AGRICULTURAL RESEARCH SERVICE

## PLANT PEST CONTROL BRANCH

### ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Economic Insect Survey Section  
Plant Pest Control Branch  
Agricultural Research Service  
United States Department of Agriculture  
Washington 25, D. C.

# COOPERATIVE ECONOMIC INSECT REPORT

## SURVEY METHODS

### Contents

	Page		Page
Alfalfa caterpillar	10	Lygus bugs	11
Aphids (potato-infesting)	26, 27, 28	Mexican fruit fly	18
Apple maggot	15	Mosquito larvae	41
Beet leafhopper	24, 25	Onion thrips	22
Boll weevil	32, 35	Pea aphid	28
Bollworm	32	Pea weevil	31
Cherry fruit fly	18	Pink bollworm	33, 35
Chinch bug	2	Plum curculio	16
Cotton aphid	33	Potato psyllid	26
Cattle lice	40	Rice water weevil	12
Cotton leafhopper	33	Spider mites on cotton	34
Cotton leafworm	33	Spittlebug	4
European corn borer	2	Stored grain insects	13
European red mite	13	Sugarcane borer	7
Golden nematode	21	Sweetpotato weevil	21
Grasshoppers	5	Thrips on cotton	35
Greenbug	8	Tomato fruitworm	22
Gypsy moth	37	Western bean cutworm	30
Hessian fly	7	Western grape leaf skeletonizer	17
Ladino clover seed midge	10	Wheat stem sawfly	3
Japanese beetle	20	White-fringed beetles	9
Larch sawfly	37	Wireworms	23
Livestock pests	39		

\*\*\*\*\*

These survey methods have been brought together at the suggestion of the Entomological Society of America Survey Advisory Committee and other entomological workers.

(Re-issued September 1955).

## CHINCH BUG

Cooperative surveys to determine populations of hibernating chinch bugs (Blissus leucopterus) are made annually in several Central States. The work is conducted during November and December in areas suspected of harboring infestations. Overwintering occurs in several species of bunchgrasses, including little bluestem, big bluestem, and broomsedge. Five samples of bunchgrass are collected at widely separated points in each county surveyed. Each sample consists of a bunch of grass including the crown, from 3.5 to 4.5 inches in diameter, which is cut from the sod clump with a tilling spade. After trimming, the sample is placed in a double paper bag on which the location, date, and other pertinent details are recorded. By examining samples of the grass clumps in the laboratory, hibernating bugs are detected and abundance determined. As counts are made the number of bugs in the sample is converted to a number per square foot and rated according to the following table:

<u>Classification</u>	<u>Number of bugs per square foot</u>	<u>Rating</u>
Non-economic	0 - 250	1
Light	250 - 500	2
Moderate	500 - 1,000	3
Severe	1,000 - 2,000	4
Very Severe	2,000 or more	5

A rating is assigned to each county based on stop ratings and percentage of land under cultivation in the county. The greater the percentage of cultivated land the less protective cover available for hibernation and, consequently, a reduced population in comparison to crops that may be attacked.

Information obtained from these surveys provides a basis for preliminary estimate of control needs as well as a record of hibernating populations; however, weather conditions the following spring determine the severity of infestations. (C. W. Shockley)

## EUROPEAN CORN BORER

Abundance Survey-- The recommended procedure for making European corn borer (Pyrausta nubilalis) fall abundance survey is to make 10 observations, or sample counts, per county. If it is found that contiguous counties cannot be sampled utilizing 10 counts per county, a survey on a district basis is preferred which averages about 5 counts per county. Fewer than 5 counts per county is not recommended.

An observation or sample count is obtained in a prescribed manner. The locations of the sampling points are distributed uniformly by marking them on a map of the area to be surveyed. The observer is instructed to proceed to the point marked on the map and sample the first corn field encountered. The sample is obtained after walking 50 paces into the field from the most accessible point. Beginning with the first plant on the observer's right, 25 consecutive plants are examined for infestation and the number of infested plants recorded. The last two infested plants encountered in the count of 25 are dissected and the number and stages of borers found are recorded. The product of percent infestation and average borers per plant becomes the estimate of the field population expressed as borers per 100 plants. The observer then proceeds to the next location and so on throughout the survey.

Distribution Survey-- The distribution surveys are less formalized than the abundance survey. In searching for new infestations available, time and number of observers are the limiting factors. Recommendations have been to examine as many fields as possible which are deemed most likely to harbor the borer. For example, mid-season surveys should be made in earliest fields in the area under observation, and September or later surveys should be confined to late fields. Concentrations of borers if present are expected to be more abundant in the respective types of fields.

Service Survey-- Service surveys to determine the need for control should be organized so that observations can be made by state zones (corn testing districts, crop reporting districts, etc.) or at strategic points in the state. The number of observations is dependent on funds and assistants available. Observations to be made include periodic counts on development of the borer as it changes from a dormant condition to an active one and larvae change to the pupal state. The emergence of moths is used as a criterion of the probable time of the beginning of egg deposition which is the forecast of the beginning of the critical period in corn borer control. Sufficient plants are examined in a number of localities to determine the egg load. When the egg load approaches 50 masses per 100 plants on corn approximately 35 inches in extended leaf height in any locality, the situation is considered serious enough to advise treatment of similar fields with insecticides. If the egg load builds up rapidly and is general over a large area, dealers are to be alerted to the probable heavy demand for insecticide materials. In any case farmers are urged to make counts in their own fields to determine the need for the use of insecticides.

Similar observations are made on the progress of the development of the second generation borer in the more advanced corn, but treatment is not recommended until the egg load approaches 100 masses per 100 plants. However, treatment of mid-season or late corn is not recommended until the egg load approaches 100 masses per 100 plants. (Elmer W. Beck)

#### WHEAT STEM SAWFLY

Wheat stem sawfly (Cephus cinctus) surveys are conducted at the conclusion of harvest in wheat fields in the northern Great Plains Area. The survey is made of the overwintering larval population by examining two samples in each of 10 well-distributed fields in each county. One sample is taken near the margin of the field within the first few drill rows, and the other at approximately the center of the field. At each sample location, 50 consecutive wheat stems of a drill row are examined for stubs cut off by the sawfly. The total number of these sawfly stubs found in the two samples is recorded as the percentage of infestation for the field.

Upon completion of the survey, the fields are placed into one of four classifications based on their percentage of infestation as follows:

<u>CLASSIFICATION</u>	<u>PERCENT OF STEMS INFESTED</u>
Light	Trace - 5
Moderate	6 - 24
Heavy	25 - 39
Severe	40 - 100

A map of the infestation is prepared by locating each classified field on a map of the surveyed region and delimiting the areas of different population abundance. The information obtained from the survey provides a basis for determining the extent of the infestation and makes certain data available that assist in making an appraisal of the wheat loss caused by the sawfly. (E. G. Davis)

## SPITTLEBUG SURVEY IN ILLINOIS

With an increase in spittlebug infestations up to economic levels in Illinois, it was considered desirable to attempt the prediction of the potential populations that might occur on legume crops in the spring. Based on biological data from Ohio and field experience in Illinois, a survey technique for this purpose was developed in Illinois for use in 1951 and 1952. On the basis of data obtained in an adult spittlebug survey in the fall, probable damage ratings were determined for the following spring.

In late August or early September after the adult spittlebug populations became fairly stable, (determined by regular sampling of a few fields) 30 counties were surveyed in Illinois to determine adult populations. Ten fields were selected at random in each county. Ten individual sweeps (standard 15" net-180° sweep) were made in each field and each recorded separately on a special form.\* The condition of the field and other pertinent data were also recorded. Based on the average number of adult spittlebugs per sweep in each county, predictions were made for the areas most likely to be subjected to economic losses the following spring.

By assuming that for each adult spittlebug per sweep there would likely be one-fourth to one-half spittlebug nymph per stem the following spring (Ohio's results), estimates were made of the acreage of new stands worthy of treatment. Treatment was recommended on first-year hay crop fields in those areas where an average of one-half or more nymphs per stem was anticipated. As a followup in late May, nymphal counts were made on a 100-stem sample in many of the fall-survey fields and observers found that for county averages the predicted and actual numbers of nymphs per 100 stems were substantially the same.

This survey method gives actual figures upon which to base and check predictions. Since by this method it is possible to obtain a quantitative cross section of populations in old and new fields and in fields of various mixtures of grasses and legumes, mixed legumes, and straight stands of legumes, the survey data is of value to research and extension workers alike.

(H. B. Petty)

## \*Spittlebug Survey

Fall. Date \_\_\_\_\_ County \_\_\_\_\_  
 Crop \_\_\_\_\_ Old. \_\_\_\_\_ New. \_\_\_\_\_  
 Condition: Good. Fair. Poor. Height \_\_\_\_\_ inches. Clipped. Unclipped.  
 Location: N. S. E. W. side of Rt. \_\_\_\_\_ miles N. S. E. W.  
 of \_\_\_\_\_  
 \_\_\_\_\_ miles N. S. E. W. of \_\_\_\_\_  
 Adults per sweep: 1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_ 4. \_\_\_\_\_ 5. \_\_\_\_\_ 6. \_\_\_\_\_  
 7. \_\_\_\_\_ 8. \_\_\_\_\_ 9. \_\_\_\_\_ 10. \_\_\_\_\_ Average \_\_\_\_\_  
 Spittlebug masses observed - Yes. No.

Spring. Date \_\_\_\_\_  
 Infestation per 10 stems: 1. a. \_\_\_\_\_ b. \_\_\_\_\_ 2. a. \_\_\_\_\_ b. \_\_\_\_\_ 3. a. \_\_\_\_\_  
 b. \_\_\_\_\_ 4. a. \_\_\_\_\_ b. \_\_\_\_\_ 5. a. \_\_\_\_\_ b. \_\_\_\_\_ 6. a. \_\_\_\_\_ b. \_\_\_\_\_  
 7. a. \_\_\_\_\_ b. \_\_\_\_\_ 8. a. \_\_\_\_\_ b. \_\_\_\_\_ 9. a. \_\_\_\_\_ b. \_\_\_\_\_  
 10. a. \_\_\_\_\_ b. \_\_\_\_\_ Total a. \_\_\_\_\_ b. \_\_\_\_\_  
 a= Infested plants.  
 b= Number of nymphs.  
 Adults observed. Yes. No.

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## GRASSHOPPERS

Grasshopper surveys include observations on nymphs, adults, and eggs. Adult surveys are made at a time when most grasshoppers are in the adult stage and cover all areas that usually harbor grasshoppers, including crop land, pasture land, and range. The egg survey is limited to the crop land areas with some additional samples being taken in other areas where adult surveys revealed high populations. Nymphal surveys or observations are made in the spring to guide large scale control operations or for making local control recommendations.

A minimum of five stops per county should be made in the adult survey. Fifteen, twenty, or even more stops may be made in large counties with important and widespread crop and range areas. At each stop the surveyor walks into the field 100 to 200 yards or a sufficient distance to obtain an impression of the general grasshopper population present. The population is estimated on the basis of average numbers of adult grasshoppers per square yard. Similar counts or estimates are made on at least one fourth mile of the field margin or boundary. If fields are small, 10 to 40 acres, and the crops diversified, two or three fields and their adjoining margins are examined at the stop. In such cases a single rating based on an average of the number of grasshoppers present in all fields examined is assigned the stop. Adult infestations are rated according to the classification of infestations in the following table.

Classification of Adult Grasshopper Infestations				
Classification	No. of Adults		Rating	Map Color
	Per Sq. Yd.	Field : Margin		
Non Economic	2	5	1.0	White
	3	7	1.5	"
Light	4	10	2.0	Green
	6	15	2.5	"
Threatening	8	20	3.0	Yellow
	12	30	3.5	"
Severe	16	40	4.0	Blue
	24	60	4.5	"
Very Severe	32	80	5.0	Red

Information recorded for each stop should include the name of the surveyor, date, exact location, the stop number in that county, habitat, number of grasshoppers per square yard in the field and in the margin, the three dominant species with the percentage of each, and the rating. For each county surveyed additional pertinent information should be noted and supplied with the stop data. This includes brief statements on the habitats infested, localities in which concentrations for egg deposition may be occurring, flight activity, damage to crops or range, control activities and their results, notes on parasites and predators and any other information that may have a bearing on the infestations.

The rating for any stop is based on either the field or marginal count, not on a combination of both. The count that gives the higher rating is always chosen. The number of stops made in the various habitats should be in approximate proportion to their relative county acreage. If the dominant species are not known to the surveyor, collections should be made for later determination.

The egg survey is made in late September or October or even later in locations where oviposition may extend into late fall or early winter. Its purpose is to determine whether the infestation expected the following year is the same, greater, or less than was shown by the adult survey and whether a shifting of adults, after the adult survey, has changed the infestation picture. Generally this survey is made only in areas where the adult survey revealed an expected economic infestation.

In the egg survey, a minimum of five stops per county is made. Stops are scattered throughout the crop areas, and are not necessarily made in the same field as adult survey stops. Five one-square-foot samples are taken in both the field and margin in areas where important egg populations may occur in either of these habitats. The soil is shoveled into a sifting screen (1/4" or 1/8" mesh depending on soil texture) using a scoop shovel so modified that one-half square foot of soil about two inches deep can be scooped up at a time. Two scoops, therefore, equal the square foot of soil which is sifted and examined for egg pods. In soil unsuitable for sifting surveyors use mason's trowels, sharpened on one or both edges, to scrape away the soil and plants and expose the egg pods. The average number of egg pods per square foot, in the field and on the margin, is recorded and a rating is assigned the stop according to the following classification of infestations.

Classification of Grasshopper Egg Pod Infestations

Classification	No. of Egg Pods Per Sq. Ft.				Rating	Map Color
	Large Fields		Small Fields			
	Field	Margin	Field	Margin		
Non Economic	0.25	2.0	0.5	1.0	1.0	White
	0.37	3.0	0.7	2.0	1.5	"
Light	0.50	4.0	1.0	3.0	2.0	Green
	0.75	6.0	1.5	4.5	2.5	"
Threatening	1.0	8.0	2.0	6.0	3.0	Yellow
	1.5	12.0	3.0	9.0	3.5	"
Severe	2.0	16.0	4.0	12.0	4.0	Blue
	3.0	24.0	6.0	16.0	4.5	"
Very Severe	4.0	32.0	8.0	24.0	5.0	Red

In the rating table two sets of figures for the number of egg pods per square foot are given under the heading "Large Fields" and "Small Fields." For farm land which is divided into fields of 80 acres or more, the figures under the "Large Fields" heading should be used. Where divided into fields of 40 acres or less, the figures under the "Small Fields" heading should be used. If fields between 40 and 80 acres in size are surveyed, they should be classified as either large or small, depending upon the typical size of their fields in the area. Only one field and margin need be examined at each stop and fields should be chosen which are of a representative size for the area. Ratings for stops may be assigned on the basis of either the field or marginal count, whichever yields the higher rating.

In areas where it is known that grasshoppers lay principally in the fields, five one-square-foot samples should be taken in the field and only two or three samples on the margin. If the important species in the area concentrate their eggs on the margin, then the five samples should be taken in that area and two or three check samples in the field.

Melanoplus mexicanus is an example of a species that deposits its eggs throughout fields. Fields of small grain stubble are frequently chosen and the eggs will be found along the drill rows with possible concentrations around straw stacks or in weed patches. Melanoplus bivittatus generally concentrates its egg pods in the margin. The pods may be found around the stems and in the roots of sun flowers and other coarse-stemmed plants. Melanoplus differentialis egg pods are also laid in margins. This species usually selects the crowns of grama grass or other similar grasses and forces the egg pods in among the roots.

In sampling a field for eggs the surveyor should distribute the samples so that the fifth is taken well into the center of the field. Weed patches and other such extremely favorable habitats should be avoided unless they are representative of the area as a whole. On the margin the samples should be scattered across and along a quarter mile of its length. Narrow margins, less than 10 feet, should be avoided, if impossible, then the egg count should be reduced proportionately.

Populations of adult grasshoppers remaining, at time of survey, in excess of 4 adults per square yard should also be recorded and considered in rating an egg stop. For populations of from 5 to 10 adults per square yard, an addition of 0.5 egg pod per square foot should be made to the actual average egg count for the field or margin. For adult populations of 11 to 20 adults per square yard an addition of 1.0 pod should be made. Only good egg pods are recorded. Those containing blister beetle or beefly larvae should be considered as destroyed and excluded from the count. All egg pods should be carefully examined before they are counted as good pods. Data from both the adult and egg surveys is used in preparing infestation maps and estimates. The maps show the best estimate of the potential infestation for the succeeding year. These, together with all data collected in the surveys, are the advance determination of the general infestation picture and provide the basis for planning the control needs for the following year. The actual grasshopper populations that will require control are not known until after predators, parasites, and weather have exerted their influence in the period from egg deposition in the fall through the first and second nymphal instars in the spring. (C. W. Shockley)

### HESSIAN FLY

Surveys to determine infestations of hessian fly (Phytophaga destructor) are made annually near harvest time in the winter wheat region and in California. If there are relatively few reports of damage in May or June, the surveys may be limited or less intensively made in some areas or states. For an intensive survey, five or more samples of wheat are collected at separated points in each county surveyed. A sample consists of 50 stems of wheat chosen at random from a larger sample pulled from a field of wheat. The percent of stems infested with puparia of the hessian fly is recorded for each sample along with location and date of collection. Often it becomes desirable to make examinations later at the field station. If so, the samples are placed in individual paper bags or tied with fine wire, labeled and stored in dry place until examined. A county, an assembly of counties, or an area is rated on the average infestation recorded from the samples examined as follows:

<u>Average Infestation</u>	<u>Infestation Rating</u>
7.5 percent	Low
17.5 percent	Moderate
27.5 or more percent	Heavy

The ratings indicate whether low, moderate, or heavy populations of the fly exist in the wheat stubble and the need for publicizing control measures. (W. B. Cartwright)

### SUGARCANE BORER

#### Determining Infestation at Time of Harvest

Method Used in Louisiana: Surveys to determine sugarcane borer (Diatraea saccharalis) infestations in Louisiana are made at time of harvest each year. Examinations are made on 10 plantations, each being representative of a surrounding area producing one-tenth of the sugar yield for the state. Six fields in representative locations on the plantation and divided among varieties and soil types in proportion to their acreage importance in the district represented by the plantation are surveyed. Each field infestation average is given equal weight in determining the plantation average, and each plantation average is given equal weight in determining the infestation average for the state. Examinations are made between October 20 and December 15. Infestation counts consist of the percentage of joints bored as determined from the total number of joints and total bored joints on 100 stalks in each field. Ten samples of 10 consecutive stalks each are examined in 10 locations of each field. Five of the samples are taken on two adjoining rows running lengthwise and one-third of the distance in from one side of the field. The samples are alternated between the two rows and spaced equidistant apart for the entire length of the field. The other five samples are similarly taken one-third of the distance in from the other side of the field. If up to 10 percent of the joints are bored infestation is considered to be very light; 10 to 20, light; 20 to 30, moderate; and over 30, very severe. The percentage of crop loss for each 1 percent joints bored is conservatively estimated to be three-fourths of 1 percent.



Each sample consists of one linear foot of drill row. If the infestation is light (50 or less greenbugs per linear foot), an attempt is made to obtain an exact count. However, if the infestation is heavy, an estimate of the number per linear foot is made. If the heavy infestation appears to be uniform, the estimate is made by counting the number on one plant and multiplying it by the number of plants in the one-foot sample. A numerical rating of 0 to 5 is given each sample as follows:

0	None	= no greenbugs
1	Non-economical	= 1 to 10 greenbugs per linear foot
2	Light	= 11 to 50 greenbugs per linear foot
3	Threatening	= 51 to 100 greenbugs per linear foot
4	Severe	= 101 to 300 greenbugs per linear foot
5	Very Severe	= above 300 greenbugs per linear foot

The average numerical rating for the 5 samples is entered in the survey data report. The prevalence of parasites and predators is recorded in the remarks column of the survey data sheet. (R. G. Dahms).

### WHITE-FRINGED BEETLES

There are two methods by which the presence of white-fringed beetles (Graphognathus spp.) can be determined: (1) inspections for adult beetles on plants and on the surface of the soil, and (2) inspections of soil samples for larvae. Effective surveys can be made by using one or a combination of these methods depending upon the season of the year. Certain definite procedures must be followed to effectuate a successful white-fringed beetle survey.

1. Likely Areas of Infestation. These are determined by possible exposure from known beetle-infested areas within the infested states as well as from infested South American countries. They include properties that have been landscaped with nursery stock moved from infested areas, railroad properties when the railroad traverses infested localities, farm crop processing plants, community centers, military installations, and other points where equipment and materials from various parts of the country are assembled, as well as ports where the insect may have been introduced.

2. Favorable Sites. After the area has been determined, it is necessary to select sites within the area to survey. On farms, the inspections are concentrated on cultivated fields, pastures, and fence rows. In residential areas, the inspections are limited to flower beds, undeveloped lots and alleyways. In industrial areas, checks are made in vegetative areas on the property and environs.

Inspection for Adults. Adult inspections may be made from late May to mid-September. The adult beetle shows strong preference for certain broad-leaf food plants such as peanuts, velvetbeans, soybeans, beggarweed, cocklebur, ragweed, blackberry, goldenrod, aster, petunias, zinnias, and chrysanthemums. By restricting the examinations to plants preferred by the beetle, better results may be expected. The finding of the characteristic feeding sign of the adult white-fringed beetle is a big asset in locating infestations. These signs are easily distinguished from injuries caused by most other insects. Search is made for semicircular cuts made in the margin of the leaf. One portion of the injury presents a smooth, slightly curved surface, whereas the other portion presents a serrated or saw-tooth edge. Upon finding characteristic feeding signs, close observation is made on the ground or in debris for the beetle. Its protective coloration and habit of the insect to feign death oftentimes make it difficult to find.

Inspection for Larvae. Larval inspection may be effectively done from early fall to late spring. This is done by selecting soil samples from around the roots of perennial plants. Although the larvae feed on several hundred species of plant, observations have shown that the preferred food plants include practically all field and garden crops and some native vegetation such as dogfennel, polypreum, evening primrose, goldenrod, ragweed, broomsedge, wild geranium, plantain, dock, and various briars. Selective digging and examination of the soil sample for the larvae should be made under preferred food plants in representative portions of the land. In the early spring when plants, both native and cultivated, begin growth, larval inspections

can be done by noting plant injury, as several food plants when attacked by white-fringed beetle larvae show certain abnormal symptoms such as yellowing, reddening, or wilting, and dead plants may be observed. These symptoms assist the inspector in further limiting the number of plants to be examined. In this type of inspection the plant is dug up by the roots with a hand trowel or shovel and the soil broken apart and examined. It is not necessary to dig large amounts of earth; the larvae, if present, will usually be found on the roots of the plant or in the soil nearby, and a majority of them will be found in the upper 3 inches of soil. (C. C. Fancher).

#### Prediction of Alfalfa Caterpillar\* Populations (as used in California)

Sampling methods: Samples of the larval population are taken by sweeps of a standard insect net. The lower edge of the net is held eight to ten inches into the alfalfa and as the sweeps are made, the rim of the net should be held perpendicular to the ground. The sweeps are made through a half circle from one side of the sweeper to the other. A step is taken between each sweep. Normally a circle of the field will be made taking one or two sweep samples at frequent intervals. All types of growth (height, variety, color, ridges, between ridges, "islands", etc.) should be sampled. Fields or portions of fields which grow more slowly than normal, e. g., remain in the 1/4 stage for a long time should be watched carefully. When confirmation counts (check counts made to confirm previous predictions) are made, fewer samples, generally at a few specific spots, are taken. As one becomes more experienced, most of the counts are estimated. Only about every fifth sample is counted. Twenty minutes per field, although some will take much more, is a good average. It is important to realize that slack periods occur between broods. Under conditions favorable for the caterpillar a field may go from the oviposition stage to the injurious stage in ten days or less. Routine visits are made to every field each week and such supplementary counts as seem necessary are made between visits.

Economic level of infestation: The standard by which economic infestations are judged is a sliding scale centered around 200 non-parasitized larvae per 20 sweeps of the standard net. This "center point" is to be used for average conditions (which rarely exist). Other factors, such as growth, stand, period remaining until harvest, must be taken into consideration. For example, this center point is too low for a dense vigorously growing alfalfa field and for infestations developing during cool weather.

Factors favoring damage: The development of an economic population is favored by (a) large flights of adults when the alfalfa is short, (b) few short fields in the vicinity at time of flight, (c) slow or uneven growth of alfalfa, (d) insufficient parasites to reduce the population below the economic level, and (e) hot, dry weather. (R. F. Smith and W. W. Allen).

\* (Colias philodice eurytheme)

#### Detection of Ladino Clover Seed Midge Infestations

Serious losses to Ladino clover seed production in Oregon have resulted from attacks by the Ladino clover seed midge (Dasyneura gentneri). This insect is a new species with its distribution largely unknown. The detecting of infestations is, therefore, of concern wherever Ladino clover is grown for seed. White and alsike clovers may also be infested by the insect.

In new clover fields infestations build up gradually and may not reach peak until the second year of seed production. The presence of midge cocoons on the soil surface under vegetation and debris is a valuable indicator of infestation past or present. Even the empty cocoons or their recognizable fragments may be in evidence for a year or two after the adults have left them. While adult or immature stages infesting clover are present only at certain times of the year, the cocoons accumulate in infested fields. The cocoons will always be sufficiently abundant to be found readily in fields which have at any time within the previous two or three years carried infestations of economic intensity. The use of cocoons to indicate

an infestation makes possible the inspection of fields for infestation at any time of year that the ground is not frozen or covered with snow. However, this method will often fail to reveal extremely light infestations such as occur in new clover plantings or those in heavily pastured clover.

The cocoons are oblong, light gray to white, slightly under 1/16 inch wide and only slightly longer. Though small, their light color makes them easily visible. They occur in greatest numbers in depressions in the ground where compacted vegetation trash has accumulated. Usually they are most abundant in the shallow irrigation trenches known as "corrugations," especially in older fields where protective layers of well compacted trash have had time to accumulate.

Detection of infestations in clover fields by sweeping with a net for the adults is rapid and convenient but the method has certain limitations. If no adults are taken in the net, it may mean that (1) there is no infestation, (2) the infestation is not in the adult stage, or (3) conditions are such that the net is not catching the adults when present. The first emergence of adults from overwintering cocoons coincides fairly closely with the appearance of bloom on the clover. In central Oregon, from early in June until the seed crop is harvested in early September, three broods of adults appear, each about a month apart. Emergence of each brood requires roughly two weeks. The emergence periods are separated by an interval of approximately two weeks during which few or no adults are present in the fields. Sweeps taken during these intervals may give a negative indication, even where heavy infestations exist. Wind causes adults to go deep into the vegetation for shelter. Net sweeps on windy days, especially in deep vegetation, may give negative results. This is likely to be the case when moderate to low adult populations are present. Adults are most abundant on the upper surfaces of the plants around midday when the sun is highest.

In sweeps repeated at intervals throughout the day in a single field those taken during the midday (11:00 a. m. to 1:00 p. m.) yielded approximately 4 times as many midges as sweeps made in the early morning (8 to 9 a. m.) or late afternoon (4 to 5 p. m.). Therefore, light infestations are most likely to show up if the sweeps are taken during the midday period.

The most reliable method of detecting Ladino clover seed midge infestations is to find the larvae in the clover heads. By picking heads in which 1/3 to 3/4 of the florets have turned down and are becoming brown, one can be assured that any mature larvae present will begin dropping out in a day or two. If the heads are placed in transparent cellophane bags they can be kept fresh for several days, and the orange-colored larvae, when they emerge, can be seen through the bags. It is best to leave several inches of stem on the heads. Then if the heads are placed in the bags stems down, the emerging larvae will fall free of the heads to the bottom of the bags. Otherwise, in their attempt to hide, the larvae may crawl back into the heads to spin their cocoons and not be detected. If the clover heads are to be taken to the laboratory, the bags are handy for keeping them fresh in transit. In the laboratory the clover stems are put in bottles of water, with the heads leaning free of the bottle mouths. Bottles containing the clover are then set in pans into which the emerging larvae drop and accumulate. By this method the clover heads can be kept fresh enough at room temperature to obtain daily larval emergence counts for 10 to 12 consecutive days. The pans can be checked at any convenient time, even days after they are set up. This method will reveal infestations too light to be evident by any of the other methods discussed. (H. W. Prescott).

#### LYGUS BUGS (Methods used in California)

On alfalfa seed: Alfalfa grown for seed should be treated for lygus control only when the lygus bug population justifies it. The treatment level will vary with the growth stage of the alfalfa. The treatment levels are the numbers which indicate the proper time of insecticide applications, and are not, necessarily, the population density at which economic damage occurs. Treatments are made at these levels to avoid later populations which may cause economic damage. Lygus counts are based on two-sweep counts taken with a standard net at 10 to 20 stations over a field. At least three two-sweep counts are made at each station. The margins of the field, spots with heavy growth, and other areas of the field may have a significantly higher count than the remainder of the field. In general, all counts in a field are averaged and treatment is based on this average population. Occasionally it is practical to treat only portions of a field.

Alfalfa in the early bloom stage is treated when the lygus-bug count reaches one insect per sweep. During the period of seed set, the fields are treated when the count of lygus bugs reaches six per sweep. Counts are determined by doubling the nymphal count and adding it to the adult count. For example, two adults and two nymphs per sweep equal a count of six; four adults and one nymph also equal a count of six; and similarly, three nymphs or six adults equal a count of six. If lygus bugs have been kept under control during the period of seed set, there is seldom any need for treating the maturing field; however, if the pests appear to be unusually abundant, the count for treatment is ten per sweep, determined in the same manner as described above.

On cotton: Lygus bugs are particularly attracted to succulent or rank-growing fields. Sweeps in cotton are made through the tops of one row. An average total of ten lygus bugs per 50 such sweeps is the minimum injurious number. Each nymph is counted as two and each adult as one. The presence of nymphs indicates a more advanced and serious infestation. This is for average conditions; it is possible that a lower population that is maintained for a long period of time may cause economic damage. However, in most years the populations do not hold steadily at one level.

On blackeye beans or cowpeas: A favored oviposition site of lygus bugs infesting blackeye beans is in the developing pod and such spots are commonly seen as small depressions with the cap of the egg forming the bottom. As the season progresses so does the number of nymphs and it is not unusual to find fields in which there are more nymphs than adults. In lygus - infested blackeye bean fields it is possible to show a correlation between populations and the amount of injury at harvest time. These fields are sampled by means of a standard 15 inch net. A sweep across two rows of beans constitutes one sweep and five such sweeps are made at each of ten stations in the field. The total number of adults and nymphs are recorded separately for each series of five sweeps. A population averaging 50 or more lygus per sweep is sufficient to cause considerable damage, especially if present when beans are in a susceptible stage. A population this heavy can be tolerated until late bloom and early pod stage when the beans should be treated.

Studies have made possible the following generalities concerning abundance and resulting seed injury. A population averaging 0-10 lygus per 50 sweeps persisting from early pod time to harvest will result in from 0.4 to 2.0 percent of beans with injury; a population of from 15 to 20 will cause 2.5 to 5.0 percent seed injury; from 40-50 lygus will cause 6.0-12.0 percent injury and 60 lygus or more per 50 sweeps will result in 15 percent or more of the seed injured. (R. F. Smith and J. E. Swift, alfalfa seed; G. L. Smith, cotton; W. W. Middlekauff, cowpeas).

#### Technique For Making Rice Water Weevil Larval Counts

Clumps of rice containing at least five plants, together with the soil surrounding the roots, were removed by hand. All but 5 plants and the excess soil were removed and discarded. Two such samples were taken and placed in a ten-inch cylinder (with sides 12-15 inches high), constructed of sheet iron, the bottom of which was covered with 20-mesh copper screening. The cylinder was then placed in six to twelve inches of water and the roots of the rice clump shaken vigorously in the water within the cylinder, after which the clump was discarded. The larvae that are completely loosened from roots or soil by this treatment float to the surface. The floating larvae were counted and removed by means of a sieve. The cylinder was then shaken vigorously which dislodged additional larvae. These also were counted and removed. This process was continued as long as it brought additional larvae to the surface. In most cases five to eight shakings completed the count. Numerous examinations of the materials remaining in the cylinder or in the clump of rice after this procedure showed that very few larvae were missed other than extremely small larvae capable of passing through the 20-mesh screen. In taking of data two such samples were taken from each plot. (F. E. Whitehead).

## STORED GRAIN INSECTS

Farm-type bins. For farm-type bins up to 5,000 bushels, samples should be taken with the standard 5-foot grain probe from 5 locations: the center, and about 1 foot from the wall at the 4 cardinal points of the bin. For shallow bins, one probe from each location is sufficient. If the grain is deeper, from 2 to 3 probes must be taken from each location using extensions on the probe so that samples can be taken from a vertical column from the surface to the bottom of the bin; e. g., if the grain is 10 feet deep a sample from the top and bottom 5 feet is sufficient, but if the grain is 15 feet deep it will be necessary to take samples from the bottom, middle, and top five feet of grain. It should be noted that in the sampling of round metal bins it may be difficult to take the samples from the 4 quadrants when the bin is over-filled. In such cases the probes should be inserted in a slanting position so that the bottom samples will be taken from the outside portion of the bins.

Quonset huts. In the sampling of quonset huts or large, rectangular wooden bins additional samples are necessary, the number depending upon the size of the building and the depth of the grain. For the average quonset 100' x 40', samples are taken at 12 locations approximately 15 feet apart in two longitudinal rows evenly spaced between the two side walls. If the grain is approximately 10 feet deep, samples should be taken from the top and bottom 5 feet at each location. In addition a surface sample should be taken from the center of the front and rear half of the quonset.

Elevator bins. The sampling of grain in elevator bins is complicated by the depth of the grain and the difficulty of reaching the surface of the grain from the head house floor. Unless special equipment is available to take probe samples from the top of the bin, or the elevator is equipped with an automatic sampler, the simplest method is to run the entire bin and take samples periodically from the grain stream with a "pelican" sampler. This method takes considerable time and is not always feasible. Since infestation in elevator bins is most frequently found in the grain at the surface and the bottom of bins, the following method has been adopted for routine examinations. A surface sample is taken from each bin by lowering an automatic sampling device on a rope to the grain level from the top of each bin. This device consists of a cylindrical container, the two halves of which are held open by springs. On contact with the grain, the two halves snap shut and capture approximately a gallon of grain. A sample from the bottom of the bin is obtained by running the bin for 1 or 2 minutes during which period 5 passes are made through the falling grain stream with a pelican grain sampler.

Composite sample. All probe samples for any one bin, quonset or elevator bin, are combined into a composite lot which is then cut down to a 1000-gram sample with a Boerner Grain Divider. The sample can be then sifted and the insects counted. The insects are classified as weevils or bran beetles. Rice weevil, granary weevil, and lesser grain borer are classed as weevils and all other beetles as bran beetles. (Stored Product Insect Section, Manhattan, Kansas).

#### A Technique for a Rapid Determination of European Red Mite Populations on Foliage

The time required for determining European red mite (Metatetranychus ulmi) populations is one of the most important limiting factors in carrying out field tests for the control of this pest. Since populations are subject to rapid fluctuations due to tremendous reproductive capacity, weather conditions, and intermingling of late broods, it is desirable to make population determinations for any given series of tests during as short a period of time as possible.

This report is a discussion of a technique used at the Dow Agricultural Chemical Research Field Station at South Haven, Michigan, since 1942. This discussion deals with studies made on mite populations on apple, cherry, prune, plum, peach and other foliage.

### Determination of Mite Populations

Sampling: A more accurate appraisal of the effectiveness of mite treatments may be made if the mite population of each plot immediately preceding application is known. Such information is important for the checks as well as for those that are to be treated. This is desirable since large differences often exist between populations in the various plots within a planting.

The pre-treatment and post-treatment population determinations are made from samples of 50 leaves from 2 to 5 trees in each plot. The number of leaves taken from each tree is determined by the number of count trees in the plot. For example, if 5 trees are used, they are marked and ten leaves are taken from each tree at each collection. If 3 trees are used 16 leaves are taken from one tree and 17 from each of the other two. The leaves are all taken by the collector circling the tree and picking the samples at regular intervals so that a complete circle is made while sampling each tree. Leaves are taken from wood with a diameter of 3/4 to 1 inch and usually at arm's length from the periphery of the trees. In the case of heavily infested trees it is necessary to make leaf collections near the tips of branches as the mites move out. These leaves are dropped immediately into small containers in a "lethal chamber" shown in Figure 1. All leaves from a plot are put into one receptacle. This receptacle may be of any suitable size. One quart cylindrical paper ice cream containers have proved satisfactory, although slightly larger containers may be more suitable when the leaves are very large such as are sometimes encountered on Duchess, Baldwin, Greening, and other varieties. An identifying card is placed on the leaves in the receptacle.

Killing the Mites: Difficulty is sometimes encountered while making population counts of live mites. When the leaves are heavily populated and when counts are made at high temperature, the active forms move about rapidly, many running off the leaves or shifting from one side of the leaf to the other. These difficulties have been overcome by placing the leaf samples immediately into the small containers which are carried in the "lethal chamber" mentioned above. The chamber is simply a tight container of a size suitable for carrying about the orchard. (Figure 1). It is constructed of a wooden frame covered with pressed wood. A 2-3/4" opening is cut in the cover over each container. These holes are snugly fitted with plugs which are merely lifted and replaced each time a leaf is dropped into the receptacle. An interior view of the lethal chamber is shown in Figure 2. On the lower surface of the chamber lid, provision is made for use of the lethal chemical. In the case illustrated, this consists of fastening to the lid strips of absorbent cotton wrapped with cloth to prevent fraying. Excellent results for quick kill of the active mites have been obtained by the use of propylene or ethylene dichloride. One application of a few ml. of the liquid toxicant per cubic foot of space is sufficient to give quick killing during the time required to collect fifty leaves from each of six plots. Ethylene and propylene dichloride serve very well for this purpose since they are relatively safe to the collector when used out of doors, and also indoors by observing reasonable precautions. The liquid should be charged into the cotton often enough to cause discoloration of the leaves within 20 minutes. To further insure kill of the mites the sample filled receptacles may be stored in larger lethal chambers. (Figure 3). A larger number of plots may be sampled in this way within a few hours. The samples may be stored in the receptacles in a cool moderately humid place (60-80% relative humidity) or the mites may be removed from the leaves and stored on the glass plates in a similar place until counts are made. Counts should be made as soon as possible, however.

Preparing for and Making Actual Counts: After the leaf samples have been collected, the mites killed and taken to a central station, the next step is to remove the mites from the leaves. This is done with a machine developed by C. F. Henderson of the U. S. Department of Agriculture working with the citrus mite (*Metatetranychus citri*) in California. The details of this machine and its operation are discussed in U. S. D. A. Circular 671, 1943. The method of operation was very similar to that described by Henderson. For the purpose of this report pertinent items and slight alterations in procedure are briefly discussed. The machine (Figure 4) consists essentially of two three-quarter inch rotary brushes, four inches long, mounted close together in a horizontal position and above a metal turn table. The brushes found most satisfactory for use on mites are of goat's hair. The brushes and turn table are operated by a small electric motor. The motor in this case is described as follows: H. P. 1/175, volts 115, cycles 60, amps 38 and rpm 1500. A 6-volt motor may be used if it is desired to use the equipment in the field where the motor can be powered from a storage battery. The turn table on the brushing machine is a metal plate which holds a glass disc of the proper size. During the brushing process the leaf samples are inserted

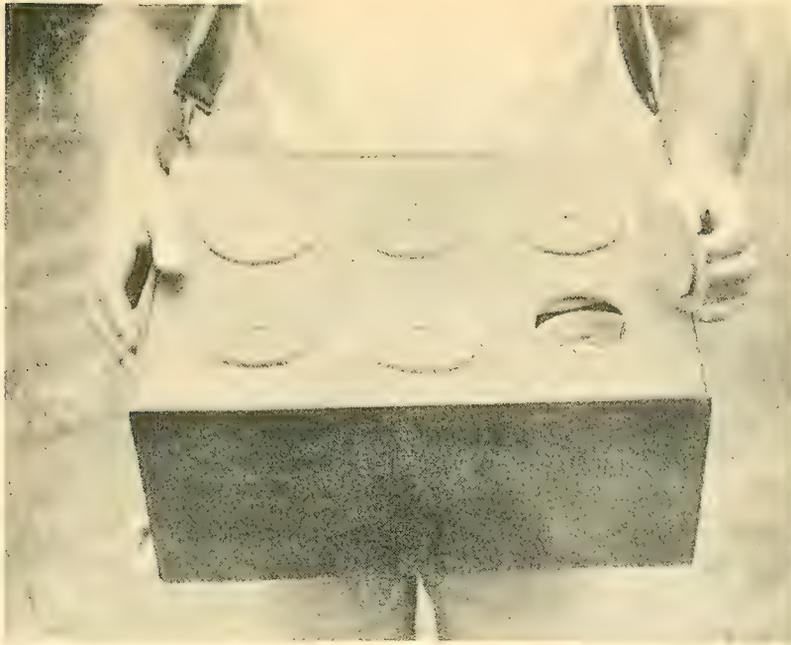


Figure 1. Details of collection chamber lid with one plug removed.

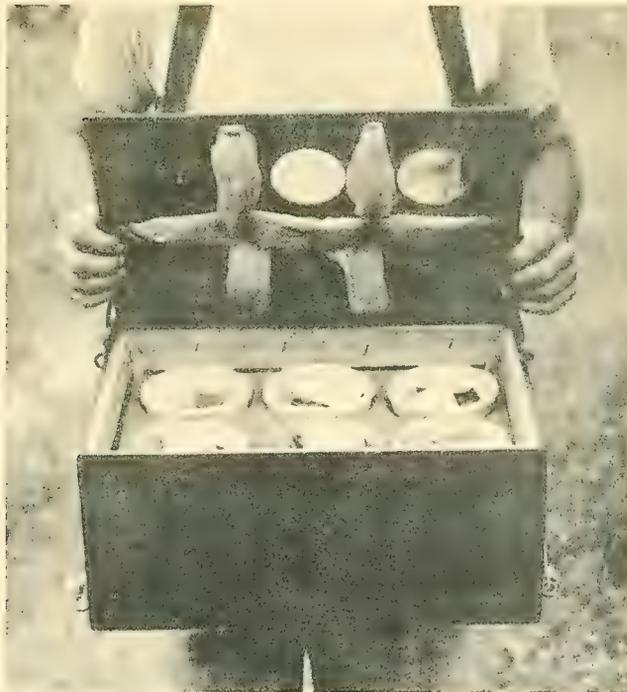


Figure 2. View of interior of collection chamber with samples from six plots in the six cardboard receptacles. Strips of absorbent material for fumigation may be enclosed in window screening to avoid fraying.



Figure 3. Chamber for transporting samples and for further fumigation and storage if necessary.

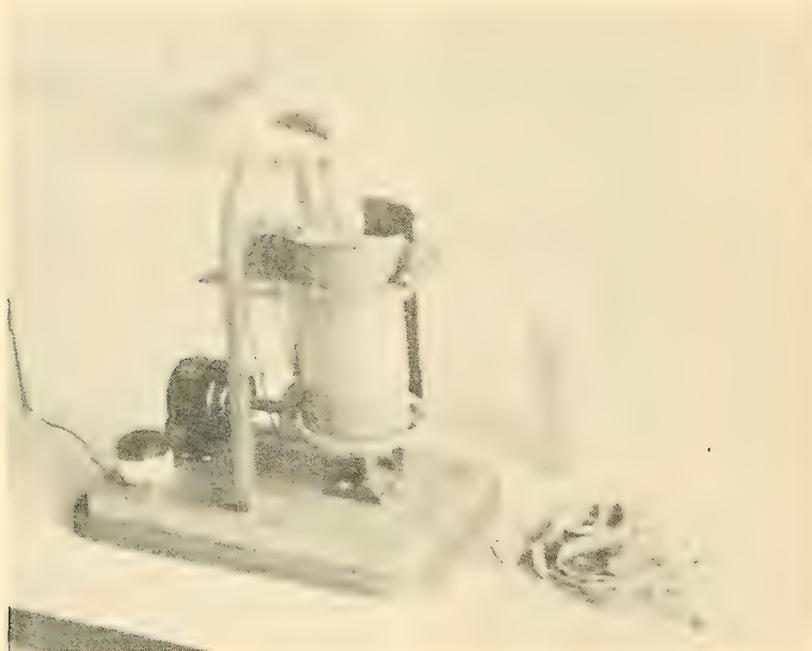


Figure 4. Brushing machine with leaf being inserted between brushes.

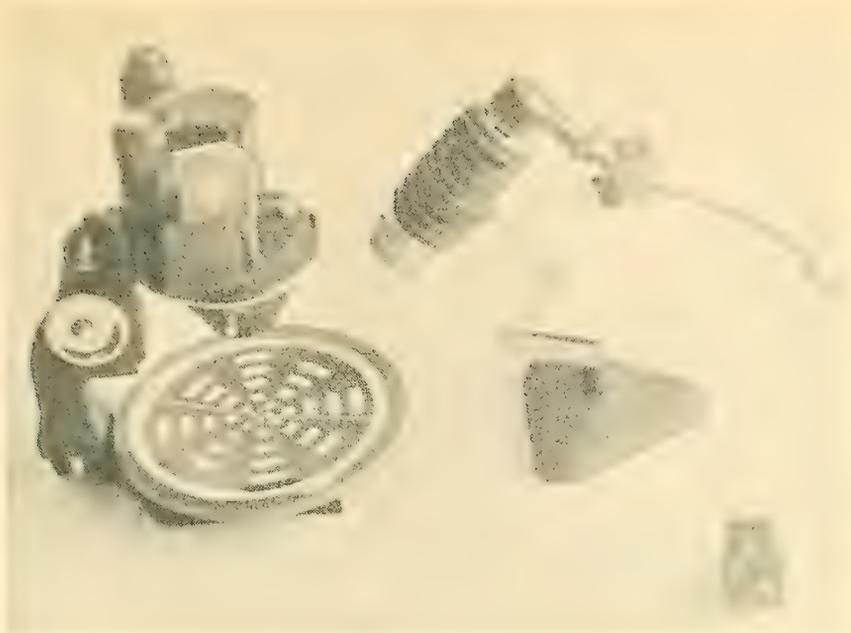


Figure 5. Equipment used for making counts. The tallies are mounted on the table top and manipulated by pressing, with the knees, levers under the table which are connected to the tally levers by strings.

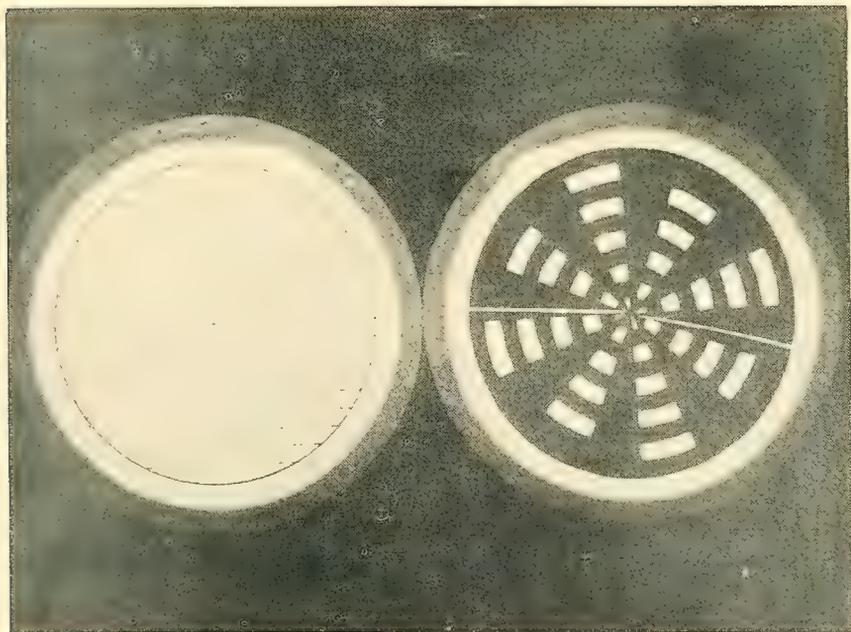


Figure 6. Holding board for easy manipulation of glass discs containing specimens. Left, parallel areas for inspection in case of light infestation. Right, white areas for inspection in case of heavy infestation.



between the rotating brushes and the mites and the eggs are dislodged. Two metal shields extend from slightly above the top of the brushes, downward to the glass disc on the turn table. These shields serve to confine the falling mites to the disc below. For maximum removal of mites, it has been found advisable to insert one end of the leaf between the brushes, withdraw it, and then insert the other end. If removal of all the eggs is desired, further brushing may be necessary after the leaf has been folded to fully expose the midrib. The glass disc placed on the turn table during the brushing process should have a diameter  $1/4 - 1/2$  in. greater than that of the area within the shields. This will permit handling the glass without crushing the forms collected thereon. Immediately before placing the glass disc on the turn table the upper surface should be lightly coated with thin varnish or some other suitable adhesive. The falling mites and eggs will lodge and remain on this film during subsequent handling. The rotation of the disc during the brushing process insures a fairly uniform distribution of the mites and eggs over the coated surface.

The regular laboratory equipment plus a few easily made accessories are all that is needed to make the counts. (Figures 5 and 6). The glass disc containing the mites and/or eggs is placed on a holding board which facilitates manipulations of the disc when put into position for examination with a binocular microscope. In making the counts, one of two means of guiding the observer during the counting is used, depending upon the abundance of specimens on the disc. If only a few are encountered, the holding board with parallel fields as shown on the left in Figure 6 is used and all specimens are counted. If there are many mites, the holding board with the black and white cardboard disc as shown on the right in Figure 6 is used and only those which lie over the white areas are counted. The narrow white stripes are for guides only and mites lying over them are not counted. The total white area is 25 percent of the total specimen bearing area. (Henderson 1.) Thus the number of forms counted in this way, multiplied by 4 gives a figure approximately the same as if the entire area is counted. When making the counts one light source, namely a microscope lamp with the light beam directed to the field of observation has proved adequate. This is different and somewhat simpler than the illumination described by Henderson. It may be that certain conditions, not yet encountered in this work, will require the setup described by him.

Enough time is allowed between the application of control treatment and leaf sampling to cause the treatment-killed mites to dry and shrivel. The first sampling after treatment is usually 3 to 5 days. If heavy rains occur during this interval many of the dead mites will be washed from the leaves. If properly handled, as described earlier, the mites which escaped the treatment, but which were killed in the lethal chamber will remain plump and may be easily identified as "live mites". Only live mites are counted.

After the counts are made the glass discs may be cleaned by immersing in a strong solution of trisodium phosphate, after which they may be rinsed in water, dried and used again. (O. A. Hammer)

#### LITERATURE CITED:

(1) Henderson, C. F. and McBurnie, H. V. 1943. Sampling Technique for determining populations of the Citrus Red Mite and its Predators. U. S. Dept. Agr. Circ. 671.

#### Determining Apple Maggot\* Fly Emergence

In late August and early September infested apples are placed in a large box having a  $1/4$  inch mesh wire bottom and raised 10 or 12 inches on corner legs. Under the box a tray with  $1-1/2$  to 2 inch sides collects the maggots when they complete larval feeding in the apple and drop. Daily and sometimes twice daily the maggots are collected, counted and distributed among the soil boxes. Soil boxes are  $1-1/2 \times 3$  feet (Size is not important) with sides 8 to 10 inches high. They are filled with 6 to 8 inches of good porous soil. Maggots are distributed among the boxes each day rather than putting each day's collection in one of the boxes. The usual number of maggots in each box is 300 or 400. When gathering the maggots from the tray, all prepupae and pupae are discarded and the soil boxes are checked frequently to remove any specimens which fail to enter the soil normally. In late fall the infested soil boxes are placed in or near the orchard and buried even with soil surface. They may be covered with wire or brush to protect them from interference by dogs or other animals. In early June cages are placed over the soil boxes to collect the flies when they

emerge. These cages are about 3 feet in each dimension covered with screen wire on at least two sides and cloth sheeting on the top and other sides. The front is attached on two edges with thumb tacks so that it can be folded back to reach in to collect and count the flies. During the emergence season the flies are collected daily. Winter mortality in these cages has ranged from 40 to 60 percent and progressive emergence estimates are based on a 50 percent natural mortality. (W. D. Whitcomb).

### Technique in Jarring for Plum Curculio<sup>1</sup>

Jarring trees to obtain plum curculio (*Conotrachelus nenuphar*) adults is an old and well established practice. It was considered at one time as a valuable supplementary control measure for plum curculio on peaches. Although no longer practiced as a control measure, it is still considered a valuable tool particularly in research. Jarring is useful as a means of timing spray applications and for locating areas of heavy infestation. It may also be used as a criterion for evaluating effectiveness of spray applications.

Equipment and technique for jarring are described in this paper. The method described has been used with satisfactory results during 1949 and 1950 in the peach belts in the Arkansas River Valley centered around Clarksville and in the southwestern belt near Nashville.

The sheet used in experiments in Arkansas is 4 feet by 7 feet and is attached to a light wooden frame. The frame is hinged for folding to facilitate transporting from one orchard to another. Other equipment includes a light rubber covered mallet and a small bottle fitted with a slit rubber top for collecting the beetles.

The procedure involved in using the small jarring sheet is to hold the sheet in one hand and to jar limbs by one or two sharp blows with the mallet. No attempt is made to jar an entire tree. The beetles are usually collected at the end of the jarring period. If, due to high temperature, the beetles become active, they are captured and counted immediately. The unit of measurement of curculio abundance is based on the amount of time spent jarring. In most cases a period of 5 minutes is used. If a complete record in an area is desired, four units of 5 minutes each are taken. Usually the limbs on one side of a tree are jarred and the operator then moves on to the next tree.

The principal disadvantage in using a small sheet to jar for 5 minute periods seems to be that it has been customary to think of curculio populations as the number per tree. Since this number is an arbitrary figure and is at best only an approximation, a different unit of expressing density of population should be equally satisfactory. The number of limbs jarred in 5 minutes by different individuals will undoubtedly vary somewhat, but this variation should not be nearly so great as the differences between individual trees.

In the past jarring records have been on the basis of the number of curculios obtained per tree. This system has numerous disadvantages. The size of trees varies greatly from one orchard to another because of differences in age and growing conditions. Curculio population varies greatly among trees of fairly uniform size. This necessitates a large sample to obtain representative data. It is difficult to jar an entire tree especially if it is a large one. Unless considerable labor is available the sheets must be placed on the ground. Uneven terrain and weed growth make this impractical in many orchards.

During the summer the temperature is too high in Arkansas for satisfactory jarring during most of the daylight hours. The beetles are more active and many of them fly upon being disturbed. More records can be taken during that period of the day when conditions are favorable if the small sheet is used to jar individual limbs rather than jarring entire trees. Also the small sheet can be held close to the limbs where the curculios are located. Fewer beetles will fly before hitting a sheet held close to the limbs than one on the ground. Also more beetles can be recovered from the sheet on a rigid frame since they can be removed more quickly from it than from large sheets. Thus jarring can be done with the small sheet when high temperature would make the use of large sheets on the ground impractical.

<sup>1</sup> Research paper No. 1021, Journal Series, Univ. of Ark. Published with permission of director of Ark. Agric. Exp. Station.

Sheets sufficiently large to cover the area under a large peach tree require several persons to hold them. The only alternative is to place them on the ground. In many Arkansas orchards the terrain is too rough to place the sheets on the ground satisfactorily. With the sheets on the ground it is difficult to jar the tree without walking on the sheets. If they are placed on bare ground they soon become soiled making it difficult to locate the curculios on them. The small sheet on a frame eliminates these difficulties. The advantages of considering the number of curculios jarred in a 5-minute period using a small sheet on a rigid frame as the unit of measurement, may be summarized as follows: Only one person is needed to take the records. More records can be taken in the same time. Difficulties due to variations in tree size, unevenness of terrain, and high temperature are decreased or eliminated. (W. D. Wylie).

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#### WESTERN GRAPE LEAF SKELETONIZER

For the past several years the Bureau of Entomology in the California Department of Agriculture has been engaged in an intensive campaign directed against the western grape leaf skeletonizer (Harrisina brillians) which is restricted in occurrence to the most southern county in the State. This insect, which is a day-flying moth, is found on wild and domestic grape in the southern and eastern portions of San Diego County in a wide range of climatic niches ranging from coastal plains to desert canyons and at elevations from sea level to 4500 feet.

Visual inspection has been found to be the only acceptable method of survey. Extensive bait trap studies have been conducted in search for an attractant which would satisfactorily supplement visual inspection, but nothing of outstanding effectiveness so far tested has been found. The most promising of these tests has involved a preparation made through the addition of the abdominal tips of virgin female moths to benzene. This has shown an attraction to males but has not yet been developed to the point where it can be used on a practical basis.

In the matter of visual survey, the presence of adults is most easily observed. They have a wing expanse of approximately one inch and have an iridescent blue-black metallic color. They usually emerge from over-wintering pupae sometime soon after April 15, and are again abundant in July and to a lesser degree in September based on two, and a light third, generations annually. If present and forced into flight they are inclined to flutter around and return to the vine from which they were originally disturbed. Adults are inclined to favor the lower portion of the vines, both wild and cultivated, and it is on these lower levels that inspection is concentrated. Actually, the adults are very retiring and tend to drop rather than fly when disturbed, making detection somewhat difficult in the absence of heavy populations.

The lemon-yellow elliptical eggs are generally deposited on the under surface of the leaf. They are laid on end, slightly separated, in more or less irregular rows making up patches of from twenty to one hundred eggs. They are not greatly dissimilar from those deposited by the smaller more common lady beetles. Their presence can be easily overlooked unless a leaf by leaf inspection is being made.

The characteristic feeding damage of the gregarious larvae is very conspicuous and easily noted on badly infested canes at a distance of one to two hundred feet.

Larval feeding up to the 4th instar is carried out on the under surface of the leaves producing an extremely thin tissue paper-like area, white and translucent when fresh, later turning brownish. As the larvae mature, the leaf surface is completely eaten. The earlier larval instars are conspicuous due to their feeding as a colony, side by side, in a steadily advancing line. The mature larvae are also conspicuous due to their brilliant blue and yellow lateral rings which relatively alternate over the length of the body. On severely infested vines nothing remains but the canes, fruit, leaf petioles and the major portion of the midrib.

The mature larvae pupate under the rough bark of infested vines, usually close to the ground level and even in the grass roots several inches away from the base of the vine. The pupae are relatively flat, yellow to dark brown in color depending on age, and encased in a white opaque cocoon. Inspection for pupae even during the dormant period is generally deemed impractical due to the time element involved.

Project experience has been that initial infestation is usually found in the border rows in vineyards. The original hour-glass pattern of inspection was for that reason subsequently changed to a peripheral survey including the first five to ten rows in vineyards in areas suspected of infestation. Although as might be expected there is considerable overlapping during the active season, the various stages closely follow the normal pattern in relation to the generations discussed under adults. (A. G. Forbes, California Dept. of Agri.)

### CHERRY FRUIT FLY

Three methods of detecting cherry fruit fly (Rhagoletis cingulata) infestations are currently being used in Siskiyou County, California.

Detection of Adults: This phase is accomplished by trapping, using a sticky-sided carton baited with ammonium carbonate. Quart-size Sealright Thermorex paper containers are used with the inner surfaces coated with Mapco Stickem Special. The trap is attached to a tree with a wire that extends through the bottom and has a small hook on the inside on which the bait packet is hung. Approximately two ounces of powdered ammonium carbonate is sealed into two inch square plastic packets. The packets remain sealed until time of use (when 10-12 perforations are made in them) and are replaced in the traps at weekly intervals. Traps are placed, when convenient, at a height of about eight feet above the ground on southeast side of the tree. Traps are generally replaced once or twice during the three months' trapping season.

Detection of Larvae: Accomplished by processing fruit samples. One pound samples of cherries are crushed by running them through an old-fashioned hand-operated clothes wringer with rollers grooved and set apart so as not to crush pits. The crushed fruit is placed over 1/4 inch mesh screen in hot water, pre-heated to 140° - 160° F., for at least one minute, the fruit is then discarded. The pulpy water remaining, containing the larvae if any, is placed in a pan in a swirling device propelled by a small electric motor. Rotation speed is controlled by a rheostat. In the swirling water larvae and other heavier particles gravitate to the center of the pan where the greatly reduced level of water permits easy detection.

Detection of Pupae: This is accomplished through soil sifting. Soil within the drip line of the tree is sifted through mesh screen (6 wires per inch) to eliminate large particles then resifted through a smaller screen (14 wires per inch) to eliminate fine soil. The remainder is inspected visually for puparia. This method of detection has been used primarily to confirm infestation on properties where adults were taken in traps but no larvae found in fruit samples processed. (D. W. Robinson).

### MEXICAN FRUIT FLY

There are two methods used to determine the presence of Mexican fruit flies (Anastrepha ludens) in the citrus orchards of the Regulated Area of Texas. One of these is the operation of traps for the purpose of measuring the adult fruit fly population. The other is grove inspection for the purpose of determining whether or not the fruit is infested. Traps are also useful in determining when the first infested fruit will be found, as this can be very closely estimated after the first gravid female is trapped.

The traps are of the glass flask type, using liquid bait, with an opening through the bottom to permit entrance of the flies. These traps are hung in the citrus trees, four or five feet above the ground and well into the center of the trees. The bait used is brown sugar and water. One and two-tenths pounds of sugar to a gallon of water is an effective mixture. Two gallons of bait is sufficient to fill twenty traps. They are placed in selected orchards scattered over the various districts, insuring a complete coverage over the entire Regulated Area. The most healthy groves are selected in which to place the traps. Trees with heavy foliage are most desirable for trapping, since the adult fruit fly prefers the shade to sunlight. The traps are usually set twenty to an orchard and are arranged in a rectangular pattern. They are placed in two rows, usually beginning with the outside row of the grove and are spaced one trap to every third tree in the row. The best arrangement is to place eight traps in a row, with two traps across the ends and another eight traps down an inside row, forming a perfect rectangle. The traps are inspected once each week, at which time they are cleaned and rebaited. One inspector can operate two hundred traps a day. Trap operations normally begin in the early fall and continue until late spring or at such a time as larval infestations are found generally over the entire Regulated Area.

Grove inspections are made for the purpose of determining whether or not larval infestations are present in the fruit. The result of these inspections governs the movement of the fruit from the groves to non-infested areas. If the fruit is free of infestation of the Mexican fruit fly, it can move through regular channels without further treatment. In case larvae are found, the fruit must be sterilized before shipment to free areas. The most satisfactory method of grove inspection is to take one or two rows at a time and work from one side of the grove to the other until all the trees have been checked. The inspector examines fruit on the ground in looking for larval infestations. It is not possible to examine all the fruit which might be on the ground as there are other factors, such as, cultivation, winds, mechanical injury and disease, which cause fruit to drop. It is necessary, therefore, for the inspector to know what fruit to eliminate in his inspections. The trained or experienced inspector is able to distinguish, in almost every instance, infested fruit from those which have fallen from these other causes. The fruit fly lays its egg in the fruit while it is still on the tree. The eggs hatch into small worms which begin working inside the fruit and cause considerable internal damage. It also takes on a discoloration on the outside which is quite helpful to the trained eye in finding infested fruit. For instance, the light yellow color of a normal grapefruit changes into dark amber color, or somewhat more of an orange color. Early-season inspections are usually confined to grapefruit since it is the most preferred host and, as a rule, the first infestations are always found in this type of citrus. The simplest and quickest procedure to determine whether or not the fruit is infested is to clip both the stem and blossom ends with a sharp knife, avoiding cutting deep enough to rupture the juice cells. If an infestation is present in its early stage, small shotlike holes having the appearance of having been drilled and brownish threadlike tunnels are quite noticeable in the rag of the fruit. If it is an advanced stage there will be unmistakable internal evidence, such as the breaking down of the juice cells and a complete honeycomb condition showing in one or both ends. Fruit from infested groves is required to receive the vapor-heat ( a heated mixture of saturated vapor, air and fine water mist) treatment before moving to non-infested areas. Grove inspections are continued until such time as a general infestation is found throughout the Regulated Area. Whenever the infestations build up to a point where a majority of the groves are found infested, grove inspections are discontinued, and the entire Area is declared an infested zone. All fruit shipped from the Regulated Area for the remainder of the season is required to be sterilized by the vapor-heat method before moving to non-infested areas and inspectors devote full-time to the supervision of this process. (B. C. Stephenson).

## JAPANESE BEETLE

(Methods used by the Japanese Beetle Laboratory, Entomology Research Branch)

The presence of the Japanese beetle (Popillia japonica) in an area can be detected by placing bait traps at suitable sites during the period of flight of the adults. The density of the population can be estimated by observing the extent of feeding by the adults on favored food plants and by the examination of soil at selected sites to determine the number of grubs present.

Traps are of value in determining the presence of beetles in areas remote from the generally infested region. In these areas traps attract and capture beetles even when a diligent search often fails to reveal their presence. Beetles are drawn from the leeward to a trap by means of an attractant. Most of those captured fly into the superstructure of the trap and fall into a receptacle from which they can not escape. The trap consists of a four-winged baffle mounted on top of a funnel, a device for holding the dispenser of the attractant, and a receptacle for holding captured beetles, and is painted a high luster yellow. The attractant is a 10:1 mixture of technical geraniol and U. S. P. eugenol by volume or a 9:1 mixture of technical anethole and U. S. P. eugenol by volume and is dispensed by means of a bottle and wick. The details with reference to the trap are given in U. S. D. A. Circular 594. The best results are obtained when a trap is hung on a rod or other suitable support in a sunny location so that it is 4 to 5 feet above the ground and to the windward of plants most subject to attack. It should not be closer than 10 to 25 feet to plants on the leeward. If located so that the odor of the attractant is carried across an open field, a trap may attract beetles from a distance of 500 yards. When trees, buildings and other obstacles deflect and impede the movement of air, the zone of attraction is reduced considerably. When a trap is favorably placed, it can be expected to capture about three-fourths of the beetles attracted to it.

The density of the adult population in an area can be estimated when the beetles are present in the greatest numbers or when the injury by feeding is the most noticeable. The tree hosts most useful in estimating feeding damage are elm, horsechestnut, linden, Lombardy poplar, Norway maple, planetree, white birch, willow, apple, cherry, peach, and plum. The low-growing plants and vines most useful for this purpose are elder, grape, sassafras, smartweed, and Virginia creeper or woodbine. Althea, dahlia, rose, and zinnia are often good indicators, and asparagus, alfalfa, clover, corn, and soybeans are sometimes useful when examining fields and gardens. In some areas other plants may be used in estimating the feeding; a complete list of the food plants of the beetle is given in U. S. D. A. Circular 547. The lacy appearance of the damaged leaves on most plants within the infested area may be attributed to feeding by the Japanese beetle, but the foliage on representative plants should be carefully examined to determine that the injury was caused by the beetle. Of course, estimates of feeding should not be made on plants that have been sprayed or dusted with an insecticide. Usually in making a survey of an area, observations are made from a car driven slowly along the roads, and the extent of feeding is recorded at various points on a map according to the following numerical system:

- (1) Very severe. Over 50 percent of the host trees entirely brown from beetle feeding; vine hosts completely defoliated.
- (2) Severe. From 25 percent to 50 percent of tree hosts mostly brown; nearly all vines defoliated.
- (3) Moderately severe. From 10 percent to 25 percent of tree hosts brown; heavy feeding on vines.
- (4) Moderate. Less than 10 percent of host trees partly brown; moderate feeding on vines.

- (5) Light. Tree hosts not showing brown though there may be evidence of light feeding on close examination; light feeding on vines apparent from a short distance.
- (6) Very light. Occasional light feeding that is apparent only on close examination. The beetles or eaten leaves are located only after a search.

With the symbols indicating the extent of feeding on the map, it is then possible to make a general estimate of the density of the Japanese beetle population in the area.

The examination of soil for the immature stages of the beetle is usually limited to a specific lawn, golf course, park or pasture, and is conducted to determine whether the injury to the grass is caused by the grubs feeding on the roots and to determine the density of the population in the soil. Many areas of turf in the eastern part of the United States have been ruined by these grubs. In making the examination, a square foot of sod is removed to a depth of 3 or 4 inches and placed in a large tray or other suitable container. The soil is removed from the roots and examined carefully to determine the number of grubs present. The procedure is repeated at other spots until a sufficient area has been examined to establish approximately the severity of the infestation. Usually 12 or 15 spots are enough to obtain a general estimate of the density of the population in a suburban lawn. (W. E. Fleming).

### GOLDEN NEMATODE

Survey inspections to detect the presence of golden nematode (Heterodera rostochiensis) cysts may be accomplished by field soil surveys, grader debris examination, and plant root examination.

Field survey consists of systematically collecting about six pounds of soil per acre. About a tablespoonful of soil is picked up with a pointing trowel at intervals of eight paces following a grid pattern. The soil is collected in a No. 12 wet-strength double-thickness paper bag, which is numbered to show location of the sample within the field and also labeled to identify the field. A sketch is made of the field showing the areas represented by each sample. The tops of the bags containing the soil are carefully folded and sealed with paper adhesive tape, to prevent leakage, and stored until processed in the laboratory. When a field or portion of a field is under suspicion or shows symptoms of infestation, it is advisable to inspect it intensively. This is accomplished by dividing the field into smaller blocks and collecting samples at intervals of four or two paces, in which case four or sixteen times as much soil is obtained per acre by the eight pace method. Field survey work can be performed at times when the ground is not frozen, too wet, or when crops do not interfere.

Grader sampling consists of the collection of soil that has accumulated under the potato grader, under the loading belt, in the storage bin, or in any location where potatoes are concentrated in quantities. It is found generally that such debris has a high content of potato vines, sticks, stones, potato skins, and other extraneous offal. Care is taken to exclude this type of debris, in other words, as much soil as possible is secured. In cases where large quantities of soil are available, it is desirable to obtain two or more samples. Each bag is filled to a depth of four to five inches and the top folded and sealed with tape. The bags are given a collection and sample number which will clearly indicate the location of the grader or storage house and date collection was made.

Following the collection, the soil samples are processed in the laboratory by a soil washing method to determine the presence or absence of golden nematode cysts.

The method of examining potato roots may be used to advantage under certain conditions. Fields are looked over carefully and patches showing plants with weak spindly stems and stunted tops are selected. Examinations also are made around buildings or where grader debris has been disposed of on fields. The plants are carefully removed from the soil and the roots examined for cysts. A 10X hand lens is helpful. The work is limited to a period of about two weeks when the swollen female has emerged, but has not become detached from the root. The cysts can be seen about the time blooms appear on the potato plants.

In consideration of the characteristics and potentialities of dissemination, every reasonable precaution should be taken to prevent the spread of this organism. Vehicles assigned to survey should not be permitted to enter any property. They should remain on paved highways or recognized thoroughfares. Trowels must be free of soil collecting recesses and grooves, and brushes should be provided for the cleaning of inspectors' shoes after leaving fields or potato storage houses. It is advisable for inspectors to wear trousers free of cuffs. Vehicles used on survey must be cleaned periodically by washing and should be kept free of soil at all times. Vehicles used in connection with infested properties must be steam cleaned prior to use on non-infested lands.

Further details on the survey and soil processing methods are contained in "Manual of Survey and Laboratory Methods Used by Golden Nematode Control," a copy of which may be obtained by writing to the Golden Nematode Control Project, P. O. Box 96, Hicksville, L. I., New York. (J. F. Spears).

### SWEETPOTATO WEEVIL

Surveys are made to determine the presence and extent of sweetpotato weevil (Cylas formicarius elegantulus) infestations. The methods consist of visual inspection of sweetpotatoes that are usually found in one or more of the following locations:

1. Post harvest crop remnants, including crowns and vines, left in fields.
2. Storages, packing sheds and processing plants
3. Plant beds and mother rows after abandonment by growers.

Primary inspection consists of the examination of the surface of sweetpotatoes for weevil emergence holes, egg, and feeding punctures, and if found, potatoes are dissected for possible recovery of specimens, of which immature stages predominate. The effectiveness of inspection in relation to location may be considered as 1, 2, 3, as listed above, but weevil population abundance usually occurs about October in the principal sweetpotato growing states. (M. S. Yeomans).

### TOMATO FRUITWORM

Surveys are conducted weekly from late June to late August in the tomato-growing areas of Utah to determine the expected populations of tomato fruitworm (Heliothis armigera). Eight samples, each sample containing 25 compound leaves, are taken at random in each of two fields in the various tomato-growing localities. A total of sixteen to twenty fields over the entire tomato-growing area are surveyed. Each sample is taken by beginning either at the top or the bottom of a branch and examining both sides of all the leaves for tomato fruitworm eggs. Leaves containing eggs are removed from the plants and the eggs examined under a hand lens to determine definitely if they are tomato fruitworm eggs. The number of fruitworm eggs is then recorded per one hundred leaves. With this information as a basis the average number of eggs per one hundred leaves is estimated for the entire tomato-growing area each week.

It has been determined in Utah that the presence of an average of one egg per one hundred leaves anytime during the period of fruit setting will result in 2 to 5 percent wormy tomatoes, which is sufficient to justify control measures. (W. E. Peay).

### ONION THRIPS\*

The following method <sup>1/</sup> is used at the Twin Falls, Idaho, laboratory of the Truck Crops and Garden Insects Section for the determination of thrips populations on onions in experimental plots:

\*(Thrips tabaci)

<sup>1/</sup> Shirck, F. H. Collecting and Counting Onion Thrips from Samples of Vegetation. Jour. of Econ. Ent. 41:(1) 121-123.

Samples of onion plants are gathered and enclosed in cardboard tubes having an inside diameter of 5-1/8 inches and a height of 7 inches. The tube has a cloth top glued in place and is provided with a slip-on metal cover to close the open end. The individual sample consists of 10 onion plants, which are cut off just above the ground. The plants are placed in the tube with the butt ends against the cloth top, and the portions of the leaves projecting beyond the cylinder are cut off squarely. If thrips populations are being determined from onion seed-heads, a sample of five heads is used and the same procedure followed as for onion plants. Separation of the thrips from the sample is accomplished by drying it at 115° F. for 24 hours. Before drying, the slip-on lid is replaced by a metal funnel having a 1-inch vertical band around its top to provide a close fit with the cardboard tube. The funnel is attached through a cork to a small jar containing a 0.5-percent solution of formalin. After exposure to the 115° temperature, the thrips leave the sample and fall into the formalin solution, from which they are later strained and counted. The formalin acts as a preservative to prevent the thrips from attack by molds in case the counting is delayed. The strainer, which also serves as a counting device, consists of a piece of black cloth cemented to a metal ring of convenient size to be used under binoculars. Guide lines 3/8 inch apart are stitched on the black cloth with white thread. Before beginning the counts, the black cloth is pressed firmly on an absorbent cloth to draw out the excess moisture remaining in the cloth. In field experiments one sample of 10 plants, or 5 seedheads, per plot has been used to evaluate the results of control applications. (F. H. Shirck)

### WIREWORMS

A survey method for determining wireworm (Elateridae) populations as a basis for biological and control studies has been developed for the irrigated lands of the Pacific Coast States. This method in modified form could be used to determine almost any wireworm population wherever the wireworms can be separated from the soil by screening. It can also be used by farmers to determine how many wireworms are present in a field before planting, and thus serve as a guide in avoiding damage to susceptible crops or indicating the necessity of using soil insecticides to reduce the infestation.

A simple portable soil sifter 1/ can be made from a piece of 1/4 inch spring steel about 36 inches long, with a quarter twist near the base, and fastened into the long arm of a T-shaped base of 2x6 inch wood plank. A suitable cross arm of same steel with a bend in the ends is welded to the top of the upright to hold screen frames. Frames can be about 24 inches square made from 3/4 x 3 inch wood, with ordinary hardware screen (4-mesh) or window screen (12-mesh) tacked on tightly.

The method in brief comprises the digging of at least 20 random test holes per plot, or per acre, with a 6-inch post hole digger to a depth of one foot. The soil from the 20 test holes, collected in pails, is passed through the coarse 4-mesh screen onto the 12-mesh screen where the shiny yellow wireworms are readily separated, counted, and kept for species identification.

The data can be arranged in the following classification for comparative purposes, based on the potential damage that wireworms can do to field and truck crops:

Infestation or Damage	No. of wireworms per 20 post-holes	No. of wireworms per cu. ft. (approx.)	Rating
Non-economic	0	0	0
Light	1-3	Less than 1	1
Moderate	4-8	1	2
Heavy	9-19	2	3
Severe	20 or more	4 or more	4

The above infestations would apply to a number of row crops, such as sugar beets, beans, peas, carrots, onions, lettuce and grains. In case of hill crops, such as corn, melons and potatoes, these infestations would cause more damage because of the wireworms concentrating in the hills. This is especially true of potatoes where the tubers stay in the ground for a longer time subject to feeding by wireworms. Sometimes even though a zero population is indicated by this method there may be considerable damage to harvested tubers. If any wireworms are suspected to be present in a field, it should be avoided for the growing of potatoes or else treated to kill the wireworms first.

Methods of sampling soil for wireworms are also described by Jones <sup>2/</sup>. (Truck Crop and Garden Insects Section).

### BEET LEAFHOPPER

Spring surveys are made annually, generally during April, to determine the abundance and distribution of overwintered beet leafhoppers (*Circulifer tenellus*) and their principal wild host plants in representative spring breeding areas in southern Idaho and eastern Oregon. To measure leafhopper abundance, 50 samples are taken at random at 3-mile intervals along the routes traveled where wild host plants occur. The counts are made with the Hills' <sup>3/</sup> square-foot sampler, which traps the insects in a cage. The kind, stand, and condition of wild host plants are recorded. The population is expressed in the number of leafhoppers per sample or per 100 square feet of weed-host area.

Beet leafhopper counts are made in sugar-beet fields with the square-foot sampler. The samples, which include more than one plant in unthinned fields but single plants in thinned fields, are taken at random along the beet rows. Generally, 100 samples are taken in each field - 25 samples in each quarter. The average population of leafhoppers is expressed in the number per sample or per beet plant.

Surveys are made in September to determine the magnitude of fall populations of the beet leafhopper in Russian-thistle areas and the extent and location of such thistle areas in southern Idaho and eastern Oregon. The transect method of recording plant cover is used to determine the acreage of Russian-thistle. Records are kept of miles traveled and the miles of Russian-thistle observed on each side of the road. The approximate number of square miles of Russian-thistle with each area is determined by means of the following formula:

$$\frac{\text{Transect miles of thistle}}{\text{Transect miles}} = \frac{x(\text{thistle area in square miles})}{\text{Total area in square miles}}$$

Quantitative samples with a 1/2-square-foot sampling fork <sup>4/</sup> is used in determining the population of leafhoppers. Ten fork samples are taken at each stopping point, the number of stops depending upon the area and condition of the Russian-thistle. At each stopping point, the Russian-thistle stand is determined by means of the pacing method. This consists of taking 250 double paces through the host-plant area. The number of living plants touched by the toe of the right foot in moving through an area is counted, and from this figure the percentage stand is calculated, e. g., if there were 125 living plants touched by the toe of the right foot in moving 250 double paces the stand is 50 percent. The condition and height of the thistle are recorded. From this information, the areas of Russian-thistle are computed and corrected to a 100-percent stand. By using the average density of leafhoppers

<sup>2/</sup> Jones, E. W. 1937. Practical Field Methods of Sampling Soil for Wireworms. Jour. Agr'l Res., 54, (2), pp. 123-134. ill.

<sup>3/</sup> Hills, O. A. 1933. A New Method for Collecting Samples of Insect Populations. Jour. Econ. Ent. 26: 906-910.

<sup>4/</sup> Lawson, F. R., D. E. Fox, and W. C. Cook. 1941. Three New Devices for Measuring Insect Populations. Bur. of Ent. and Plant Quar. ET-183.

per unit-area and the acreage of thistle, the approximate number of leafhoppers can be determined. As an example, if Russian-thistle occupied an average of 54 percent of each acre examined and if the thistle plants were infested on an average by 57 beet leafhoppers per square foot of land surface occupied, on this basis there would be approximately 1,340,000 beet leafhoppers per acre. This survey gives the acreage of Russian-thistle and the size of the fall population of leafhoppers in the summer breeding areas. The principal breeding areas of the beet leafhopper in the western states have been located and delimited, and the surveys are confined to these areas.

Information obtained from these surveys, together with other pertinent factors, provides the basis for the issuance of statements on beet leafhopper conditions for southern Idaho to growers and other interested persons or agencies. (J. R. Douglass)

#### BEET LEAFHOPPER SURVEY USING A STANDARD SWEEP NET

While a sweep net is not considered as accurate as some other methods of survey for beet leafhopper, it is considered faster and it is believed its use will permit a practical estimate of leafhopper populations in a given area.

In using a sweep net, similar in form and size to a standard butterfly collecting net, three important factors must be considered: (1) weather, (2) condition of the host plant, and (3) type of host plant.

With respect to the weather, leafhoppers are not particularly active in temperatures below sixty degrees, lower temperatures forcing them close to the ground where they would be difficult to pick up with the net. Wind also will cause leafhoppers to remain well within the protection of the host plant. In either case it would be difficult to pick up a true representative population with a net and collecting should be avoided under such conditions.

With respect to the condition of the host, the latter may on occasion be quite dry in which case concentrations are forced onto the greener plants which should then be made the object of sweeping.

The manner of sweeping depends on the type of host plant involved. In the case of mature Russian-thistle and perennials, as normally encountered in the fall, survey is based on the number of hoppers recovered in a single sharp ninety degree sweep of the net. On the smaller winter annuals, three foot sweeps of the net made rapidly back and forth as close to the ground as possible, usually in multiples of ten, twenty-five or fifty sweeps, are followed. The number of leafhoppers thus recorded is based on the average number per sweep in relation to the number of sweeps made.

In general practice, survey is accomplished by sweeping at one-quarter to one-half mile stops throughout favorable-looking areas. Excepting where a single sweep is used on mature thistle and large perennials the usual practice is to take ten sweeps. However, if the population of leafhoppers is exceedingly low, as many as fifty sweeps may be used for each check. Where using ten sweeps, it is customary to make at least ten such unit checks at each location.

Generally speaking an average of five leafhoppers per ten sweeps is considered the minimum economic population meriting treatment. However, under certain conditions an average of two or three leafhoppers per ten sweeps over a large area can produce damaging numbers.

During the spring, survey is restricted to warm knolls having a southern exposure with sparse growth favorable to development of the spring generation. Sweeping in such areas in addition to determining the need for treatment is later made to check the time and extent of the spring flight back into the agricultural areas based on the number of female leafhoppers in such areas at the time of checking. Such survey is usually made by using the ten-sweep unit, sweeping as close to the ground as possible. (H. Green, California Dept. of Agri.).

### POTATO PSYLLID

To determine the abundance of potato psyllid (*Paratrioza cockerelli*) populations, adult counts are made in approximately 10 potato fields per county, selected at random and examined at one-to-two-week intervals during the growth of the plants.

Potato psyllids are most numerous near the edges and progressively diminish in numbers toward the center of the potato fields. Adult counts are made with a 15-inch insect net, of unbleached muslin. Starting at one edge of the field and working toward the center along the rows, fifty sweeps are taken at intervals of about one pace. The net is swept briskly across the tops of the plants, covering approximately two-thirds of the net opening with the tops of the plants. Sampling is continued toward the center of the field, in units of 50 sweeps, until 2 to 4 units of samples are obtained, depending on the size of the field. Counts are recorded in numbers of psyllids per 100 sweeps.

Although survey records are based on adult counts, egg and nymph counts may be made, if desired, by taking 50-leaflet samples at the same location that the adult counts are made. One leaflet is taken from near the center of each of 50 plants. The leaflets are examined in the laboratory under a low magnification lens and the eggs and nymphs are recorded in numbers per 50 leaflets. (R. L. Wallis)

### APHID POPULATIONS ON POTATOES IN THE NORTHEAST

Populations of aphids in northeastern Maine are determined at intervals on potatoes receiving no insecticidal treatment and on potatoes treated commercially for the control of insects. In this area the potato plants usually are infested by winged and wingless forms of four species of aphids (buckthorn, green peach, potato, and foxglove aphids). The wingless forms -- ordinarily by far the more numerous on the plants -- cause direct feeding damage to the potato plants and also serve as vectors for certain virus diseases of potato. The winged forms are often of more importance than the wingless forms in spreading the virus diseases within and between fields of potatoes, and they also colonize plants in widely separated parts of the field. One species of aphid may be of greater importance than another as a vector of certain of the virus diseases and, because of size differences, in causing direct feeding damage to the potato plants. Therefore, in all aphid population counts, a record form is used to show the number of each species found on each sample unit.

Number and location of sample units: Experience has shown that it is not practical to determine aphid populations in an entire potato field. Consequently, the sample units are limited to one square acre in each field of commercially-grown potatoes examined. One hundred sample plants are located mechanically at random over the acre by a screen-grid method.

Unit and sub-units of sample: 1/ Early in the season, when plants and aphid populations are small, the entire hill is examined. After the plants are about 8 inches high the examinations are confined to 3 leaves on each sample plant. The leaves are examined in situ, care being taken not to disturb the aphids. One leaf is located at random within each of the top, middle, and bottom thirds of the plant. Later, if larger numbers of aphids develop, only the terminal and the 2 basal (lateral) leaflets of each leaf in each of the 3 standard positions are examined. Typically, potato leaves have 7 leaflets -- a terminal and 3 pairs of laterals. If still later even larger numbers of aphids develop, the sub-units consist of only half the area of these 3 leaflets in similar positions. All the leaf area on one side of a midrib of a leaflet constitutes a half leaflet. Detailed studies have shown that this is a valid sampling procedure. These half-leaflets are chosen so that 50 percent of them are on one side of the leaflet midrib and the rest on the other. For any one sample plant, however, the same side of the midrib for all 9 of the half leaflets is used.

1/ Abstracted from pages 9-10 of Bul. 480, Maine Agr. Exp. Sta., Control of Aphids on Potatoes with DDT when Used with Fungicides, by W. A. Shands, G. W. Simpson, P. M. Lombard, R. M. Cobb and P. H. Lung.

Expressing aphid populations: Populations are stated in terms of the average number of aphids of each species per plant. Winged and wingless forms are recorded separately. Except when the entire hill is used as the unit of sample early in the season, the number of aphids determined as the average is the average of those found on 3 whole leaves per plant. When the sub-unit consists of leaflets 1, 4, and 7, the 3-whole-leaf basis is approximated by dividing the average (for the 1-4-7-leaflet basis) by 38.1 and multiplying by 100. This formula was derived from a study of aphid distribution on potato leaves. Likewise, the 3-whole-leaf basis is approximated for counts involving sub-units of one-half of leaflets 1, 4, and 7 by using 19.05 as the factor instead of 38.1.

Information from surveys following this procedure permits comparisons between aphid populations at different locations as well as between the populations of the four species of aphids involved. Because of differences in growth habits of different potato varieties, population comparisons between varieties and between years may be of less value. When made at regular intervals throughout the season in the same locations the counts indicate locality differences in rates of population increase. Actual aphid populations per plant--when sub-units of sample are involved--can be approximated by multiplying the averages for the 3-whole-leaf basis by one-third of the average number of leaves per stalk and that by the average number of stalks per hill. (W. A. Shands and G. W. Simpson).

#### APHID POPULATIONS ON POTATOES IN THE NORTHWEST

Only the green peach aphid (Myzus persicae) occurs in sufficient numbers to cause direct feeding damage to potatoes in the intermountain area of the Northwest. The extent of overwintering is indicated by the number of eggs found per six inches of twig in 25-twig samples taken from each of four peach orchards in February. At this time the location of 100 eggs is marked on the trees and the start of hatching and 50 and 100 percent of hatch is determined by examining those eggs every two weeks.

The start of aphid flight in the spring, and the seasonal intensity of flight from May to October, is determined from twice-weekly examinations of four, or more, Moericke-type traps which are placed at ground level near potato fields. This trap consists of an aluminum stew pan 8 inches wide and 2 1/2 inches high. Chrome-yellow enamel paint is applied to the inside of the pan to within one inch of the top. A quart of water in each pan serves as a trapping medium. The aphids are removed for identification and counting by pouring the water through a fine-mesh wire screen funnel.

Starting when the potato plants are four inches high, and continuing at approximately 14-day intervals until the early crop is harvested or the late-crop plants are frosted, 50 compound leaves are picked at random one leaf per plant - from the base of the plant in four fields of approximately the same planting age. Three categories of aphid abundance are obtained from the trap or leaf-sample examinations.

<u>Classification</u>	<u>Number of winged aphids per trap (3-4 day collection)</u>	<u>Number of wingless aphids per 50 compound leaves of potato</u>
Light	0 - 10	0 - 50
Moderate	11 - 100	51 - 500
Heavy	101 - 1000 plus	501 - 2000 plus

(B. J. Landis, E. W. Davis and K. E. Gibson)

## PEA APHID

Three methods are commonly used in measuring pea aphid (Macrosiphum pisi) populations, the choice of method depending upon the host plants and size of the aphid population.

Sweepnet counts: The sweep net is used in very low aphid populations, such as occur in alfalfa late in the summer, or in peas just after the spring movement from alfalfa. A standard 15-inch collecting net is used, and a brisk sweep of about 3/4 of a circle is taken. (Two sets of samples are taken in representative parts of each field.) In taking a series of sweeps, the operator moves forward one or two steps at each sweep, to encounter previously undisturbed foliage. A few exploratory sweeps are taken to determine the size of sample. In general, a sufficient number of sweeps should be taken to collect from 50 to 100 aphids, but in very low populations this may not be possible, and under these conditions a sample of 25 or 50 sweeps should be taken.

Board Counts: These are used in general survey work, on moderate to high populations of pea aphids. The board is a thin piece of board about 10 x 18 inches in size, containing an area 6 x 12 inches that is marked off into smaller squares. The board is held below and to one side of the tips of a row of pea plants, and the aphids on the plants dislodged by shaking the plants with the free hand. Only the aphids which fall inside the marked portion of the board are counted. In very high populations, the aphids are counted only on alternate squares, in checkerboard fashion. Ten randomly distributed board samples are taken from each field or station.

Tip Counts: This type of count is used in general survey work on moderate to high populations. The operator walks across the field holding an open paper sack in one hand and picking tips at random with the other hand. The tips are from 4 to 6 inches long, and are picked with a twisting motion of the hand so that the tip, when severed, is held over the open palm, to catch any aphids that may be dislodged. The tips are dropped into the paper bag, which is then closed and stapled, and taken to the laboratory for counting. At the laboratory the bags are placed in a large container and fumigated with a few cc. of methyl-iso-butyl ketone for about 10 minutes. This makes the aphids loosen their hold on the plants. The contents of the bags are then shaken over a 4-mesh screen so that the aphids drop through and the plants remain. Flat black or white boards may be used to catch the aphids for counting. As with the sweep net, the number of tips per sample is varied with the aphid population. Two 50-tip samples are needed for populations much lower than 1 aphid per tip, while two 5- or 10-tip samples is sufficient for aphid populations higher than 10 per tip. It is generally difficult to count more than 300 to 500 aphids per sample, and the number of tips per sample should be reduced in high populations to give about this total number of aphids.

Correlation of Methods: Because of the varying conditions under which the above methods are used ordinarily, a close correlation is not possible. However, in general on alfalfa a population of 1 aphid per tip is about equal to 30 aphids per sweep. On peas, a population of 1 aphid per tip is about equal to 3 to 4 aphids per board or per sweep. (W. C. Cook)

### Populations of Potato-Infesting Aphids and of Aphid Eggs on Primary Hosts in Maine

Since 1942 a study of the populations of winged and wingless aphids and of aphid eggs on the more important primary hosts of three species of potato-infesting aphids in northeastern Maine has been in progress. The potato-infesting species included in the study have been the buckthorn aphid (Aphis nasturtii Kltb. (=abbreviata Patch)), the green peach aphid (Myzus persicae) and the potato aphid (Macrosiphum solanifolii). The more important primary hosts of these aphids, respectively, are alder-buckthorn (Rhamnus alnifolia) Canada plum (Prunus nigra) and wild roses (Rosa spp., chiefly swamp rose, R. palustris).

During the course of this study some methods have been devised and tested which appear to provide estimates of populations of the aphids and of aphid eggs on the more important primary hosts. Some of these methods appear to be suitable while others are not entirely satisfactory. All can doubtless be improved upon. An outstanding result of the study has been the realization that except in the instance of the buckthorn aphid, fall and spring surveys of aphid egg abundance are of much reduced value without a knowledge of the size and composition of the fall aphid populations on the primary hosts. A knowledge of population trends of the aphids on these hosts in spring is also of value in anticipating the probable time and size of the spring migrations since the operation of many factors may tend to change the outlook for size of the spring migration.

### Populations of the Aphids

The potato aphid: One hundred randomly located units are examined in determining the size of potato aphid population at each observation station of wild roses. Depending upon time of year and stage of plant growth three units of sample are employed. Two of these are used in the spring and the other one in the fall. Both units in the spring are located on the terminals of limbs, branches, or stems of the plant. The early-season unit is all new growth on the terminal 6 inches at these places on the plants. This unit is used from the time the eggs begin to hatch until the young leaves begin to unfold. From then until the spring migration of the aphid is complete the unit is all new growth on enough buds at branch or stem terminals to make a total of 6 inches of new growth. Records for each unit include the number of buds examined having new growth, the number of buds infested by the potato aphid, and the total number of potato aphids found. These data are essential in comparing potato aphid population sizes at different places, and in determining population trends at any one place. Aphid populations are expressed as (1) the average numbers of winged and of wingless potato aphids per unit, per infested unit, per bud or new growth from single buds, and per infested bud; and (2) the percentage of infested units or buds.

The whole compound leaf is the unit of sample from the start of the fall migration until fall breeding is complete. Fall populations of the potato aphid are expressed as the average number of potato aphids per leaf and the percentage of leaves infested. After the leaves begin to fall an estimate is made of the percentage of leaves still attached.

The green peach aphid: Populations of the green peach aphid on Canada plum are determined (1) at the spring peak of abundance of aphid colonies, and (2) from the beginning time of the fall migration until all of the leaves have fallen. The determination in spring is made at the time when the spring migration of the green peach aphid is at the peak, usually about the middle of June. This determination is based upon (1) the number of aphid colonies observed by two workers concurrently searching, for the same unit of time (usually 10 minutes), in separate parts of the same plum thicket, and (2) collections of a representative number of the colonies found. The workers must know how to recognize at a glance the presence of an aphid colony, as well as the locations and types of growth most likely to be infested. Examination of the collected specimens is made with a binocular microscope to determine the number of colonies containing the green peach aphid only, and the number with species in addition to the green peach aphid. Abundance of the aphid is expressed as the average number of aphid colonies found per minute of observation, the percentage of colonies infested only by the green peach aphid, and the percentage of green peach aphid colonies also containing other species of aphids.

Fall populations of the aphid are determined by examining 100 randomly located leaves on plants of Canada plum in each thicket. Once the leaves begin to fall, an estimate is made of the percentage of leaves still attached to the plum trees. Fall populations of the aphid are expressed as the average numbers of winged and of wingless forms per leaf and per infested leaf.

The buckthorn aphid: Populations of the buckthorn aphid are determined on alder buckthorn from the beginning time of the fall migration until fall breeding is complete or until the apterous forms become so numerous that extensive movement of the aphid occurs over the plants. After the foliage begins to drop records are made to show the percentage of leaves still attached. At each location a count consists of examining 100 randomly-located, attached leaves. The population is expressed as the average numbers of winged and of wingless buckthorn aphids per leaf and the percentage of leaves infested.

Because of the small size and the breeding habits of this aphid, no satisfactory method has been devised to determine spring populations of the buckthorn aphid on its primary host. Some indication has been obtained at the spring peak of aphid abundance by examining for aphids all new growth of three or four terminal buds at the tips of branches or stems. Population size is expressed as average number of colonies per branch or stem terminal and the percentage of terminals infested.

### Populations of Aphid Eggs

Populations of aphid eggs on the primary hosts are determined semi-annually, in the fall after egg deposition is complete and again in late spring just before hatching starts. These times usually are early in November and late in April.

Canada plum and alder-buckthorn: Nine bunches of 10 twigs each are randomly cut from branch or stem terminals in 9 separate sections of each thicket of Canada plum or patch of buckthorn. The terminal 9 buds on each twig are then examined in the laboratory with the aid of a binocular microscope to determine the number of aphid eggs by each bud. Records by bud position or number are made to show for each the number of fully distended and the number of shrivelled eggs found. An egg is considered as being shrivelled if it is not perfectly distended. Populations are expressed as the average number of each kind of eggs per 100 buds.

Wild roses: Examinations of wild roses for aphid eggs are made in the field with the aid of a reading glass and a hand lens. Two units of sample are employed in each rose patch, viz., the terminal 9 buds on each of 30 randomly located branch or stem terminals, and 270 individual crotches of branches and limbs. Records are made to show by bud position or crotch number the numbers of fully distended and shrivelled eggs. An egg is considered as being shrivelled if it is not perfectly distended. Populations are expressed as the numbers of fully distended and shrivelled eggs per 100 buds or crotches.

### Location of Sample Units

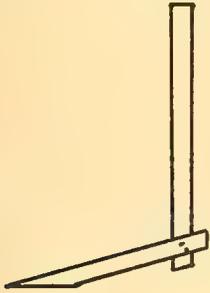
Random location of sample units in all of these procedures is essential, both vertically on the plants and to include all parts of the area covered by the host at each station. The results of some observations of the potato aphid on swamp rose illustrate the importance of random sampling in any effort to compare between locations, populations of the aphid or of aphid eggs. Equally important considerations are involved for other species of aphids on their primary hosts.

In the fall the potato aphid is more abundant on yellowing leaves than on green ones. Yellowing leaves are usually more abundant inside and near the base of the plants than at branch or stem terminals or outer parts of the plants. In the spring the aphids breed most commonly at the tip of new growth, irrespective of location on the plant. Frequently, the populations are larger than elsewhere on young rose shoots near the base of the plant and inside the rose patch. Populations of the eggs and of the aphids are larger, both in fall and in spring, on rose plants growing inside hedgerows or narrow bands of trees than on similar plants growing outside or in unprotected places. The composition of the aphid population and of the aphid eggs may vary tremendously on rose plants within a small patch that appears to be very uniform as to sameness of environmental conditions. (W. A. Shands and G. W. Simpson).

### WESTERN BEAN CUTWORM

The examination of beanfields for western bean cutworm (*Loxagrotis albicosta*) should first be directed toward the detection of holes in the pods by the larvae and, second, if they are found, toward the cutworm itself. Since other insects eat similar holes in the pods, the larvae must be found for positive identification of its presence. If the beans have not been cut, an examination should be made of 100 feet of row located in the center of the field and 100 feet of row located near the approximate center of each quarter of the field, involving the examination of a total of 500 feet of row per field. To facilitate turning the vines and exposing the pods, a

vine lifter could be used to advantage. (see diagram). The handle is made from 1-5/8 x 3/4" lumber and is 39 inches long. The blade is made from 1-1/4 x 3/8" lumber and is 17 inches long. If holes are noted in the bean pods, the plants should be slapped so as to knock any larvae that may be on the plants into the middle of the row. The soil under the plants should also be examined for these larvae, since they often burrow into the soil around the plants. If the bean plants have been cut and windrowed or shocked, an examination should



be made of 20 feet of windrow in the center of the field and 20 feet located near the approximate center of each quarter of the field, involving the examination of 100 feet of row per field. In examining the vines, they should be raised, shaken, turned, and placed to one side. Larval pellets are dropped on the soil-surface, and when they are observed either under the plants or windrows, the larvae are generally readily found. For the distribution and description of the insect see the article by J. L. Hoerner, "The Cutworm Loxagrotis albicosta on Beans," Jour. Econ. Ent. 41(4): 631-635, 1948. (J. R. Douglass).

### PEA WEEVIL

Since pea weevil (Bruchus pisorum) populations in infested pea fields are most often concentrated in a narrow zone around the edges, especially in larger fields, it is frequently unnecessary to apply control measures to the entire planting. Parts of the field that require dusting may be determined quickly and accurately by making adult counts through use of a 15-inch net. Sweepings are made soon after the first blossoms appear and before controls are applied. The inspector goes into the field in several places on each of the four sides or at intervals in an irregularly shaped field. Two or more 25-sweep collections are made at each selected location (beginning at edge of field or 100 feet inside the margin), with strokes across the upper parts of the vines spaced at one or two paces. As each collection is completed, weevils are counted and number and location recorded on a rough diagram of the field. Inspection progresses at 100-foot intervals toward the center of the planting until no weevils are found. In peas grown for seed, survey is made toward center of the field to the point where weevil number falls below the economic level.

Due to influences such as weather and time of season, it is impossible to accurately establish an expected infestation rating resulting from a given number of weevils, as determined by sweeping, in an average field of peas. Weather has an important effect on both yield and weevil activity. The same number of weevils produce a greater infestation in late varieties than in early varieties. A population of 5 weevils per 50 sweeps may cause infestation at the canning stage of 1 to 2 percent in early varieties, whereas the same population may cause infestation at the same stage of 10 to 25 percent in varieties blooming after June 15. An infestation of 1 weevil in 25 sweeps on the growing plants at time of blooming causes from 3 to 8 percent infestation in peas harvested for seed.

In making this survey particular attention is given to areas in the field most likely to be severely infested including borders adjacent to wooded or brushy areas, buildings, ravines, gullies or any area where the first peas blossomed. After the initial inspection, fields are rechecked 18 to 24 hours after dusting to determine the effectiveness of the control operation. (The Pea Weevil and Methods for Its Control, Farmers' BuI. No. 1971, U.S.D.A.)

## COTTON INSECTS

The following suggested methods for making uniform cotton insect surveys were formulated at the Cotton Insect Research and Control Conference held in Memphis, Tennessee, December 7-9, 1952.\* It was agreed at the conference that these methods are not final but would serve as a guide in the development of standardized survey procedures.

### Boll Weevil

Survey records are made in a number of States to determine winter survival of the boll weevil. Counts are made in the fall soon after weevils have entered hibernation and again in the spring before they emerge from winter quarters. A standard sample is 2 square yards of surface woods trash taken from the edge of a field where cotton was grown during the season. At least five samples are taken from a location.

In the main boll weevil area, population counts are made on seedling cotton to determine the number of weevils entering cotton fields from hibernation quarters. The number per acre is figured by examining the seedling plants on 50 feet of row in each of five representative locations in the field. Additional counts are desirable in large fields.

Examinations for boll weevils are made weekly after the plants are squaring freely or have produced as many as three squares per plant. While walking diagonally across the field pick 100 squares. They should be one-third grown or larger, and an equal number should be picked from the top, middle, and lower branches of the plants. Squares from the ground or dried-up squares that are hanging on the plant should not be picked. The number of squares found to be punctured is the percentage of infestation.

An alternative method is to inspect about 25 squares in each of several locations distributed over the field. The number of sample counts will depend upon the size of the field and the surrounding environment. Accurate infestation records in large fields will require additional counts in different parts of the field. The percentage of infestation is determined by counting the punctured squares.

In both methods, all squares that have egg or feeding punctures should be counted as punctured squares.

### Bollworm

Examinations for bollworm eggs on cotton should be started when most of the corn silks in the area begin to dry, or at the time bollworms usually appear. Examinations should be repeated every 5 days if possible thereafter until the crop has matured.

While walking diagonally across the field, examine 100 main-stem terminals (about 3 or 4 inches of the top of the plant) for eggs and worms. If eggs are found on the terminals and 4 or 5 small larvae in the small squares or on the tender top leaves, the infestation is sufficiently heavy to start treatment. Insecticides should be applied at 5-day intervals as long as necessary.

To determine injury, inspect 100 bolls and 100 squares while walking diagonally across the field and compute the percentage of injury for each. The boll-injury record is the most indicative of existing or occurring damage.

In an alternative method of estimating bollworm damage make observations while walking diagonally across a field. The degree of injury may be recorded as follows:

None, if no damage is observed.

Light, if only a few squares and bolls show injury.

Medium, if injured squares and bolls are readily noticeable over most of the field.

Heavy, if numerous injured squares and bolls are noticed over the field.

\* Rev. by Cott. Ins. Res. and Cont. Conf., December 14-15, 1953.

Cotton Aphid

To determine early -season aphid infestations, while walking diagonally across the field make observations or inspections of many plants. Degrees of infestation may be recorded as follows:

None, if none is observed.

Light, if only a few aphids are found on an occasional plant.

Medium, if aphids are present on numerous plants and some of the leaves show a tendency to curl along the edges.

Heavy, if aphids are numerous on most of the plants and if the leaves show considerable crinkling and curling.

To determine aphid infestations on fruiting cotton, begin at the margin of the field and, while walking diagonally across it, examine 100 leaves successively from near the bottom, the middle, and the top of the plants. The degree of infestation, according to the average number of aphids estimated per leaf, may be recorded as follows:

None	0
Light	1 to 10
Medium	11 to 25
Heavy	26 or more

Cotton Fleahopper

Weekly inspections for the cotton fleahopper should begin as soon as the cotton is old enough to produce squares and be continued until the crop is set and begins to mature. About 3 or 4 inches of the top of the main-stem terminal of 100 cotton plants per field should be examined. Both adults and nymphs should be counted, the number per 100 terminals being recorded as the infestation for the field. The examinations should be made at several representative points diagonally across a field, 33 terminal buds being inspected approximately 50 feet from each of the 2 corners and 34 terminal buds at the center of the field.

Cotton Leafworm

The following levels of leafworm infestation, on the basis of ragging and the number of larvae per plant, are suggested for determining damage:

None, if no leafworms are observed.

Light, if 1 or only a few larvae are observed per field.

Medium, if 2 to 3 leaves are partially destroyed by ragging, with 2 to 5 larvae per plant.

Heavy, if ragging of leaves is extensive with 6 or more larvae per plant, or if defoliation is complete.

Pink Bollworm

Inspections to determine the degree of infestation in individual fields should be made as follows:

For infestation of blooms: Early in the season, make infestation counts when there is an average of at least one bloom for every four or five plants, but not more than one bloom for every two plants. Beginning at the margin, walk diagonally across the field and inspect several hundred blooms per field for those rosetted. The number of rosetted blooms should be recorded on a percentage basis.

For infestation of bolls: While walking diagonally across the field, collect at random 100 green bolls that are hard or firm when pressed. Examine each boll as follows: Remove the bracts and calyx by cutting off a thin slice of the base of the boll; cut each section of the boll midway between the sutures so that each lock can be removed intact; examine the inside of the carpel for the characteristic tunnels or mines made by the young larvae. The number of bolls found infested represents the percentage of infestation.

Other inspection techniques: There are other inspection methods besides those listed above that are most helpful in directing control activities against the pink bollworm. These make possible the detection of infestations in previously uninfested areas and the evaluation of increases or decreases in infestation as they occur in infested areas. They are also used to determine the population of larvae in hibernation and the survival or carryover of such larvae to infest the new cotton crop. These methods are as follows:

1. Inspection of gin trash: Procure freshly ginned "first cleaner" trash, which has not been passed through a fan, from as many gins as possible in the area to be surveyed. Maintain the identity of each sample of trash and examine it by separating mechanically all portions of the trash larger and all portions lighter in weight than the pink bollworm. A small residue is left which must be examined by hand. This method is extremely efficient for detecting the presence and abundance of the pink bollworm in any given area. However, it does not usually reveal the exact field or the percentage of field infestation.
2. Inspection of lint cleaner: This is another method for detecting the presence of the pink bollworm. The free larvae remaining in the lint during the ginning process are separated in the lint cleaners and a substantial number of them are thrown and stuck on the glass inspection plates of the cleaners. All larvae recovered from this method are dead. For constant examination at a single gin, wipe off the plates and examine after each bale is ginned. By doing this, the individual field that is infested may be determined. For general survey, make periodic examinations to detect the presence of the pink bollworm, in a general area.
3. Examination of debris: Between January and the time squares begin to form in the new crop, examine old bolls or parts of bolls from the soil surface in known infested fields to determine survival of hibernating larvae. Examine the equivalent of 100 bolls and count the living larvae. From these data the number of larvae remaining in hibernation at any given date may be determined. Such records when carried on from year to year provide comparative data which may be used in determining appropriate control measures.
4. Light traps: Especially designed traps using mercury vapor or black light fluorescent bulbs will attract pink bollworm moths. Such traps have been used to discover new infestations and their usefulness and value for survey work should be fully explored.

### Spider Mites

In making inspections for spider mite infestation, begin at the margin of the field and while walking diagonally across it examine 100 leaves or more taken successively from near the bottom, the middle, and the top of the plants. The degree of infestation, according to the average number of adult females estimated per leaf, may be recorded as follows:

None	0
Light	1 to 10
Medium	11 to 25
Heavy	26 or more

### Thrips

To make inspections for thrips infestations, begin at the margin of the field and while walking diagonally across it observe or inspect numerous plants. The degree of damage may be recorded as follows:

None, if no thrips or damage is found.

Light, if newest unfolding leaves show only a slight brownish tinge along the edges with no silvering of the underside of these or older leaves and only an occasional thrips is seen.

Medium, if newest leaves show considerable browning along the edges and some silvering is evident on the underside of most leaves and thrips are found readily.

Heavy, if silvering of leaves is readily noticeable, terminal buds show injury, general appearance of plant is ragged and deformed, and thrips are numerous.

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Not included in the conference report are several cotton insect survey methods which have been developed. Two of these methods follow:

#### Ground Trash Examinations for Boll Weevil (as conducted at Tallulah, Louisiana)

Since 1936 trash examinations have been made in the Tallulah, Louisiana area in both fall and spring -- during the fall to determine the number of boll weevils entering hibernation; and during spring, the number which have survived. The so-called fall examination is usually made during the latter part of November and early December, or after temperatures which have forced weevils into hibernation. The spring examination is usually made during the latter part of February and early March. In making the examinations, ten 3 x 6 foot samples of surface trash, including about an inch of the topsoil, is carefully scraped up and placed in a bag from each location. The locations are selected near the edges (within 50 feet) of fields planted to cotton during the previous season. Approximately 20 locations, or fields, are sampled during both the fall and spring examinations. The samples are brought to the laboratory where they are run through a machine which is a modification of a soil sifter. This device divides the trash samples into three fractions: (1) very coarse material, consisting of leaves, twigs, etc.; (2) intermediate-sized particles of trash; (3) very fine material. The weevils are found in the intermediate sample. (Cotton Ins. Sec.).

#### Methods of Surveying for Pink Bollworm (as used by Pink Bollworm Control Project, PPCB)

The inspection of cotton for pink bollworm falls under four types or methods: the inspection of Blooms, Bolls, Debris, and Gin Trash. Each method yields information of a definite nature on the spread and intensity or build-up of the infestation at a certain point or period in the season, such information being the basis for quarantine and control measures.

Bloom Inspection: The method employed with this type of inspection is to make counts of the noninfested blooms and the infested blooms in a given field or part of a field, thus enabling the working out of the percent of infestation. With some experience, the inspector is readily able to detect the infested blooms by their rosetted appearance. Under usual conditions the rosetted, or infested, bloom remains closed, with the outer edges of the petal flared, after the noninfested bloom is open. By knowing the percent of the blooms infested, information is gained which indicates the previous winter's survival and the probable severity of the infestation for the growing season ahead, thus, forecasting the need for control measures. A 5% infestation in the early blooms is considered as forecasting economic damage.

Boll Inspection: The inspection of green cotton bolls for pink bollworm is performed for several specific purposes, such as, to keep abreast with the increase or decrease in infestation, to obtain information as to the effectiveness of control measures, and to locate spread to new areas where the inspection of gin trash is not practical; also, boll inspection is used to determine late season build-up or spread after harvest of the crop has been completed.

The usual method employed in the inspection of bolls is to examine twenty bolls from five representative points in the field, usually near each corner and the center. The percent is found on the 100 bolls examined. Ten percent to 12 percent infestation early in the season will probably cause economic damage. To detect the early stage of the larva in the boll, the boll is carefully cut and examined, first by removing the bracts by cutting off a small layer from the base of the boll, then cutting lengthwise of the boll midway between the sutures in such manner that when the boll is opened the lock will be whole and unbroken and the partitions or carpel walls between the locks will be undamaged by the cutting operation. Examine the inter-carpel lining for the characteristic tunnels or mines made by the small worm. The number of bolls found infested represents the percentage of infestation. The newly hatched larva is very difficult to see, but the damage caused is more noticeable. It enters the green boll immediately after hatching and moves toward the locks and seed, leaving a small thread-like brown "railroad", or tunnel, as it moves or burrows its way along the inside of the carpel. These railroads are characteristic work of the pink bollworm and are readily detected by the experienced inspector. In the later stage the larva is usually easily detected not only by the damage caused, but the larva itself is normally readily found when the boll is opened. When opening the boll the later stages of damage are detected by noting the small round between the partition walls of the boll and the workings between the seed. If no damage is seen by this time the inspector does not generally cut the seed, but if damage is found, it may be necessary to cut the seed before actually locating the larva. A small round clean-cut hole is made in the outer wall of the boll only after the larva is mature and is preparing to leave the boll, or is preparing for moth emergence, where pupation takes place inside the boll which occasionally happens under certain climatic conditions. In late season the larva habitually seals itself inside a single seed or it pulls two seeds together to form "double seed." In the inspection of dry bolls or bollies, the method is much the same as the inspection of green bolls; however, this is late season inspection and the larva is expected to be mature, which makes necessary that more seed be cut in order to locate the larva sealed inside seed for weather protection during the overwintering stage. This type of inspection is done for the purpose of determining winter survival or mortality.

Debris Inspection: For inspection purposes debris is considered to be dry bolls, or parts thereof, consisting of pieces or parts of locks or seed cotton either on the soil surface or partly covered—this method also necessitates cutting considerable seed, and is conducted for the purpose of determining the effectiveness of stalk destruction and the effectiveness of different types of stalk cutters or shredders by determining the pink bollworm mortality. This method or type of inspection is also done for the purpose of determining winter carry-over in debris as compared to carry-over in bolls on the stalks or off the soil surface.

Gin Trash Inspection: A machine has been developed by the Pink Bollworm Project which aids in the inspection of gin trash. This machine employs screens and air cleaners to reduce the trash samples to a residue containing pink bollworm, if any, all insects contained in the cotton trash which are of comparable size and weight of the pink bollworm, plus a small amount of leaf stems, grass seed and small clods of dirt. This means that it is possible for the inspector to inspect trash representing cotton from a large number of bales and many different fields in the period of a day. The greatest value developed from this method is the quicker detection, at a lower cost, of an initial infestation of pink bollworm in an area not previously known to be infested. A secondary value of this method is to trace light infestations to individual fields. The inspection of gin trash is also a quick and economically sound means of obtaining comparative data from year to year showing the increase or decrease of infestations. Due to varying factors in the cotton cleaning machinery at the gins this method does not yield results which can be translated as percent damage in the field. (Welker and West).

## GYPSY MOTH

In determining the specific location, size and extent of gypsy moth (*Porthetria dispar*) infestations trapping and scouting surveys are annually conducted. Trapping surveys involve the use of sex attractant which is obtained by clipping the last two segments of the abdomen of adult virgin female gypsy moths into benzol to extract the attractant from the sex glands. At the 15-tip strength, traps attract male moths for distances up to 1/2 mile. The traps are placed in the field late in June or early in July and are visited approximately once each week during the entire flight season to freshen the tanglefoot placed on wax paper within the metal cylinder by combing and to remove moths that may have entered the trap and become lodged on the tanglefoot. Where the gridiron method is employed parallel lines are run through the forested areas by the use of a compass and the traps are normally placed at 7/8 mile intervals. In trapping along roadsides traps are placed one mile apart. This method of surveying extensive areas commenced in a largescale way in the summer of 1942 when a total of 7,282 traps were used in surveying 2,950,000 acres. Approximately twice this acreage was surveyed the following year and in the summer of 1950, 19,608 traps were used in surveying more than 7,193,600 acres.

Plans for scouting are principally based on the results of the trapping program and in general, surveys of this nature are confined to an examination of territory within 1/2 mile of the attracting trap. However, some scouting is annually conducted in areas where traps are not used because infestation is known to be present. Such surveys are conducted so as to delimit the areas infested, determine the intensity of infestation, and hazard of spread of the gypsy moth by wind or common carriers.

Data obtained from the scouting surveys is used in setting up the spraying program on a priority basis to insure early treatment of those areas where the hazard of spread is greatest. (J. M. Corliss).

LARCH SAWFLY  
(as used in the Lake States)

Beginning in 1949, reconnaissance surveys of forested areas subject to larch sawfly (*Pristiphora erichsonii*) attack have been conducted annually to assess not only the magnitude of the infestation, but the duration and intensity of attack preceding tree mortality. Depending on seasonal conditions, surveys are conducted during late July or early August. In these surveys combinations of aerial and ground methods have been used in Minnesota, while ground methods alone have been used in Wisconsin and Michigan. Because of the inaccessibility of most tamarack stands to ground travel, aerial methods have a peculiar advantage. With refinements in technique they seem to offer the greatest promise for compiling worthwhile annual records reflecting larch sawfly abundance.

## Aerial Survey

Survey Plan: Aerial reconnaissance surveys in 1949 and 1950 consisted of planned random cruises of tamarack concentrations, especially those in national forest areas and in counties from which the sawfly had been reported. Experience during these earlier surveys indicated the need for a more comprehensive and systematic approach in using aerial methods to delimit zones of defoliation over large areas from year to year, and in 1951 this sort of approach was taken. The system employed was an adaptation of the technique developed for spruce budworm surveys in the Northeast to meet the need for more accurate means of mapping defoliator damage than the sketch mapping method commonly used. Those familiar with timber cruising methods can best visualize it in comparison to a line strip cruise made on the ground. Evenly spaced flights are made over the forest at a constant altitude above the ground. Along the flight lines each observer examines a strip of timber and records his ocular appraisal of conditions viewed according to predetermined categories. This information is continuously transmitted via electrical keyboard to pens registering on the moving chart of an operation recorder. The observations registered on the chart of this instrument are then transcribed onto maps using any system which will permit connecting points of similar observations by isomorphic lines. A survey of this type has been designated an operation recorder aerial survey.

Equipment: A 5-passenger Cessna 195 high-wing monoplane was made available for the 1951 survey late in the summer by the U. S. Bureau of Entomology and Plant Quarantine's Beltsville, Md., forest insect laboratory. This plane was specially equipped for low altitude flying usually necessary in defoliator surveys. It contained, in addition to an Esterline-Angus operation recorder, and full length plexiglass doors for maximum visibility, a radio-altimeter and gyro compass to facilitate maintaining proper altitude and direction.

Procedure: In this survey the entire forested area of Minnesota north of Duluth (approximately 15 million acres) was covered by a system of parallel flight strips at 12-mile intervals, extending in an east-west direction. These flight strips were laid out in advance of aerial operations on large scale maps (1 inch - 2 miles), showing prominent topographic and cultural features, as well as the land subdivisions. Such maps, compiled by the various states in cooperation with the U. S. Bureau of Public Roads, are available in most states. The individual map sheets were assembled into a single composite map of the entire areas to be covered. The course of each flight was plotted on the composite, and at convenient intervals readily recognizable points of reference, such as intersections with lakes, rivers, highways, etc., were designated by number along each course. These points of reference served as check points in maintaining the proper alignment of flights, and were identified by the pilot, who recorded the appropriate number in Morse code on the operation recorder chart as each was crossed. For convenient use in the airplane, the composite map was cut into strips, each containing about 3 flight lines, and folded.

The survey flights were made at an altitude of 500 feet above the ground and at an indicated airspeed of 120 miles per hour. Stand conditions were appraised by two observers, each viewing a separate strip approximately 5 chains wide on opposite sides of the plane. Conditions observed were classified according to five categories, and, through separate switchboards for each observer, were recorded on the operation recorder chart. The categories used were: (1) non-tamarack type; (2) water; (3) non-defoliated tamarack, i. e., no observable defoliation from 500 feet, although very light defoliation may have been present; (4) partially defoliated tamarack, i. e., defoliation easily observable, but varying amounts of green foliage present; (5) completely defoliated tamarack, i. e., all or almost all of the foliage destroyed. In this manner two separate, independent, and continuous strip samples were made the entire length of the respective flight lines. When the daily flying was done, proportional dividers were used to transfer the recorder chart data directly to the strip map. The plane speed between each check point was assumed to be constant, so that once the ratio between each pair of check points on the map and on the recorder chart was determined it was a simple matter to plot the portions of the strip in the different categories. A color code system was used to differentiate tamarack condition classes on each strip. For example, if red was the color which identified complete defoliation, a band of red would be inscribed at the exact places and for as long as was indicated by either or both observers. Thus, when tamarack condition classes on each strip were designated by the appropriate color, the picture for any given locality was readily apparent.

When the strip maps were reassembled into the original composite of the area covered, it was evident that the overall picture of damage was obscured by excessive detail at the 1-inch to 2-mile scale. To prepare the final map, it was necessary to group the strip data by townships. This was done by measuring the strip length in each township, and computing the percent of the sample in each tamarack condition class. The township was then given designation corresponding to the condition class in which 50 percent or more of the tamarack fell. For example, if the average length of strip for all tamarack condition classes in a given township was 4 miles, and 2 miles (50 percent) was classed as completely defoliated, the entire township was arbitrarily designated as being completely defoliated. On the basis of the values thus obtained, generalized zones of damage reflecting the different levels of larch sawfly infestation in tamarack stands were established.

#### Ground Survey

Plots are established throughout the infested area and adjacent uninfested tamarack type. Paint-marked stopping points along roads facilitate the operation, and attempts are made to paint-blaze sufficient trees, poles or boulders to make the spot easily identified from a moving vehicle. Paint-blazes also lead into the plot proper. Data are compiled from the percent defoliation (nearest 5 percent) of ten well spaced (2 chains if possible) paint-numbered tamarack trees.

Ten minute cocoon collections are also made under three trees, totaling 1/2 man hour of work. In order to observe possible evidence of stand decadence, 1/12-acre (1 chain by 1 chain) plots are also maintained at each defoliation plot. The bounds of this plot are amply painted in, and a hundred percent survey of each 4" or larger tamarack is made for eastern larch beetle (Dendroctonus simplex) which often attacks weakened trees. Data are kept on the total number of tamarack trees and those infested. (Division of Forest Insect Research).

### Classification of Infestations of Livestock Pests

The following methods of determining insect infestations are used primarily for research investigations and the techniques may need adjusting to meet field survey conditions.

CATTLE GRUBS - Examine infested portion of animal's back. When average number of cysts (grubs) per animal is 1-10, light; 11-20, medium; over 20, heavy. NOTE: Yearlings and bulls usually more heavily infested than older or younger animals.

HORN FLIES - Count or estimate number of flies on ten animals in herd. Average number of flies per animal 1-25, light; 26-100, medium; over 100, heavy. NOTE: Flies will be more difficult to count in the cool and extreme hot hours of the day. Bulls and dark-colored animals will usually carry heavier infestations than other animals in the herd.

HORSE FLIES and DEER FLIES - Count number of flies visiting animal for a 15 minute period. Average count of 1-5 per animal, light; 6-10, medium; 11 or more, heavy.

STABLE FLIES - Usually the heaviest feeding of flies will be observed from 9:00 to 10:00 A.M. and 3:00 to 5:00 P.M. Count number of flies feeding on animal. Average count per animal of 1-5, light; 6-10, medium; 11 or more, heavy.

CATTLE LICE - A. Sucking species - Observe and examine animals for greasy appearance on dewlap and poll or neck and the presence of lice on muzzle, around eyes and in brush of tail. Occasional louse observed, light; 5-10 lice per examination area, medium; over 11, heavy. B. Chewing species - Observe and examine animals for loss of hair, rubbing, etc. Part hair for examination. Occasional louse observed, light; 5-10 lice per examination, medium; over 11, heavy. NOTE: Abundance of lice in herd largely influenced by seasonal changes and individual susceptibility of host.

GOAT LICE - Part hair in 5 places. One on neck, one on each side and two on belly. Estimate number of lice per hair part. Average lice per goat 1-10, light; 11-25, medium; 26 or more, heavy.

HOG LICE - Examine behind ears and fore legs, on belly and between hind legs. Count lice observed. Average lice per animal: light - 1-10; 11-20, medium; and over 20, heavy.

POULTRY LICE - Examine 5 fowls, part feathers in 5 places under each wing, vent, back and breast or neck. Count lice at each part. Average number of lice per fowl 1-5, light; 6-10, medium; 11 or more, heavy.

FOWL TICK - Examine both fowls and premises. A. Larvae on fowls - Make counts under each wing, on inside of each leg and near vent. Average number of larvae per bird 1-5, light; 6-10, medium; over 11, heavy. B. Adults on premises - Examine roosts, nests, etc. Adults hard to find, light; adults readily noticeable, medium; adults plentiful, heavy.

ROOST MITES - Examine roosts and nests for presence of mites. Occasional mite observed, light; readily observed, medium; numerous, heavy.

FLEAS - A. Sticktight - Examine comb and wattle of 5 birds. Count number of attached fleas. Average count per bird 1-5, light; 6-10, medium; 11 or more, heavy. B. Dog and cat fleas - Walk around infested premises and estimate number of fleas on pants leg in one minute. 1-5, light; 6-10, medium; 11 or more, heavy.

LONE STAR TICKS and WINTER TICKS - Examine foot square area in 5 places on animal. One on each side of neck, one on each side and escutcheon. Estimate number of ticks present in each area. Average tick count per animal 1-10, light; 11-25, medium; more than 26, heavy.

GULF COAST TICKS - Examine outer surface of ears. Count number of ticks on ear. Average number of ticks per ear 1-5, light; 6-10, medium; 11 or more, heavy.

EAR TICKS - Examine folds on inner surface of ear. Count number of ticks without removal, if possible. Average number of ticks per ear 1-10, light; 11-20, medium; over 20, heavy.

FLEECE WORMS - Examine areas of soiled fleece. More prevalent during warm, humid weather conditions. One case in 100 animals, light; 2-3 cases in 100 animals, medium; 4 or more cases in 100 animals, heavy.

SCREW-WORMS - Examine animals or obtain information from ranchers, farmers, veterinarians and insecticide dealers. Less than one case per 100 animals, light; 1-2 cases per 100 animals, medium; more than 2 cases per 100 animals, heavy.

SHEEP KEDS - Count pupae and adults by parting wool - 25 parts, mostly on body of animal. Average count of 1-5, light; 6-10, medium; more than 11, heavy.

FOWL MITES - Examine for presence of mites in feathers. Part feathers in 5 places. Estimate number of mites under each wing, on each side and about vent. Average number of mites per fowl 1-10, light; 11-25, medium; 26 or more, heavy.  
(C. L. Smith and W. S. McGregor).

#### Technique for Counting Cattle Lice

1. One square inch samples are taken from the area of infestation either with a straight razor, knife or simply by scraping with the thumb-nail. These are preserved either in AGA\* or 70 percent alcohol in 2-ounce screw top specimen jars. Samples are labeled as to date, place taken, and the species.
2. The first step is to remove the entire sample from the preserving fluid and dissolve all the hair by boiling in 10 percent KOH.
3. When the hair is completely dissolved the sample is transferred to a centrifuge tube and centrifuged until all the lice are brought down. Most of the KOH is then removed by a rubber bulb and pipette. The sample is then washed with water, centrifuged and the water removed to take out as much of the KOH as possible.
4. Water is added to the centrifuge tube and the sample agitated by shaking until all the specimens are suspended. The sample is then poured over a filter paper in a Buchner funnel set over a filter flask. Attachment of the filter flask to a water aspirator pump speeds filtering. Removal of the KOH is essential if successful filtering is obtained.
5. The filter paper on which the lice are caught is divided into 8 segments for easier counting.
6. Sex determinations may be made with the aid of a binocular microscope and males and females removed with a needle to separate Syracuse watch glasses containing AGA or alcohol. Nymphs and eggs are counted directly on the filter paper. A tally counter aids in taking the count.
7. Petri dishes containing filter paper moistened in AGA were found to be excellent for holding over lice collected by the Buchner funnel from day to day or over a week-end.  
(J. L. Lancaster, Jr.)

\*Alcohol, glycerin, glacial acetic acid.

Technique for Calculating the Number of Mosquito Larvae Per Acre

Sheet iron cylinders 10 inches long covering 144 square inches (13.5" diameter) were constructed. One half inch mesh hardware cloth was soldered over one end. In making counts the end covered with hardware cloth was at the bottom of the cylinder as it was dropped at random in the water. The purpose of the hardware cloth was to prevent an excessive amount of vegetation extending upward into the cylinder. Then using a six-inch sieve covered with 60 mesh screen, the enclosed water is agitated and the larvae are dipped from the cylinder and counted. The count was considered complete when five successive dippings produced no larvae. Ten such counts were made in the area and the average of these numbers was multiplied by the number of square feet per acre. (F. E. Whitehead).













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