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Cooperative ECONOMIC INSECT REPORT

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PLANT PROTECTION DIVISION

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AGRICULTURAL RESEARCH SERVICE

PLANT PROTECTION DIVISION

ECONOMIC INSECT SURVEY AND DETECTION

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 Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG damaged small grains in Texas, heavy on untreated wheat in Oklahoma SPOTTED ALFALFA APHID heavy on alfalfa in southwest Oklahoma, some controls needed in southeast New Mexico. (p. 187).

BROWN WHEAT MITE heavy on wheat in Oklahoma. WINTER GRAIN MITE damaged small grains in Texas. (p. 188).

YELLOW SCALE populations on citrus lowest since 1963 in Florida. (p. 189).

Detection

● A NOCTUID MOTH reported for the first time from Hawaii. This is a new Western Hemisphere record. Larvae of this species attack shade trees in the Philippines. (p. 193).

For new county records see page 192.

Special Reports

Summary of Insect Conditions in the United States - 1970.
Potatoes, Tomatoes, Peppers (pp. 194-198).
Beans and Peas (pp. 198-200).
Cole Crops (pp. 200-203).
Cucurbits (pp. 203-204).
General Vegetables (pp. 204-206).

Predications

Possibility for SPRING CANKERWORM outbreak exists in Kansas. Defoliation by a CONIFER SAWFLY this spring expected to be light to moderate in Arkansas. (p. 190).

Some First Occurrences of Season

ALFALFA WEEVIL adults in Oklahoma, larvae in Tennessee. EASTERN TENT CATERPILLAR larvae in Alabama, Mississippi, Oklahoma, Arkansas; webbing in Texas. FALL WEBWORM adults in Florida. STABLE FLY adults in Oklahoma. SUBTERRANEAN TERMITE adults in Nevada and Maryland. CLOVER STEM BORER adults in Florida.

Reports in this issue are for week ending March 19 unless otherwise indicated.

CONTENTS

WEATHER OF THE WEEK ENDING MARCH 22

HIGHLIGHTS: A storm developed over the Great Basin, crossed the Rocky Mountains, intensified, and moved northeastward across the central Great Plains and Great Lakes region to New England. Blizzards and severe dust storms occurred along the storm paths. Winds exceeded 60 m.p.h. and gusted to much higher speeds. Snowfalls of 10 inches or more were common from Iowa to New England.

PRECIPITATION: As the week began an intense storm was centered over northern Michigan. Gusty winds and a few tornadoes occurred in the Ohio River Valley. Indiana and Ohio suffered widespread wind damage. House trailers were toppled, barns lost their roofs, and trees and power lines were blown down. Heavy snow fell in the northern Great Plains and upper Mississippi River Valley. A few showers and snow flurries continued into Tuesday which otherwise was mostly fair and dry. A Pacific storm brought light rains to the northern Pacific coast and snow flurries to the mountains in the Northwest. A new storm began developing in the Great Basin late Tuesday and early Wednesday. It spread snow over the central Rocky Mountains as it moved eastward. Lander, Wyoming, received 5 inches of snow Tuesday afternoon. Three inches fell at Rapid City, South Dakota, accompanied by winds gusting to 50 m.p.h. Much stronger gusts occurred farther south. Grand Junction, Colorado, registered gusts to 63 m.p.h. on Wednesday. Blowing dust reduced visibility at Grand Junction to 0.5 mile. Widespread dust storms occurred over the Oklahoma and Texas Panhandles and west of the Pecos River in Texas. The storm deepened as it moved eastward Thursday. It dumped 7 inches of snow at Ocheyedan, Iowa, Thursday morning. Blowing snow or blowing dust reduced visibility to near zero in places. Gusts reached 70 m.p.h. at Imperiel, Nebraska, and 75 m.p.h. at Dodge City, Kansas, Thursday forenoon and 100 m.p.h. at Hastings, Nebraska, in the afternoon. Strong winds continued over Nebraska and Kansas Thursday night and early Friday. At Hays, Kansas, wind speed remained at 65 m.p.h. or higher for 3 consecutive hours and reached a peak gust of 115 m.p.h. The storm continued northeastward over the weekend leaving 6-15 inches of new snow. Seasonal snowfall totals at a number of locations in New England have exceeded previous record totals. By Sunday, intensity of the snowfall had decreased, but flurries continued from western Pennsylvania to northern Maine. A large area from California to eastern portions of Oklahoma and Texas received no rain or only light widely scattered sprinkles. Much of this area is becoming dry. Weather of the week continued on page 206.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMY CUTWORM (Euxoa auxiliaris) - OKLAHOMA - Larvae per 10 linear feet of wheat ranged up to 6 in 5 Blaine County fields, up to 7 in 4 southern Kingfisher County fields, and up to 4 in 2 of 5 Kiowa County fields. About 75 percent of larvae in late stages. (Okla. Coop. Sur.). KANSAS - Larvae averaged 0.3 and 0.4 per row foot in 3 to 4-inch wheat in 2 Seward County fields, and 0-0.5 in 10 Meade County fields. Very little foliar damage noted. (Bell).

CORN EARWORM (Heliothis zea) - ARIZONA - Larvae averaged 280 per 100 sweeps in one alfalfa field at Gila Valley, Yuma County. (Ariz. Coop. Sur.).

CORN LEAF APHID (Rhopalosiphum maidis) - NEW MEXICO - Very light on barley in Dona Ana County. (N.M. Coop. Rpt.).

GREENBUG (Schizaphis graminum) - ARIZONA - Averages per 100 sweeps of barley and wheat about 8-inches tall in Yuma County: 200 on March 9 and 800 on March 16 in 4 fields. Averaged 60 per 100 sweeps in 60-acre barley field at Coolidge, Pinal County. Infestation of several weeks past required treatment at Pima, Graham County; recent cold temperatures nearly eliminated populations. Predaceous insects and ground spiders abundant in fields checked. Greenbug averaged 100 per linear foot in 3-inch barley in Kansas Settlement and Cochise areas of Cochise County. Aphids found just below soil surface in crown area of plants. No greenbugs found in wheat. (Ariz. Coop. Sur.). TEXAS - Damage heavy to small grains in Archer, Wilbarger, Foard, Knox, Hardeman, Throckmorton, Wichita, and Young Counties. Moisture stress becoming critical in northern Rolling Plains. Greenbug activity decreased in area of Denton, Denton County, past 2 weeks. Damaged small grains in Trans-Pecos area. (Boring et al.). OKLAHOMA - Ranged 100-800 per linear foot in unsprayed wheat in 5 southwest counties, except in scattered fields where plants almost dead. Ranged 35-80 per linear foot in these fields. Many fields sprayed, especially in Cotton, Tillman, and Jackson Counties; spraying continues as weather permits. Mostly winged forms and small nymphs ranged 2-25 per linear foot in area. Large numbers flying on calm days and reinfested many fields sprayed earlier. Parasite activity noted in 16 of 22 fields. Parasitism ranged 5-10 percent in occasional fields, most averaged less than 2 percent. Predator activity increasing in area. Greenbug remains heavy in untreated wheat in Beckham, Custer, and Washita Counties. Scattered fields show heavy parasitism. Greenbug ranged 50-130 per linear foot in 4 of 5 fields in Blaine County, averaged 8 per linear foot in other field. Light parasitism in one field. Greenbug ranged 50-300 per linear foot of wheat in Jefferson County. Counts generally light in Logan County. Average per linear foot as follows: 70 and 120 in 2 fields (ranged 4-20 in 6 fields) in Kingfisher County; 15 and 100 in 2 Grady County fields (parasitism light); 14 in western Payne County field; and light in Garfield County. (Okla. Coop. Sur.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARIZONA - Ranged 0-60 per 100 sweeps of alfalfa at Yuma, Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Light to heavy on alfalfa in Eddy and Chaves Counties. Some fields required treatment. (Mathews). OKLAHOMA - Heavy on alfalfa in several southwest counties and moderate in Cotton County. Average per square foot: 100 in Comanche County field and 200 in Stephens County field. Ranged 15-75 per square foot in Grady County, up to 10,000 per square foot in Tillman County. (Okla. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

CHINCH BUG (Blissus leucopterus leucopterus) - KANSAS - Annual survey completed week ending March 11. Overwintering populations in bunch grass light for second consecutive year. Heaviest counts per square foot by county: Dickinson 57, Marion 53, Ottawa 98, Harvey 152, Elk 163, Crawford 140, and Labette 85. Most samples from little bluestem. (Bell).

EUROPEAN CORN BORER (Ostrinia nubilalis) - COLORADO - Overwintering larvae light in Kiowa Valley, Weld County. (Johnson). DELAWARE - No pupation of overwintering borers as of March 11. (Burbutis).

SMALL GRAINS

BROWN WHEAT MITE (Petrobia latens) - NEW MEXICO - Light to heavy on alfalfa in Eddy and Chaves Counties. (Mathews). OKLAHOMA - Very heavy on wheat in Jackson, Kiowa, and Beckham Counties. Light in scattered fields in Cotton, Tillman, Greer, Blaine, Kingfisher, and Grady Counties. (Okla. Coop. Sur.).

WINTER GRAIN MITE (Penthaleus major) - TEXAS - Damaged small grains in Foard and Knox Counties and several areas near Denton, Denton County. (Boring, Turney). OKLAHOMA - Light, 0-6 per linear foot, in most wheat checked in Payne, Logan, and Kingfisher Counties. (Okla. Coop. Sur.).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - TENNESSEE - Adults light in small grain in Haywood, Tipton, and Madison Counties. (Gordon).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - OKLAHOMA - Percent alfalfa terminals infested by larvae: 10 in Chickasha area field and 30 in southern Grady County; 12 in Comanche County field. Larvae ranged up to 4 per terminal in Tillman County. These are all new county records. Terminal infestations ranged 10-50 percent in Stephens and Cotton Counties. Moderate and widespread in Pontotoc County. Adults appearing in Yuba area of Bryan County and eggs common in Durant area. (Okla. Coop. Sur.). MISSOURI - Percent alfalfa tip infestation by early instars (mostly first) by county: Cape Girardeau 22.5, Perry 27.5, Ste. Genevieve 40, and St. Charles 7. (Huggans). KENTUCKY - Eggs averaged 219 per square foot of alfalfa in 3 Fayette County fields. (Barnett). MARYLAND - Surveys negative in State. (U. Md., Ent. Dept.). TENNESSEE - Egg hatch noted in Tipton, Haywood, and Madison Counties, most early instars. Damage should be apparent in some fields during last week of March. (Gordon). MISSISSIPPI - Larvae per 20 stems of alfalfa by county: Oktibbeha 35, Marshall 57, and Pontotoc 114. (Sartor). FLORIDA - Increased but counts still light; larvae 25 per 100 sweeps of alfalfa at Gainesville, Alachua County. (Mead).

CLOVER LEAF WEEVIL (Hypera punctata) - NEW MEXICO - Averaged one larva per square yard of alfalfa in northern Eddy County. (Mathews). MARYLAND - First and second instars on alfalfa and clover in Eastern Shore counties. Damage to foliage less than 2 percent in 15 acres of alfalfa near Carville Station, Queen Annes County. (U. Md., Ent. Dept.).

CLOVER STEM BORER (Languria mozardi) - FLORIDA - Adults 3 in 100 sweeps of alfalfa in Gainesville, Alachua County. (Mead).

PEA APHID (Acyrthosiphon pisum) - ARIZONA - Ranged 300-8,000 per 100 sweeps of alfalfa at Parker and 1,000-2,500 per 100 sweeps at Yuma, Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Generally light on alfalfa in Eddy, Chaves, and Dona Ana Counties. (N.M. Coop. Rpt.).

TARNISHED PLANT BUG (Lygus lineolaris) - FLORIDA - Nymphs 8 in 100 sweeps of alfalfa at Gainesville, Alachua County. (Mead).

SUGAR BEETS

SUGARBEET ROOT MAGGOT (Tetanops myopaeformis) - IDAHO - Adults collected from survey stakes at Menan, Jefferson County, June 1, 1970 (Gooch, Sutherland), and at Parker, Fremont County, May 23, 1970 (Hillman, Sutherland). These are new county records. Determined by G. Steyskal. (Portman).

GENERAL VEGETABLES

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Troublesome on vegetables in Yuma Valley, Parker Valley, and Dome Valley areas of Yuma County. Controls needed. (Ariz. Coop. Sur.).

DECIDUOUS FRUITS AND NUTS

WOOLLY APPLE APHID (Eriosoma lanigerum) - ALABAMA - Damaged 80-95 percent of 5-year-old apple trees in commercial orchard in Chambers County. Numerous galls above ground and undesirable sprouts from damaged roots noted. Controls planned. (Stewart, Mar. 12).

CITRUS

Insect Situation in Florida - Mid-March - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 75 (norm 61) percent of groves; economic in 54 (norm 40) percent. Expect upward trend to continue. Will keep populations on fruit and leaves above normal and in high range. Highest districts south, west, north, and central. CITRUS RED MITE (Panonychus citri) infested 48 (norm 39) percent of groves economic in 17 (norm 15) percent. Gradual increase expected from now through June. Population at normal moderate level in March. Scattered heavy infestations will be important especially in young groves. Highest districts south and north. TEXAS CITRUS MITE (Eutetranychus banksi) infested 34 (norm 31) percent of groves; economic in 12 (norm 14) percent. Population at normal low level for March, will start to increase before April and continue into June. Some heavy infestations may be expected in all districts. Highest districts east and south. SIXSPOTTED MITE (Eotetranychus sexmaculatus) infested 7 percent of groves; economic in 1 percent. Increase expected in April. GLOVER SCALE (Lepidosaphes gloverii) infested 87 (norm 80) percent of groves; economic in 10 (norm 16) percent. Population near normal. Expected to enter high range by April and gradually increase. Highest districts south, east, and west. PURPLE SCALE (L. beckii) infested 77 (norm 79) percent of groves; economic in 3 (norm 9) percent. Population will increase slightly but will remain below normal and at moderate level. Highest district north. CHAFF SCALE (Parlatoria pergandii) infested 57 (norm 61) percent of groves; economic in 2 (norm 10) percent. Although increase is predicted, will remain below normal and at moderate level. YELLOW SCALE (Aonidiella citrina) infested 37 (norm 63) percent of groves; none economic (norm 12) percent. Population lowest since 1963 and will remain low in all districts. An ARMORED SCALE (Unaspis citri) infested 30 percent of groves; economic in 18 percent. Population higher than any prior month and will increase after March. BLACK SCALE (Saissetia oleae) infested 17 (norm 30) percent of groves; economic in 4 (norm 13) percent. Population much below normal and at low level. Gradual increase expected in April. Highest district west. APHIDS appeared in 13 percent of groves since February. Rapid increase expected until mid-April. Adult WHITEFLIES will appear on new foliage in large numbers. (W.A. Simanton (Citrus Expt. Sta., Lake Alfred)).

CALIFORNIA RED SCALE (Aonidiella aurantii) - CALIFORNIA - Ranged 1-6 per leaf and 1-30 on fruit in Fresno, Fresno County, area. About half of female scales gravid. (Cal. Coop. Rpt.).

CITRUS RED MITE (Panonychus citri) - ARIZONA - Averaged 12.5 per leaf in one lemon grove on Yuma Mesa, Yuma County. Controls underway. (Ariz. Coop. Sur.).

SMALL FRUITS

CURRANT BORER (Synanthedon tipuliformis) - OREGON - Heavy on red currant at Woodburn, Marion County. First borers detected in canes sold to berry grower. (Tinker).

ORNAMENTALS

AN ADELGID (Adelges tsugae) - OREGON - Ranged 20-30 per linear inch on branches of western hemlock (Tsuga heterophylla) at Salem, Marion County. (Larson).

BAGWORM (Thyridopteryx ephemeraeformis) - KENTUCKY - Bags on Juniperus spp. averaged 42.5 per tree in Caldwell County, 8 in Green County, and 2.8 in Wayne and McCreary Counties. (Barnett).

FOREST AND SHADE TREES

A CONIFER SAWFLY (Neodiprion taedae linearis) - ARKANSAS - Egg hatch observed March 13 in Calhoun County. Peak hatch expected about March 20, unless cold weather retards development. Egg deposits light in Bradley and Calhoun Counties March 13. Defoliation in spring of 1971 expected to be light to moderate. (Warren).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - ALABAMA - First hatch observed March 1 in Lee County on black cherry trees. Total of 16 egg masses (heavy count) on this 25 foot-high tree. Few egg masses hatched. Birds and other predators had not affected eggs during winter months. (McQueen). MISSISSIPPI - Larvae light on black cherry in Oktibbeha, Wayne, and Greene Counties. (Sartor). TEXAS - Webbing appearing in eastern areas, also in Gonzales County on plum. (Coster, Cole). OKLAHOMA - Hatching on wild plum in southern Grady County; early instars only. (Okla. Coop. Sur.). ARKANSAS - Early instars on wild cherry in Calhoun County March 12. Early instars and small webs noted in Washington County on March 16 on quince and wild cherry. Foliage of host plants not fully budded. (Warren). VIRGINIA - Early instars on wild cherry in Pittsylvania County on March 16. Only 1 of 3 egg masses observed hatched (Dominick); on flowering crab in Richmond County on March 17 (Freund).

SPRING CANKERWORM (Paleacrita vernata) - KANSAS - Male moths flying to lights on March 12 in Riley and McPherson Counties. Female found on March 18 in trap containing logs of American elm for collecting elm bark beetles in Riley County. Possibility of outbreak exists for 1971. (Thompson). Two female moths collected crawling up trunks of American elms on March 15 in Shawnee County. (Iselin).

FALL WEBWORM (Hyphantria cunea) - FLORIDA - First adults at Gainesville, Alachua County, March 1; additional adults collected regularly since in blacklight traps. (Bacheler, Habeck). Reports of larvae and webbing negative but expected soon. (Mead).

MAN AND ANIMALS

SCREWWORM (Cochliomyia hominivorax) - One case reported in U.S. March 14-20 as follows: TEXAS - Hidalgo. Total of 101 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico as follows: Sonora 27, Chihuahua 12, Coahuila 1, Nuevo Leon 2, Tamaulipas 59. Total of 17 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screwworm flies released: Texas 16,568,000; Mexico 122,696,000. (Anim. Health Div.).

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Ranged 0-5 per head on 50 head of cattle in Payne County. (Okla. Coop. Sur.).

HORN FLY (Haematobia irritans) - TEXAS - Ranged 20-35 per head on 35 Herefords in Bell County on March 5. (Hoelscher). FLORIDA - Adults averaged 25 per head on dairy cows near Gainesville, Alachua County. (Head).

STABLE FLY (Stomoxys calcitrans) - OKLAHOMA - Few flies noted on dairy cattle in Payne County. First report of season. (Okla. Coop. Sur.).

MOSQUITOES - TEXAS - Trapped total of 345 specimens in 74 light traps during January. Average per trap as follows: Culex salinarius 2.56, C. pipiens quinquefasciatus (southern house mosquito) 0.36, Culiseta inornata 0.62, and Anopheles quadrimaculatus (common malaria mosquito) 0.21. (Harris County Mosq. Cont. Dist.). Adults less numerous during February than January. (Jefferson County Mosq. Cont. Dist.).

WRINKLED SUCKING LICE (Haematopinus spp.) - COLORADO - H. suis (hog louse) heavy on hogs at 2 farms in Larimer County. Controls applied. (Hantsbarger). OKLAHOMA - Mainly H. eurysternus (shortnosed cattle louse) heavy on cattle in Bryan County. Continue moderate in Mayes and Payne Counties. (Okla. Coop. Sur.).

HOUSEHOLDS AND STRUCTURES

SUBTERRANEAN TERMITES (Reticulitermes spp.) - NEVADA - Numerous alates swarming in home at Las Vegas, Clark County. (Zoller). MARYLAND - First R. flavipes (eastern subterranean termite) swarms of season in Montgomery and Prince Georges Counties. (U. Md., Ent. Dept.).

PACIFIC DAMPWOOD TERMITE (Zootermopsis angusticollis) - OREGON - Damage heavy to washroom floor at Springfield, Lane County, residence. Damaged plywood between subflooring and asphalt tile. Old damage apparent on upper surface of subflooring beneath leaking sink and washer indicating site of introduction. Larvae of Buprestis aurulenta (golden buprestid) in subflooring and plywood. Entire floor must be replaced. (Penrose, Humphrey).

FIREBRAT (Thermobia domestica) - MINNESOTA - Continuing problem in apartment complex at Hopkins, Hennepin County. Control efforts unsatisfactory during past 2 months. (Minn. Pest Rpt., Mar. 12).

STORED PRODUCTS

A DERMESTID BEETLE (Trogoderma variable) - CALIFORNIA - Larvae infested flaxseed, barley, milo, safflowerseed and wheat in mill at Imperial, Imperial County. T. simplex dominant species in many of same hosts at another nearby mill. (Cal. Coop. Rpt.).

Stored Grain Pests in Kentucky - Average adult counts per pound of seed oats in Taylor County: Cryptolestes pusillus (flat grain beetle) 10.4, Oryzaephilus surinamensis (sawtoothed grain beetle) 1.7, and Sitophilus oryzae (rice weevil) 4.6. (Barnett).

BENEFICIAL INSECTS

A BRACONID (Lysiphlebus testaceipes) - OKLAHOMA - Heavy (up to 98 percent parasitism) in greenbug infested wheat in northern Washita and southern Custer Counties. Parasitism light in 1 of 5 Blaine County fields. Adults and/or mummies light in 16 of 22 fields in Cotton, Tillman, Kiowa, Greer, and Jackson Counties. Light in scattered fields in Grady and Kingfisher Counties. (Okla. Coop. Sur.).

AN ICHNEUMON WASP (Bathyplectes curculionis) - KENTUCKY - Adults 2 per 100 sweeps of alfalfa in Caldwell County field. (Barnett).

CONVERGENT LADY BEETLE (Hippodamia convergens) - OKLAHOMA - Larvae ranged up to 5 per linear foot in many greenbug infested wheatfields in southwest area. Adults and pupae also present in many fields. Adults and larvae light in scattered fields in central and west-central areas. (Okla. Coop. Sur.). KANSAS - Overwintering adults per square foot of bunch grass by county averaged: Republic 46, Ottawa 58, Lincoln 5, Barton 8.5, Kingman 37, and Riley 125. Three samples per county, except 4 in Riley. (Bell).

A HISTERID BEETLE (Hister nomas) - CALIFORNIA - Fifty adults, reared from foundation stock imported from Australia, released in Redding area, Shasta County, in cooperation with local agricultural officals. These are first of this species

reared and released in California for control of Musca autumnalis (face fly). Imported beetles were released in 1970. So far, no recoveries that would indicate establishment. (Cal. Coop. Rpt.).

GREEN LACEWINGS (Chrysopa spp.) - OKLAHOMA - Adults in many wheatfields in central, southwest, and west-central areas; no larvae or eggs noted. (Okla. Coop. Sur.).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - Found 2 new infestations during period March 12-18 on adjacent properties at Reynosa, Tamaulipas. Infestations located about one-half mile from major citrus-growing area in lower Rio Grade Valley of Texas. Delimiting surveys underway; eradication treatments to start March 18. (PPD).

HALL SCALE (Nilotaspis halli) - CALIFORNIA - Surveyed about 1,000 acres for wild almond seedlings in Stilson Canyon near Chico, Butte County. Three almond seedlings discovered and destroyed. Microscopic inspection of twigs from these plants proved negative for Hall scale. (Cal. Coop. Rpt.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - SOUTH CAROLINA - Specimens collected at Blackville, Barnwell County, along State Highway 78 by L.G. Way and D. Truluck on March 16, 1971. Determined by V.H. Owens, confirmed by D.R. Smith. This is a new county record. (PPD).

OBSCURE SCALE (Melanaspis obscura) - CALIFORNIA - Microscopic examination of 275 linear feet of twig samples completed. All inspections negative. Twig samples collected from oaks growing in vicinity of 10 oak trees infested in 1971 in Capitol Park, Sacramento, Sacramento County. (Cal. Coop. Rpt.).

DETECTION

New Western Hemisphere Record - A NOCTUID MOTH (Pericyma cruegeri Butler) HAWAII - Kauai Island (p. 193).

New County Records - ALFALFA WEEVIL (Hypera postica) OKLAHOMA - Grady, Commanche, Tillman (p. 188). IMPORTED FIRE ANT (Solenopsis saevissima richteri) SOUTH CAROLINA - Barnwell (p. 192). SPOTTED ASPARAGUS BEETLE (Crioceris duodecimpunctata) WYOMING - Washakie, Hot Springs (p. 204). SUGARBEET ROOT MAGGOT (Tetanops myopaeformis) IDAHO - Jefferson, Fremont (p. 188).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 3/12-18, BL - Beet armyworm (Spodoptera exigua) 1, granulate cutworm (Feltia subterranea) 5, saltmarsh caterpillar (Estigmene acrea) 5. MISSISSIPPI - Stoneville, 3/12-18, 2BL, Temp. 40-70°F., precip. 1.29 - Armyworm (Pseudaletia unipuncta) 218, black cutworm (Agrotis ipsilon) 75, cabbage looper (Trichoplusia ni) 11, yellowstriped armyworm (S. ornithogalli) 123. TEXAS - Waco, 3/12-18, BL - Armyworm 69, beet armyworm 27, black cutworm 39, corn earworm (Heliothis zea) 3, granulate cutworm 169, saltmarsh caterpillar 23, yellowstriped armyworm 46.

CORRECTIONS

CEIR 21(12):163 SCREWWORM (Cochliomyia hominvorax) - One case reported in U.S. ... TEXAS - Hidalgo ... should read ... Two cases reported in U.S. ... TEXAS - Hidalgo and Jim Hogg. (Anim. Health Div.).

HAWAII INSECT REPORT

New State Record - Adults of a NOCTUID MOTH (Pericyma cruegeri Butler) reared from 5 larvae found feeding on poinciana leaves at Koloa, Kauai, on February 7, 1971, by D. Sugawa. Determined by E.L. Todd. This noctuid occurs in Borneo and Australia. (Kawamura). This is a new Western Hemisphere record. (PPD).

General Vegetables - ONION THRIPS (Thrips tabaci) nymphs and adults light, as many as 11 (average 6) per plant, in 0.25 acre of bulb onions at Pulehu, Maui. Mixed populations of GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) and LEAFMINER FLIES (Liriomyza spp.) generally trace in most snap bean and tomato plantings at Pulehu, Maui. Larvae of IMPORTED CABBAGEWORM (Pieris rapae) moderate on foliage of horse-radish tree (Moringa oleifera) at Ewa, Oahu. This is a new host record for P. rapae in Hawaii. Adults trace (1 per 5 square yards) in 1.5 acres of mixed planting of head cabbage and cauliflower at Waiakoa, Maui; eggs averaged 3 per plant; larvae nil. (Davis, Miyahira).

Fruits and Nuts - COCONUT SCALE (Aspidiotus destructor) light in small banana planting at Pearl City, Oahu; moderate colonies on some leaves. Remains light on coconut trees in Hawaii Kai area. Nymphs and adults of lady beetles (Telsimia nitida and Lindorus lophanthae) light at both locations. (Au, Kawamura).

Ornamentals - A LEAFHOPPER (Protalebrella brasiliensis) moderate on lettuce at Koko Head, Oahu; light "hopper burn" on leaves. Species previously reported only on Wedelia and Lippia in Hawaii; used extensively as ground cover. Nymphs and adults heavy on Lippia at Hawaii Kai; as many as 50 adults per square foot. (Haramoto, Kashiwai).

Forest and Shade Trees - All stages of a CONIFER APHID (Cinara carolina) heavy in 8 acres of loblolly pine (Pinus taeda) at Olinda, Maui; about 3,000 trees affected. Fifty percent of terminal leaf clusters with as many as 50 aphids per linear inch of stem; branches and trunk with as many as 12 per linear foot. Averaged 12 per square foot on forest floor. (Ah Sam, Miyahira). CUBAN LAUREL THRIPS (Gynaikothrips ficorum) heavy on young terminal leaves of several Ficus retusa (Chinese banyan) trees at Koko Head, Oahu. Nymphs and adults of an ANTHOCORID BUG (Montandoniola moraguesi) light in infested fluted leaves. (Kashiwai, Rose).

(Continued from page 184)

POTATOES, TOMATOES, PEPPERS

Highlights:

COLORADO POTATO BEETLE was damaging and required controls in several areas. The outbreak in Utah was the most severe ever experienced in the State. TOBACCO FLEA BEETLE was more widespread and more damaging than usual on potatoes, tomatoes, and peppers in California. TOMATO FRUITWORM was the most important pest of tomatoes in Alabama and was the heaviest in five years in Illinois. CABBAGE LOOPER caused severe damage to spring and fall tomatoes and SOYBEAN LOOPER damaged potatoes in Florida. EUROPEAN CORN BORER was again serious on potatoes and peppers in Michigan. GREEN PEACH APHID was not the problem on potatoes in Colorado as in 1969, but did require controls on peppers in the Mesilla Valley of New Mexico in the spring.

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) eggs were hatching in MAINE as far north as Houlton, Aroostook County, by June 29. By July 13, spraying became general as far north as Mars Hill. By August 1, second-generation adults were feeding. Adults in unsprayed fields increased to 2 per plant in Aroostook County and 2 per 3 plants at East Corinth, Penobscot County. Adults were rare in sprayed fields. A few adults were found May 1 in Washington County, RHODE ISLAND. This pest was found throughout the season on potatoes but controls suppressed numbers. On September 2, large numbers of adults swarmed over a property adjoining a potato field. Colorado potato beetle and Tetranychus urticae (twospotted spider mite) were heavier on eggplant in southern NEW JERSEY than in 1969. Satisfactory control was achieved in most fields by mid-August. Overwintering populations of Colorado potato beetle were extremely heavy in Middlesex and Monmouth Counties, but injury was practically nonexistent on potatoes due to widespread use of systemic insecticides in the furrow at planting time. Foliage feeding injury by second-generation larvae was more noticeable; however, controls were satisfactory. Special controls were needed for Colorado potato beetle in most potato fields in eastern PENNSYLVANIA. Populations were of concern to growers on seedling tomatoes in Columbia, Northumberland and Schuylkill Counties, but did not require special controls. Colorado potato beetle generally increased in most DELAWARE fields with controls necessary on potatoes and some tomatoes. Colorado potato beetle adults in MARYLAND were noted in Dorchester, Wicomico, Somerset, and Worcester Counties the first week of May. Several hundred acres of tomatoes in Wicomico and Worcester Counties required protective sprays during May. Eggs were present on potatoes and tomatoes by May 15 in Wicomico County. Colorado potato beetle larvae in unsprayed potatoes ranged 12-14 per 3 row feet in Queen Annes and Caroline Counties May 29. Scheduled weekly controls were needed on tomatoes, peppers, and potatoes. Colorado potato beetle was damaging only in localized untreated situations and was not a major problem in OHIO. Tomato growers in Sandusky and Seneca Counties reported serious damage to tomato plants in mid-June. Counts ranged 2-7 per leaf on preblossom to blossom plants. Colorado potato beetle was light to moderate throughout TENNESSEE during May and June. Damage was very light except where controls were not applied. Colorado potato beetle was kept under control in the 16,500 acres of commercial potatoes in ALABAMA.

Colorado potato beetle adults were first reported on potatoes from May 28 to June 11 in southern IDAHO. At Aberdeen, Bingham County, counts ranged 2-16 per 10 row feet. Many eggs had been laid in Bannock County by June 24. Eggs and larvae were found on potatoes in Twin Falls County on June 25 and Fremont County on July 7. Control was warranted in scattered locations of Fremont, Madison, Jefferson, Bonneville, and Bingham Counties by July 12. At this time, Colorado potato beetle was still mating in Bingham County and pupating in Jefferson County. Perillus bioculatus (twospotted stink bug) was preying on larvae in Bingham County on July 28. The most severe outbreak of Colorado potato beetle in UTAH occurred during 1970. Most infestations were confined from Davis County northward.

Colorado potato beetle adults were laying eggs in late May and larvae appeared during late June in northeastern COLORADO. Controls were effective; however, some reinfestations appeared in early July. Damage was moderate to heavy, but overall damage in Colorado was light. This pest appeared on garden potatoes in Murray County, OKLAHOMA, during mid-May. Damage was heaviest in most areas in late May and early June. Colorado potato beetle adults and eggs were evident in early potato fields the last of June in Walsh and Pembina Counties, NORTH DAKOTA. Larvae ranged 3-8 per plant by the first of July. Controls were started and continued into mid-August. Colorado potato beetle appeared again in MINNESOTA on potatoes in Washington, Scott, and Polk Counties after an absence of several years. Damage, although localized in small garden plantings, was severe on young potato plants.

TUBER FLEA BEETLE (Epitrix tuberis) adults averaged 5 per 10 sweeps in seed potato fields during late June at Sumas, Whatcom County, WASHINGTON. TOBACCO FLEA BEETLE (E. hirtipennis) was more widespread, more damaging, and persisted later than previously on potatoes, tomatoes, and peppers in CALIFORNIA. POTATO FLEA BEETLE (E. cucumeris) caused light damage to tomatoes and potatoes and was observed throughout TENNESSEE. Shotholes of potato flea beetle were noted in Walsh County, NORTH DAKOTA, the last of June. Damage increased by mid-August to 50-60 shotholes per leaf and required controls at this time.

MARGINED BLISTER BEETLE (Epicauta pestifera) caused light to moderate damage to tomatoes and was observed in several middle and west TENNESSEE counties. A CARABID BEETLE (Nomius pygmaeus) damaged tomatoes locally at Hampton, Hampton County, SOUTH CAROLINA. SOUTHERN POTATO WIREWORM (Conoderus falli) adult collections in light traps during the summer and fall were the heaviest in 12 years in FLORIDA; however, larval populations were light on potatoes. Spring damage was light.

PEPPER WEEVIL (Anthonomus eugenii) infested pepper plants in southern CALIFORNIA. DARKLING BEETLES (Blapstinus spp. and Metoponium spp.) damaged seedling tomatoes in the State.

TOMATO FRUITWORM (Heliothis zea) damage to tomatoes was very light and below normal in UTAH, but this pest was heavy on tomatoes in CALIFORNIA. Populations in Yuma County, ARIZONA, required controls on a 4 to 7-day schedule from early June until harvest. Damage was heaviest in home gardens statewide. Larvae damaged tomatoes in truck and home gardens in Valencia and Bernalillo Counties, NEW MEXICO. Tomato fruitworm larvae damaged garden tomatoes in OKLAHOMA from late June to early October. Counts were heavy in Mayes County during early September and in Marshall County during early October. Tomato fruitworm was the most important pest of tomatoes throughout the season in ALABAMA commercial and home plantings. Infestations became more troublesome this season on the 8,500 commercial acres in the State as well as home gardens. The number of pesticide applications ranged from 15 to 30 in order to control this species. Larvae of this noctuid were common on tomato foliage in late spring and on foliage and fruit during fall in Manatee and Collier Counties, FLORIDA. Infestations were found throughout the season in SOUTH CAROLINA. Damage was more severe to late tomatoes. Tomato fruitworm populations were heavier in ILLINOIS than for any of the past 5-years. Second-generation moth flight and egg hatch were especially heavy in northern Illinois. Damage was evident on tomatoes.

CABBAGE LOOPER (Trichoplusia ni) was noneconomic on potatoes and tomatoes in Prowers, Otero, and Pueblo Counties, COLORADO, but late instars averaging 5-6 per plant were troublesome to potato growers in OHIO in early September. Some plants showed 10 percent defoliation. Infestations were present on tomatoes in Providence County, RHODE ISLAND, by September 23. Cabbage looper has shown an increased tendency to damage tomatoes in SOUTH CAROLINA in recent years. Larvae were unusually heavy on collards during August. Populations decreased as temperatures declined in late October. Cabbage looper was abundant and caused severe damage to the spring and fall crops of tomatoes at Immokalee, Collier County, and at Bradenton, Manatee County, FLORIDA; populations built up earlier at Immokalee. A disease caused high mortality of larvae in late spring.

BEET ARMYWORM (Spodoptera exigua) was heavy in FLORIDA during the spring and summer at Bradenton, Manatee County. Larvae caused foliage and fruit damage to tomato. Damage was heavy and populations were difficult to control on potato during the spring at Hastings, St. Johns County. Beet armyworm infested tomato fruit in test plots at Homestead, Dade County, about midspring. Populations were severe on one-third acre planting of bell pepper at Immokalee, Collier County, in early May, and by mid-May heavily damaged most plants in 60 acres of bell pepper. Damage was light in 20 acres of bell pepper in late May at Sanford, Seminole County, which had been recently treated. Beet armyworm caused considerable alarm to growers of bell pepper in the Ft. Myers area of Lee County when one 40-acre field was treated and showed little reduction of population.

STALK BORER (Papaipema nebris) in OKLAHOMA was heavy and damaged garden tomatoes in Oklahoma County during late May and in Mayes County during early July. SOYBEAN LOOPER (Pseudoplusia includens) was the second most common noctuid on tomato at Bradenton, Manatee County, FLORIDA. Populations were heavy and damaging on potatoes at Hastings, Santa Rosa County, during spring. Controls were difficult.

TOMATO PINWORM (Keiferia lycopersicella) populations in CALIFORNIA were reduced from previous years and very few were found north of the Tehachapi Mountains. Tomato pinworm was light to heavy throughout TEXAS. Infestations on tomatoes occurred in scattered counties in the Rio Grande Valley area and in Brazos, Erath, Hockley, and Lubbock Counties.

EUROPEAN CORN BORER (Ostrinia nubilalis) moth flights were heavy in NORTH CAROLINA and indicated possible trouble in the sweet pepper growing areas, but severe populations did not occur. Excellent controls on potatoes adequately suppressed infestations throughout most of the potato area. Infestations were more severe than usual with a yield loss of up to 25 percent in some fields in Pamlico and Carteret Counties. Spray schedules in MARYLAND prevented second-generation European corn borer larvae from reaching economic levels on peppers in Dorchester, Wicomico, and Worcester Counties. In PENNSYLVANIA, first-generation larvae heavily infested about 100 acres of potatoes in Lehigh and Northampton Counties and another 40 acres in Centre County. Actual loss in yield from European corn borer in these fields did not appear to be as great as damage to vines indicated. Second-generation borers were more destructive than usual to peppers in Pennsylvania. European corn borer infestations in early potatoes and untreated sweet peppers in DELAWARE were very heavy, reaching 100 percent from late August to late September. This pest continued to cause serious damage and losses in potatoes and peppers in MICHIGAN. Both broods are important in potatoes whereas only the second brood is of concern in peppers. Controls were effective. Second-generation larvae were heavy on peppers in southern ILLINOIS.

POTATO TUBERWORM (Phthorimaea operculella) was not abundant in MICHIGAN warehouses during the winter. The first field infestation occurred in Monroe County July 20. This was limited to a small corner of a 2-acre plot. Control measures were instituted the same day and the area was subjected to a weekly survey. This lightly infested field was free of infestation for 4 consecutive weeks. First and third instars were found in 2 Monroe County fields August 21. Controls were applied immediately. Light infestations persisted, especially in the areas of weed growth protection. These limited potato tuberworm populations were kept at a minimum for the remainder of the growing season. Larvae were found infesting 100 acres of eggplant in Charleston County, SOUTH CAROLINA, on September 9. Potato tuberworm was not found during surveys in Baldwin, Mobile, and Escambia Counties, ALABAMA, due to well planned survey and control efforts for the previous 2 years. In UTAH, potato tuberworm was found only in an occasional potato in the area of Washington County, and at Enterprise and Beryl in Iron County. Potato tuberworm larvae were heavy in potatoes in the San Joaquin Valley of CALIFORNIA.

GREEN PEACH APHID (Myzus persicae) remained light on potatoes in central WASHINGTON through midseason; populations built up very heavily late in the season. Cold weather in late August and early September made control difficult. In early July, nymphs and alates were observed in 13 of 24 seed fields at Lynden,

Custer, and Bellingham, Whatcom County. Green peach aphid was well below normal on all crops in IDAHO. Counts on potatoes in Canyon County averaged 2 per 100 leaves in early July, increased to 14 per 100 leaves by late July, and then declined for the rest of the season. This aphid was first found on potatoes in the eastern area in early August. Counts increased gradually to a maximum of 2 per 100 leaves at the end of the season in eastern Idaho. This pest was reported in heavy numbers from potato fields in the Hermiston area, Umatilla County, OREGON, during late August. In CALIFORNIA, green peach aphid, FOXGLOVE APHID (Acyrthosiphon solani), and another aphid caused damage to potatoes in several locations throughout the State. Green peach aphid was the most common species to infest potatoes throughout UTAH. Green peach aphid was not the problem this year in COLORADO as populations occurred later than in 1969. This aphid began to appear near the last of June, but did not have time to increase before potato harvest. Green peach aphid was only found in Otero County this year. In NEW MEXICO, the spring buildup on chilli peppers and bell peppers required treatment in the Mesilla Valley. Unusually heavy numbers were a problem on bedding plants such as chilli peppers, bell peppers, and tomatoes in greenhouses in Bernalillo, Valencia, San Juan, and McKinley Counties.

Green peach aphid populations in MICHIGAN were heavy and difficult to control. Ideal weather in August and/or a failure of insecticides may have been the cause. This pest was troublesome and damaging to eggplant in many Cumberland and Gloucester County, NEW JERSEY, plantings by late July. Thousands of winged forms were observed hovering above plants in one field near Vineland on July 29. By mid-August, adequate rainfall helped reduce populations to more manageable levels. Populations became heavy by late July in New Jersey. Buildup was partly due to lower than average early summer rainfall. In DELAWARE this aphid was heavy on several crops, especially potatoes and sweet peppers. In PENNSYLVANIA, green peach aphid developed very dense populations in most potato fields and on most other vegetables. Most control measures were ineffective. Cost of control on potatoes was about $300,000. Green peach aphid began to build up on peppers by July 10 in MARYLAND. Counts ranged 2-6 per 50 plants in Dorchester, Somerset, and Wicomico Counties. Populations were moderate to heavy and required controls on potato acreage in Worcester County late in August. Preplant applications of insecticides were satisfactory for protection on potatoes. Moving from Canada plum to potatoes on June 22 in Aroostook County, MAINE, this aphid infested 6 percent of the potatoes. By August 24, increases were noted and a fungus attacked only a small percentage of the aphids as top foliage killing time approached. At East Corinth, Penobscot County, and Turner, Oxford County, it had increased to 15 per leaf (3-leaf count method) on table stock and from 3 to 6 per leaf on seed stock by August 24. The latter counts became of much concern but no diseases became involved before top killing of the seed stock. Heavy populations of green peach aphid developed from early spring migrants on peppers at Bradenton, Manatee County, FLORIDA. Controls were difficult. Damage was light on potatoes during spring at Hastings, St. Johns County. Populations were moderate on 12 percent of 1,000 eggplants at a farm near Tampa, Hillsborough County, in early April.

POTATO APHID (Macrosiphum euphorbiae) spring migrants moved from wild roses to potatoes June 22 in Aroostook County, MAINE. Infestations increased to 50 percent of the plants infested. By July 20 each colony contained 1-22 nymphs, was 5.5 percent parasitized, and 2.3 percent killed by fungus. Potato aphid accounted for most of the infestation by the aphid complex on potatoes. By August 27 each colony contained up to 37 nymphs, was 5.9 percent parasitized, and 8.5 percent killed by fungus. On August 24, fall migrants appeared in yellow traps. Numbers on potatoes decreased due to migration, increased fungal attacks, and predators. Damage was absent on treated potatoes and light on untreated potatoes with no loss in yield. FOXGLOVE APHID (Acyrthosiphon solani) in Aroostook County, MAINE, was first observed on hawkweed June 22. Three infestations of 1-13 nymphs per colony were reported on 2,100 plants by July 20. No aphids were found on potatoes after August 10. GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) was above average on tomatoes and other crops at Clemson, Oconee County, SOUTH CAROLINA, and other Piedmont communities.

TARNISHED PLANT BUG (Lygus lineolaris) caused noticeable damage on potatoes the last week of June at Lincoln, Penobscot County, MAINE. Population pressure at hay cutting caused migrations to and from potatoes as grass regrew. Because of growth and grass maturity, populations increased on potatoes up to top killing, at which time counts were 2-5 per sweep on certified seed potatoes and 10-12 per sweep in 50 percent of the fields of table stock potatoes at East Corinth, Penobscot County. SAY STINK BUG (Chlorochroa sayi) damaged a commercial planting of chilli peppers at Safford, Graham County, ARIZONA, in early September. BROWN STINK BUG (Euschistus servus) was locally damaging to tomatoes in Pickens County, SOUTH CAROLINA.

VEGETABLE LEAFMINER (Liriomyza munda) was light in tomato foliage during spring in FLORIDA. Populations were heavy and damage severe on fall tomatoes. Vegetable leafminer was occasionally found on bell pepper. Counts were light on potatoes at Hastings, St. Johns County. PEPPER MAGGOT (Zonosemata electa) adults collected on sticky-board traps in southern NEW JERSEY were fewer than for the same period in 1969. Most of the pepper acreage in Atlantic, Cumberland, and Gloucester Counties was sprayed according to schedule during July. VINEGAR FLIES (Drosophila spp.) were moderate and below normal in tomato fields during fall in UTAH.

TWOSPOTTED SPIDER MITE (Tetranychus urticae) has become more numerous in home gardens in SOUTH CAROLINA. Some damage occurred to tomatoes. Tetranychus spp. damaged tomatoes in most areas of OKLAHOMA from June through August. TOMATO RUSSET MITE (Aculops lycopersici) was heavy on tomatoes in several widespread areas of CALIFORNIA.

BEANS AND PEAS

Highlights:

MEXICAN BEAN BEETLE was more abundant and caused more damage to late beans in southern New Jersey than for five years. This pest was serious on beans in Alabama and was damaging in parts of Nebraska and New Mexico. COWPEA CURCULIO remained a major pest of peas in Alabama. EUROPEAN CORN BORER continued serious on beans in Michigan and second-generation larvae were more damaging than usual to beans in central Pennsylvania. WESTERN BEAN CUTWORM was serious on beans for the third year in south-central Idaho. PEA APHID was heavy on peas during June in Wisconsin and economic during mid-August in northeast North Dakota. COWPEA APHID was heavy and widespread on commercial and garden plantings in Alabama. BEAN THRIPS damaged commercial beans in the upper Coastal Plain section of South Carolina.

MEXICAN BEAN BEETLE (Epilachna varivestis) was a serious and damaging pest of lima beans and pole beans in ALABAMA, but not quite so serious on field peas. Populations were as heavy as in 1967, 1968, and 1969.

Mexican bean beetle was found for the first time in Jackson County, IOWA, during 1970. This pest had been reported from Clinton, Scott, Muscatine, Louisa, Des Moines, Lee, Van Buren, Davis, and Appanoose Counties in previous years. Mexican bean beetle damaged field beans in Scotts Bluff and Box Butte Counties, NEBRASKA. Adults averaged 3 per plant on August 7. Infestations remained about the same in WYOMING as they were in 1969. Larvae began appearing July 27 in Goshen County. A few fields were treated in Goshen and Platte Counties. Mexican bean beetle larvae ranged 0-9 per bean plant in Crowley, Otero, and Pueblo counties, COLORADO, in late July. Damage was noted and controls were applied to many fields. Adults appeared in Larimer, Weld, Boulder, and Morgan Counties in early June. Eggs appeared in late June and larvae in mid-July. Damage varied, being heaviest in fields where controls were applied late. Heavy populations were noted in Morgan County at harvest. Loss in Colorado was light to moderate. Damage by Mexican bean beetle was above normal in gardens and moderate in canning and commercial market crops in UTAH. Populations were very destructive on bush and pole beans in Bernalillo, Valencia, and Rio Arriba Counties, NEW MEXICO. This bean pest was

more abundant and caused more injury in late bean plantings in south NEW JERSEY than at any similar period during the past 5 years. Recommended insecticides provided adequate control. Mexican bean beetle populations on commercial beans were kept below economic levels in MARYLAND by timely controls. Infestations in garden plantings ranged moderate to heavy statewide where controls were not applied. Light to moderate populations of Mexican bean beetle infested beans in TENNESSEE. Damage was light in most cases. Moderate to heavy damage was also observed in a few isolated areas in the eastern and western sections. Controls, when applied, were effective. Mexican bean beetle damage was light on beans in SOUTH CAROLINA.

WESTERN SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata undecimpunctata) adults were more abundant than usual in western OREGON. Controls were needed in midsummer on bush beans in the Willamette Valley and pole beans in the Roseburg area, Douglas County. SPOTTED CUCUMBER BEETLE (D. undecimpunctata howardi) adults caused moderate to heavy damage to bean pods in many home gardens in middle TENNESSEE during July. BEAN LEAF BEETLE (Cerotoma trifurcata) feeding damage was noted on bean pods in scattered fields in Dodge and Burt Counties, NEBRASKA, during September. Losses were estimated at about 1 percent in the fields examined. Bean leaf beetle was a pest mainly of peas and beans in the 2 to 6-leaf stage, but was found throughout the year in ALABAMA.

PEA LEAF WEEVIL (Sitona lineatus) was heavy in young peas in northern Whitman and southern Spokane Counties, WASHINGTON. Damage was spotty but widespread. This was the first record of pea leaf weevil in this portion of eastern Washington. This pest was found in Latah County, IDAHO, May 14. Adults completely notched the leaf margins of many 4 to 8-inch plants. Infestation was localized. Several thousand adults were readily collected at harvest.

COWPEA CURCULIO (Chalcodermus aeneus) remains one of the major pests of the 6,000 acres of commercial peas in ALABAMA. This weevil was general on cowpeas and localized on snap beans in SOUTH CAROLINA.

PEA WEEVIL (Bruchus pisorum) was light again this year in IDAHO. Very few field margins at Palouse, Latah County, needed treatment. Pea weevil was moderate during spring and some control on commercial and garden beans was necessary in UTAH. SUGARBEET WIREWORM (Limonius californicus) caused a 60-percent stand reduction of beans near Murtaugh, Twin Falls County, IDAHO.

EUROPEAN CORN BORER (Ostrinia nubilalis) second-generation larvae were more destructive than usual to beans in PENNSYLVANIA. Growers made 2 spray applications to snap beans in the central areas in early August to prevent larval infestations. Numerous lots of untreated beans were rejected by processors because of high larval counts. European corn borer continued to cause serious damage and losses to snap beans in MICHIGAN. Both broods are important in this crop. Controls were effective. This pest damaged stems of field peas in Abbeville County, SOUTH CAROLINA. LESSER CORNSTALK BORER (Elasmopalpus lignosellus) was heavy on beans in eastern Palm Beach County, FLORIDA, during fall. Losses on some farms ranged 10-25 percent. Infestations were lighter and more scattered in the Everglades area. Larvae in SOUTH CAROLINA damaged beans late in the season. Lesser cornstalk borer larvae in OKLAHOMA damaged garden beans and peas locally in Jefferson County during mid-September. LIMABEAN VINE BORER (Monoptilota pergratialis) damaged beans locally in SOUTH CAROLINA, especially at Charleston, Charleston County.

WESTERN BEAN CUTWORM (Loxagrotis albicosta) moths emerged June 30 in Minidoka County, IDAHO, and July 5 in Twin Falls County. Moth emergence was heavy by July 22 and peaked at 146 per trap per night in 7 blacklight traps on July 25. Numbers decreased due to cool weather, but peaked again on July 30 at 148 per trap. Collections decreased rapidly after August 13. Overall numbers were lower in 1970 than in 1969 but were 7-10 days later. Consequently there were more young larvae at harvest to damage beans after windrowing. Western bean cutworm causes the most damage in Minidoka and Twin Falls Counties and has been serious the past 3 years. GREEN CLOVERWORM (Plathypena scabra) damaged scattered beanfields

in Bay, Clinton, and Tuscola Counties, MICHIGAN. Larval populations in WISCONSIN ranged 2-6 per linear foot on lima beans and snap beans in Pepin, St. Croix, and Trempealeau Counties the third week of August and 2 per linear foot in the central sands area. Canning companies estimated control costs at $75,000.

WESTERN YELLOWSTRIPED ARMYWORM (Spodoptera praefica) was nearly absent this year in the green pea area in Latah County, IDAHO, where infestations were noted during 1969. It was noneconomic elsewhere in peas checked during June. CABBAGE LOOPER (Trichoplusia ni) damage was moderate on 70 acres of commercial snap beans in Tulsa County, OKLAHOMA, in early October. Controls were ineffective. Populations of GRANULATE CUTWORM (Feltia subterranea) and BLACK CUTWORM (Agrotis ipsilon) caused injury to beans and field peas in the Everglades area of FLORIDA. Larvae ranged 6-22 under a single plant in one planting of field peas. CORN EARWORM (Heliothis zea) populations were the heaviest in 5 years in ILLINOIS, and damaged beans in the northern section. DIAMONDBACK MOTH (Plutella xylostella) larvae were more severe on snap beans in late summer in NORTH CAROLINA than in recent years.

PEA APHID (Acyrthosiphon pisum) was first detected in peas on May 26, and by early June had increased to 20 per sweep in some fields in WISCONSIN. The following week, counts were 250 per sweep in podded peas and 5 per linear foot in emerging peas. Canning companies were in the process of treating. Pea aphid continued to be heavy throughout the rest of June. By July, counts began to decline and checks of late peas remaining in late July revealed counts below economic thresholds in most cases. Pea aphid was found in economic counts of 100 per growing tip on peas in mid-August in Pembina County, NORTH DAKOTA. Controls were applied to 500 acres of peas. Damage to canning or garden peas in UTAH was rare. Pea aphid counts on peas in IDAHO were well below normal at Genesee, Kendrick, and Troy in Latah County.

COWPEA APHID (Aphis craccivora) was widespread in ALABAMA. Populations were heavy in home gardens and commercial plantings. This pest is suspected to be the vector of a widely distributed cowpea mosaic throughout the State. GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) was reported above average on beans at Clemson, Oconee County, and other Piedmont communities in SOUTH CAROLINA. Infestations were heavy in August and required controls in 40 acres of commercial beans in Frederick County, MARYLAND.

BEAN THRIPS (Caliothrips fasciatus) damage was moderate to pinto bean foliage in San Juan County, UTAH. This thrips caused local damage to beans in CALIFORNIA. Bean thrips was very damaging to commercial beans in the upper Coastal Plain section of SOUTH CAROLINA. WESTERN FLOWER THRIPS (Frankliniella occidentalis) caused severe blossom drop on garden beans in CALIFORNIA. Sericothrips variabilis was numerous on snap beans in Sussex County, DELAWARE, in mid-June.

SIXSPOTTED MITE (Eotetranychus sexmaculatus) was severe on peas in San Diego County, CALIFORNIA. TWOSPOTTED SPIDER MITE (Tetranychus urticae) has tended to become more numerous in home gardens in SOUTH CAROLINA. Primary damage has been to beans.

COLE CROPS

Highlights:

CABBAGE LOOPER was a problem on cole crops throughout the year in California. This pest damaged commercial cabbage in Wisconsin late in August, commercial greens in Tennessee, and was heavy as usual on cole crops in Florida. IMPORTED CABBAGEWORM required regular treatments in New Mexico, and was one of the most destructive pests of cabbage in Alabama.

CABBAGE LOOPER (Trichoplusia ni) heavily infested cabbage and other plants in many gardens in Custer, Garfield, Pondera, and Sweet Grass Counties, MONTANA. Larvae in OREGON averaged one per center head in an experimental planting of broccoli near Corvallis, Linn County, during late August. In CALIFORNIA it was a problem throughout the year on cole crops. Numbers in UTAH were light this season. Cabbage looper, along with IMPORTED CABBAGEWORM (Pieris rapae), in NEW MEXICO damaged cabbage in truck and home gardens in Bernalillo, Sandoval, and Valencia Counties. Plants had to be treated regularly. Cabbage looper damage in OKLAHOMA to commercial cabbage was light in Tulsa County during mid-May and moderate during early September, and heavy on collard, mustard, and turnip greens during late September. Damage was heavy to several fall-planted vegetables, especially turnips, in gardens in the eastern half of Oklahoma during October. Cabbage looper and P. rapae were heavy in a field of commercial cabbage during mid-July in Shawnee County, KANSAS.

Heavy populations of cabbage looper in ILLINOIS infested other cole crops. Many adults appeared in WISCONSIN blacklight traps during mid-July. Larval numbers increased rapidly. By early August, damage was significant in commercial cabbage and in gardens throughout the eastern half of Wisconsin. By late August another generation was apparent and ranged up to 5 per leaf. Growers sprayed repeatedly, but despite their best efforts, loss still occurred. Controls cost about $50,000. Numbers of cabbage looper along with P. rapae in MICHIGAN were moderate. Control with chemicals or Bacillus thuringiensis was satisfactory. Damage was extensive, however, when rainy periods washed the materials off the plants and kept fields too wet for re-treating. In northeastern OHIO, cabbage looper built up during August. All larval instars and some pupae were found on cabbage by August 20.

Throughout NEW JERSEY, cabbage looper, P. rapae, and DIAMONDBACK MOTH (Plutella xylostella) larvae were abundant on cabbage and broccoli. First blacklight trap collections occurred June 12 in Cumberland County and peaked with 82 per night in Salem County on August 26 and 27. A polyhedrosis virus infected loopers on broccoli in Cumberland County during mid-August. By mid-September, field infestations were practically nonexistent. Cabbage looper built up in MARYLAND during late August but did not become economic due to timely controls on cabbage, broccoli, and kale. In TENNESSEE most controls were not effective, and damage occurred to commercial greens statewide. Cabbage looper, along with SOYBEAN LOOPER (Pseudoplusia includens), damaged cabbage, collards, and other cole crops throughout ALABAMA. Cabbage looper was the more important species. Cabbage looper was heavy as usual in FLORIDA during April to June. Damage to cabbage was heavy in the Everglades area; control was difficult. Heavy larval numbers caused moderate to heavy damage to crucifers, mostly cabbage during spring; larvae caused moderate damage during fall. Control was satisfactory with recommended materials, properly applied at the correct times. Larvae heavily damaged collards during March in experimental plots at Bradenton, Manatee County, although the plants were regularly treated. In central Florida during mid-May, up to 108 eggs and 10 larvae per small plant infested untreated collards. By late May many larvae were dead from a virus.

A NOCTUID MOTH (Lacinipolia vicina) in MINNESOTA severely damaged cabbage and radish fields in Sibley County. Some stands were completely destroyed. SOYBEAN LOOPER (Pseudoplusia includens) in ARKANSAS was a serious pest of greens crops during fall due to resistance to available insecticides. BEET ARMYWORM (Spodoptera exigua) in FLORIDA seriously damaged cabbage in the Everglades area because this species is difficult to control. Damage was moderate to cabbage and other crucifers during fall at Hastings, Saint Johns County.

IMPORTED CABBAGEWORM (Pieris rapae) caused early damage in many CALIFORNIA locations on most cole crops. Injury in UTAH was conspicuous in garden cabbage but light to moderate in commercial plantings. Imported cabbageworm in ALABAMA was one of the most destructive on commercial and home plantings of cabbage, collards, and other cole crops statewide. In SOUTH CAROLINA, however, it was the number two insect on collards. Damage by imported cabbageworm was heavy in unsprayed noncommercial cabbage in MARYLAND. Cabbage cannot be grown untreated in

the State. A serious pest of cole crops in NEW YORK, larvae were a problem throughout the season because parasites were not present as in other years. Larvae ranged 40-50 per plant in unsprayed fields. Although numbers in southern and central MAINE were heavy during the last week of July, damage was light due to effective use of insecticide.

DIAMONDBACK MOTH (Plutella xylostella) was light on cabbage and other cole crops in UTAH. Counts during spring had been fewer than usual on wild mustards. Numbers were damaging in isolated areas throughout ALABAMA on all cole crops, but mainly on turnips, mustard, cabbage, and collards. It was extremely rare on collards in SOUTH CAROLINA. In NORTH CAROLINA all stages of diamondback moth heavily infested collards and turnip greens throughout the Coastal Plain as late as November 10. Larvae severely infested untreated collards and mustard greens in Manatee County, FLORIDA, during late March and early April. Populations were low on crucifers in Saint Johns County. Found throughout the growing season at Belle Glade, Palm Beach County, larvae became severe on garden crucifers or inadequately treated crops, particularly late in the season.

SOUTHERN CABBAGEWORM (Pieris protodice), a rare species of economic importance in ARKANSAS, caused concern by infesting garden patches of greens in Benton County in October. CROSS-STRIPED CABBAGEWORM (Evergestis rimosalis) was numerous in SOUTH CAROLINA on garden cabbage during May in Anderson, Oconee, and Pickens Counties. CABBAGE WEBWORM (Hellula rogatalis) severely damaged mustard, turnips, and cabbage in southeastern NORTH CAROLINA from mid-September until frost in late November in the Piedmont and Coastal Plain.

CABBAGE MAGGOT (Hylemya brassicae) was found in basal portions of cabbage heads harvested in the Willamette Valley, OREGON. This occurrence is uncommon and usually attributed to selection of basal leaves for egg laying during rainy weather. In MONTANA it damaged cabbage and radish plants in Chinook, Great Falls, Big Timber, and Libby. Activity on cole crops in ILLINOIS was less than average in 1970. Adults were noted in Racine County, WISCONSIN, the week of May 10. Some isolated instances of moderate to heavy infestations occurred, but generally populations were lower than normal. Cabbage maggot was heavy in western NEW YORK, but damage was scattered due to abundant rain which brought most of the infested plants through to harvest. Adults were active in 4 distinct peaks, the first and most damaging occurred on May 10.

CABBAGE APHID (Brevicoryne brassicae) was very abundant on cole crops most of the year in CALIFORNIA. This aphid was numerous to damaging on garden cabbage in UTAH. Colonies began to increase on cole crops in Wood County, WISCONSIN, by late August but diminished rapidly. Aphids were scarce elsewhere. In ALABAMA it was a serious pest to cabbage and collards statewide throughout the year. In FLORIDA heavy counts during spring moderately damaged untreated or improperly treated cabbage at Hastings, Saint Johns County. Control was satisfactory when correct methods and materials were used.

TURNIP APHID (Hyadaphis pseudobrassicae) in OKLAHOMA ranged moderate to heavy on garden turnips in Marshall County during early October. Throughout ALABAMA damaging numbers were found on turnips and mustard during summer and winter. In FLORIDA, GREEN PEACH APHID (Myzus persicae) and H. pseudobrassicae were very abundant on Chinese cabbage during fall. Counts on the undersurface of the leaves were 150+ per square inch in the Everglades area. Green peach aphid was the more abundant, but as parasitism developed, turnip aphid became the more abundant by late November.

FALSE CHINCH BUG (Nysius ericae) severely damaged a seed planting of cabbage in Marion County, OREGON, during September. Buildup apparently occurred in cabbage litter of adjacent fields. HARLEQUIN BUG (Murgantia histrionica) was extremely rare on collards in SOUTH CAROLINA, in marked contrast to 25 years ago when it was found in every garden.

MOLE CRICKETS (Scapteriscus spp.) heavily damaged crucifers in seedbeds during fall in Saint Johns County, FLORIDA. Damage was moderate when seedlings were transplanted to the field. Damage in the field is unusual. Control was difficult in seedbeds and in the field.

CUCURBITS

Highlights:
STRIPED CUCUMBER BEETLE damaged young cucumber plants in North Carolina and was a problem on cantaloup in Colorado. MELON APHID was prevalent in California, and necessitated controls to prevent buildup on cantaloup in Arizona. BEET ARMYWORM damaged melons in Florida and melons and cucumbers in California. SQUASH BUG ranged moderate to heavy on various cucurbits, especially squash, from mid-June to early September in Oklahoma.

STRIPED CUCUMBER BEETLE (Acalymma vittata) severely infested young cucumber plants during late May and early June in NORTH CAROLINA. Damage was about normal on mature plants. A. vittata was light to moderate in OKLAHOMA and infested various cucurbits in scattered areas during July, August, and September. Striped cucumber beetle was a problem on cantaloup in COLORADO early in the season. Counts ranged 0-5 per plant and populations declined after the first week in July.

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) was noticeable from the middle of July through summer in OHIO. It was primarily a pest of backyard gourds and melons. Counts of 15 per blossom were found on commercial pumpkin plantings in early September. Most infested areas were adjacent to cornfields. WESTERN SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata undecimpunctata) damaged cucumbers in several locations in CALIFORNIA. A LEAF BEETLE (Paranapiacaba tricincta) was found again this year feeding on the ovaries of melons in Otero and Pueblo Counties, COLORADO. Another LEAF BEETLE (D. undecimpunctata tenella) caused moderate damage to squash, cantaloup, and other melon blossoms in the "Dixie" area of Washington County, UTAH.

MELON APHID (Aphis gossypii) was probably the most prevalent species on melons, cucumbers, and squash in CALIFORNIA. In central UTAH, melon aphid was numerous on cantaloup, and sometimes on squash. Controls were necessary in ARIZONA from early to mid-May to prevent buildup in cantaloup fields in Yuma County. Heavy populations in OKLAHOMA infested watermelons in Lincoln County and were also heavy on cucumbers and cantaloups in Payne County during August. Melon aphid populations on watermelons near Bethlehem, Caroline County, MARYLAND, were the only infestations reported.

EUROPEAN CORN BORER (Ostrinia nubilalis) was reported for the first time in cantaloup in MICHIGAN. MELONWORM (Diaphania hyalinata) was the most serious of this group of pests on cucumbers, cantaloups, and pumpkins in ALABAMA.

CABBAGE LOOPER (Trichoplusia ni) was discovered in a Monroe County field where extensive leaf feeding and 3 pupae were found underneath cantaloup leaves. This is a new host for T. ni in MICHIGAN. BEET ARMYWORM (Spodoptera exigua) was damaging to melon and cucumber plantings in CALIFORNIA. Beet armyworm caused damage to melons in the Ft. Myers, Lee County, area of FLORIDA. It was a problem as a "rindworm" on watermelons in Collier County. SQUASH VINE BORER (Melittia cucurbitae) was a pest on cucumber and cantaloup in central and southern ALABAMA.

SQUASH BUG (Anasa tristis) was spottedly numerous and damage to cucurbits was about normal in UTAH. This pest was sometimes very numerous in Utah County. Squash bug adults appeared in watermelon fields in Jefferson County, OKLAHOMA, the second week of June. Hatching began the third week of June. Moderate to heavy counts infested various cucurbits, especially squash, from mid-June to early September in most areas. Squash bug was light in OHIO. Populations were absent in many cucurbit plots and when found, counts were rarely above 2 nymphs per foot of vine.

SEEDCORN MAGGOT (Hylemya platura) caused some loss of melon seed planted during cool, stormy intervals during spring in UTAH. TWOSPOTTED SPIDER MITE (Tetranychus urticae) infested many acres of cantaloups in Sumter County, SOUTH CAROLINA.

GENERAL VEGETABLES

Highlights:

BEET ARMYWORM, CABBAGE LOOPER, and GREEN PEACH APHID were problem pests on various vegetables during the 1970 season.

ARTICHOKE PLUME MOTH (Platyptilia carduidactyla) continued a serious pest on artichokes in CALIFORNIA. BEET WEBWORM (Loxostege sticticalis) flights and beet injury were unusually light in UTAH. BEET ARMYWORM (Spodoptera exigua) caused concern to growers of carrots, lettuce, and onions in ARIZONA. Lettuce was heavily hit where treatments were delayed. In FLORIDA, S. exigua damaged celery and other vegetable crops seriously in the Everglades area because the approved insecticides gave only partial control. SALTMARSH CATERPILLAR (Estigmene acrea) was found throughout the year in the Everglades area of the State. The tachina flies and a fungus (Entomophthora sp.) which normally reduce numbers during summer, might have been light.

CABBAGE LOOPER (Trichoplusia ni) was a continuing problem on vegetables in CALIFORNIA; larvae required treatments. In ARIZONA it was the major problem on lettuce. The winter crop had the least problems, but early spring and late fall crops were generally treated regularly in the lettuce areas of Yuma, Maricopa, Pinal, Pima, and Cochise Counties. As in the past in Otero County, COLORADO, insects did not seriously threaten the spring crop of lettuce although cabbage looper infested some fields. In the fall crop, however, cabbage looper infestations ranged up to 40 percent. Lannate effectively controlled this pest. Larvae in OHIO infested one-third of the plants in greenhouse leaf lettuce and completely defoliated some. Sprayed or treated plantings showed little or no feeding. Heavy as usual during April to June in the FLORIDA Everglades, cabbage looper damaged celery. This larva is the most difficult to control on vegetable crops next to S. exigua.

Collected in 1969, SPOTTED ASPARAGUS BEETLE (Crioceris duodecimpunctata) and ASPARAGUS BEETLE (C. asparagi) were reported in 1970 as new State records for NEVADA. Spotted asparagus beetle collected in Washakie and Hot Springs Counties, WYOMING, are new county records. Asparagus beetle numbers were heavy in MICHIGAN. Larvae heavily damaged asparagus ferns during late July in Van Buren County. Numbers were economic in Berrien and Oceana Counties. In MARYLAND, asparagus beetle adults were active and laying eggs on May 1. Adults averaged 1 per yard in Kent County. Controls were required to prevent egg contamination of spears.

SWEETPOTATO FLEA BEETLE (Chaetocnema confinis) in Wicomico County, MARYLAND, was higher than 1969's light to moderate numbers. Heavy counts, 2-5 per plant, in several newly planted fields during early June made replanting necessary. Counts generally in this county ranged 1-2 per yard during spring. Controls were applied by many growers during July to suppress possible larval root injury. Early in the season in Maryland, GOLDEN TORTOISE BEETLE (Metriona bicolor) infestations on sweetpotatoes were moderate to heavy (30-80 percent defoliation) near Hebron, Wicomico County. About 50 acres required controls during early June. Counts averaged less than 1 per plant for the rest of the season. CARROT WEEVIL (Listronotus oregonensis) caused much injury to large commercial fields of untreated carrots in DELAWARE.

GREEN PEACH APHID (Myzus persicae) was one of the main pests on many kinds of vegetables in CALIFORNIA. Medium numbers infested spinach in Clark County, NEVADA, during April. Numbers in UTAH were moderate on seed beets in Washington County during spring. In ARIZONA special treatments were needed to control this aphid on lettuce in Yuma County during early February. In MARYLAND, spring

populations of green peach aphid averaged less than 2 per yard in 600 acres of spinach in Dorchester and Kent Counties. Timely cuttings in May prevented populations from becoming economic. In NEW JERSEY it damaged a sweetpotato planting in Burlington County during late July; by August 7 it was eliminated by heavy numbers of Hippodamia convergens (convergent lady beetle). Green peach aphid, heavier than in the past 5 years, infested several vegetables in southern and western MAINE.

ASPARAGUS APHID (Brachycolus asparagi) was first identified from NEW JERSEY in February 1970 although asparagus research plots had been treated in August 1969 to control damaging aphid populations, which undoubtedly were this species. It first appeared during late June in experimental plantings at East Brunswick, Middlesex County; damage was severe enough to warrant control by early July. This aphid was found in Monmouth County and elsewhere in Middlesex County by July 23, in Burlington, Ocean, Cumberland, and Gloucester Counties by August 7, and in Salem, Mercer, and Somerset Counties by August 14. Severe stunting, rosetting of brush, and stickiness from much honeydew were evident in many heavily infested fields. Overwintering eggs, probably of this species, were first observed on brush at Somerset, Somerset County, on October 1. By late August many aphids in many fields were parasitized. Hippodamia convergens was numerous on brush, particularly in Gloucester County fields. Asparagus aphid was found on asparagus in Bucks and Montgomery Counties for a new State record in PENNSYLVANIA.

ONION MAGGOT (Hylemya antiqua) was a local problem in commercial and garden onions and garlic in CALIFORNIA. In IDAHO very little damage occurred in treated commercial onions. Maggots eliminated 95 percent of the onions in an experimental plot planted under shade and 10-15 percent of the onions in a plot where a spring furrow treatment was not applied at Parma, Canyon County. Injury to onions in UTAH was common in gardens and moderate in commercial plantings. Onion maggot was light on onions in Weld and Boulder Counties, COLORADO. Loss was moderate. Infestations were less than 10 percent at Pueblo, Pueblo County. Activity on onions in ILLINOIS was less than average in 1970. Adults were less abundant in NEW JERSEY at collection sites than during the previous 2 years. Very little economic injury occurred to onions since most of the acreage was treated at planting.

BEET LEAFMINER (Pegomya betae) and an EPHYDRID FLY (Psilopa leucostoma) were much less abundant in WASHINGTON than in past years. Beet leafminer severely damaged spinach, swiss chard, and beets in home plantings at Pullman, Whitman County. SPINACH LEAFMINER (Pegomya hyoscyami) was the most important garden pest in MAINE in 1970 because it infested almost all of the beets and much of the spinach and swiss chard. Damage occurred primarily to beet greens. Several beet plantings were unfit for use and were destroyed. The second generation in the last part of June caused the greatest damage. Controls were effective.

ASPARAGUS MINER (Ophiomyia simplex) numbers in MICHIGAN were heavy in the 3 major asparagus counties--Berrien, Oceana, and Van Buren. It infested the fern from 8 inches above the soil surface down to the crown. All stages were found throughout the summer from mid-June onward. Exceeding 1969's damage in MAINE, CARROT RUST FLY (Psila rosae) damaged about 30 percent of the carrots in 25 percent of the gardens in the southern area. Controls were satisfactory in commercial plantings.

ONION THRIPS (Thrips tabaci) was light on onions in Weld and Boulder Counties, COLORADO. Losses were moderate. Counts ranged 0-60 per plant during the season. Effective control may be obtained with 3-4 sprays. In UTAH it caused light to moderate discoloration to tops of dry and seed onions as usual. In IDAHO, this thrips damaged a few bulb onion fields in Canyon and Payette County where sprays were delayed. Counts appeared normal in bulb and seed fields.

LYGUS BUGS (Lygus spp.) were present in about the usual numbers in southern IDAHO. Although required on most seed crops, control was not difficult to maintain. Nearly all carrot fields were treated. SOUTHERN GREEN STINK BUG (Nezara viridula) numbers and damage were heavy on miscellaneous vegetables during summer and fall at Hastings, Saint Johns County, FLORIDA. It was difficult to control.

SPIDER MITES, mostly Tetranychus spp., were generally prevalent on vegetables in Canyon, Ada, Payette, and Washington Counties, IDAHO, but not as damaging as in previous years. An ERIOPHYID MITE (Aceria peucedani) caused no damage to carrot seed fields in Idaho in contrast to 2 badly damaged carrot seed fields in 1969. Typical symptoms of low numbers were widespread in the southwestern area. WHEAT CURL MITE (Aceria tulipae) populations were light on vegetables in southwestern Idaho. No damage occurred in 1970 compared with 1969 when 2 wheatfields in Canyon County were destroyed.

Weather of the week continued from page 186.

TEMPERATURE: Subfreezing temperatures occurred in the West from Canada to Mexico on 1 or 2 days early in the week. Douglas, Arizona, registered 30° Monday morning. Southerly breezes warmed the Atlantic seaboard and temperatures reached the 70's as far north as New Jersey Monday afternoon. The Florida Peninsula warmed to the 80's and Orlando registered 91° Monday. Weather continued mild in the East Tuesday along the Atlantic coast. Palm Beach, Florida, recorded 90°. Southern Texas continued warm with the mercury reaching 92° Tuesday at San Antonio and 93° Thursday at Cotulla. At midweek, a mound of high pressure lay over the East and early morning temperatures dropped to below freezing as far south as northern Florida Thursday morning reaching 28° at Tallahassee and 32° at Jacksonville. A few spots in the North registered subzero temperatures on 1 or 2 mornings. Among the coldest readings were 11° at Eagle River and Land O'Lakes in Wisconsin Wednesday morning and -12° at Marquette County Airport, Michigan, Thursday morning. Southerly winds brought warmer weather to mid-America Saturday. Some areas were 30° warmer Saturday afternoon than Friday. Maximums at Hill City, Kansas, were 40° Friday and 70° Saturday. Williston, North Dakota, warmed to 45° Saturday but no higher than 23° Sunday, after another cold blast pushed into the northern Great Plains. Northerly winds brough subfreezing weather to the Deep South Sunday morning when McBride, Mississippi, registered 30° and Tallahassee, Florida, 26°. (Summary supplied by Environmental Data Service, ESSA.)

NATIONAL WEATHER SERVICE'S 30-DAY OUTLOOK

MID-MARCH TO MID-APRIL 1971

The National Weather Service's 30-day outlook for mid-March to mid-April is for temperatures to average below seasonal normals over the Midwest, the northern half of the Great Plains, the Pacific Northwest, and the Pacific coast. Above normal temperatures are indicated for the southern Plateau, the southern Plains, and Florida. In unspecified areas near normal temperatures are in prospect. Precipitation is expected to exceed normal over the north Pacific coast, the northern Plains, the lower Great Lakes, and from the middle and lower Mississippi Valley to the Appalachians. Subnormal totals are indicated for the Southwest. Elsewhere near normal precipitation is in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the National Weather Service. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price $5.00 a year.

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