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HOME, YARD & GARDEN *501-089*

Newsletter

No. 8 • May 23, 1990

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Scale Crawlers

Home, Yard, and Garden Pest Newsletter No. 3 discussed and described scale species that may be present on trees and shrubs. This article discusses the immature or crawler stage of some important scale insects. The *oystershell scale* overwinters in the egg stage beneath the female scale covering. Their egg hatch is in May or early June in the northern part of the state. The brownish red crawlers will move onto new shoots and leaves. *Euonymus scale crawlers* will also begin to hatch in late May and in June. The yellow- or orange-colored nymphs move out from the adult female covering to new green foliage and stems. *Pine needle scale nymphs* appear on new needles in June. There could be additional generations for some scale species. Oystershell scale can have another generation in the southern part of the state. There could be two or three more generations of the euonymus and pine needle species. Oak lecanium, if present, will appear as crawlers in late June or early July.

Control: All these scale crawlers can be controlled with an insecticide labeled for use on the host plant. Malathion, diazinon, Dursban, and Orthene are commonly used for scale crawler control.

Striped Cucumber Beetles

Striped cucumber beetles are now a problem on cucumber, melon, and squash seedlings and young plants. The beetles do not really damage the young plants, but they can infect them with bacterial wilt, causing the leaves to wilt until the whole plant dies. No cucumber or melon varieties are resistant to bacterial wilt.

Control: To prevent this disease, you must strictly control the cucumber beetles the first

few weeks after your plants emerge. Apply Sevin or rotenone three times at five-day intervals, treating new growth as it appears. If good control is achieved during the first month, the beetles often are not a problem the rest of the season. If the plants are in bloom, apply the insecticide in the evening to avoid interfering with pollination by bees.

Tree Borers

Borers that attack the trunks or stems of lilac, dogwood, viburnum, flowering peach, plum, fruit trees, and ash have similar life cycles and are controlled in the same manner. The adults of the borer species that attack these ornamental plants are wasp-like, clear-winged moths. They lay their eggs in the cracks of bark in May and June. The young tunnel into the wood and remain there until the next spring. There is only one generation per year. In central Illinois, borer moths begin to emerge from infested trees and shrubs in late May and peak in early June.

Control: Pheromone traps are available to determine the adult emergence of ash, lilac, and peach borers. The traps are baited with the scent of a female moth and attract male moths of the same species. To be successful, insecticides should be applied when eggs are hatching and before the young borers have tunneled beneath the bark. Dursban, an insecticide, is effective on this borer species.

Mosquitoes

Heavy rains last week, combined with warm temperatures, will likely produce large numbers of mosquitoes during Memorial Day weekend (and several before and after). Inland floodwater mosquitoes, *Aedes vexans*, lay their eggs on low-lying land. Heavy rains flood these low-lying areas and the eggs hatch into larvae, months to years after they were laid. In warm water, the larval mosquitoes will develop to pupae and emerge as adults in 2 weeks. These female floodwater mosquitoes will easily fly 15 miles and can fly 30 miles to obtain a blood meal. (These mosquitoes bite primarily during the evening hours.)

Control: Repellents containing DEET will protect against mosquito bites. But even with

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repellents, you may wish to restrict outdoor evening activities to avoid these nuisance pests.

LAWNS

Turfgrass: Diseases

Necrotic ring spot was formerly part of the disease called *Fusarium blight*, probably the most serious and widespread disease of established Kentucky bluegrass turfs that are intensively managed. The causal fungus is favored by slightly cool temperatures from spring to autumn and is most severe in late spring and early autumn.

The disease starts as light green patches, about 2 to 6 inches in diameter. In warm to hot weather, the patches enlarge and rapidly progress from a dull reddish brown to light tan



Necrotic ring spot

and finally become straw colored. The patches enlarge each year and commonly become sunken, roughly circular, doughnut-shaped areas of dead or stunted grass, up to 2 to 3 feet in diameter. Tufts of "healthy" grass commonly appear in the center, giving a "frog-eye" pattern. Serious turf damage occurs when the blighted areas are numerous and overlap.

Control: The soil should be fertile, well prepared, and well drained and have a soil reaction (pH) of 6 to 7. Grow locally adapted, disease-resistant grasses in blends or mixtures. Avoid pure stands of very susceptible grass cultivars such as Fylking, Glade, Merion, Monopoly, Nugget, Park, South Dakota Common or Certified, and Victa. Maintain adequate to high balanced fertility based on soil tests, the recommended fertilization program for your area, and the grass or grasses being grown.

Mow frequently at the maximum height (1 1/2 to 3 inches) for upright, lawn-type grasses. Remove no more than one-fourth to one-third of the leaf height at one cutting.

Remove thatch now if it has accumulated to 1/2 inch or more.

Water established turf thoroughly at each irrigation (soil should be moist at least 6 inches deep). Avoid overwatering and frequent sprinklings in late afternoon or evening. Reduce soil compaction by core aerifying now, repeating the operation until there are 18 to 36 holes per square foot, 1 1/2 to 2 1/2 or 3 inches deep.

Preventive fungicide sprays may be needed where disease has been increasing for the past several years. The two fungicides that give excellent control (when applied according to manufacturer's directions and drenched into the top 3 to 4 inches of soil) are Rubigan and Banner. The first application should go on *before* disease is evident or when night temperatures do not drop below 70 degrees F for the first time. Banner and Rubigan also control several other turf disease including summer patch, dollar spot, *Rhizoctonia* brown patch, rusts, anthracnose, leaf smuts, and powdery mildew.

Dollar spot attacks all turfgrasses when temperatures are warm (60 to 85 degrees F) and the weather is wet or humid, particularly if



Dollar spot attacking Kentucky bluegrass.

the turf is deficient in nitrogen. Look for more-or-less round, straw-colored, somewhat sunken spots up to 4 to 8 inches in diameter. Infected leaves show

bleached white to light tan girdling lesions with a dark brown, reddish brown, or purplish border. If serious, many patches merge to produce large, irregular, sunken areas of straw-colored dead turf.

Control: Maintain adequate to high fertility (see under necrotic ring spot above) and avoid overwatering and frequent sprinkling in late afternoon or evening. Do what you can to increase air movement over the turf. You can choose from a number of tolerant or moderately resistant Kentucky bluegrass cultivars, fine-leaf fescues, and perennial grasses. Mow at the maximum height. If dollar spot has been serious in the past, start fungicide applications when the disease is first evident. In addition to

Banner and Rubigan, some excellent fungicides include Chipco 26019, Daconil, Duosan, Dyrene, and Vorlan. Always carefully follow the manufacturer's directions. Apply the fungicide in 3 to 5 gallons of water per 1,000 square feet and apply it uniformly to the turfgrass area.

Red thread is most serious in cool, excessively wet weather in spring and fall on fine-leaf fescues, Kentucky bluegrass, and perennial ryegrass. It is an important disease on slow-growing, nitrogen-deficient turf, where thatch is over 1/2 inch thick, calcium levels in the soil are low, there is a sudden drop in temperature, herbicides have been misused, or the turf is otherwise under stress. The most conspicuous sign is the appearance of pale to bright coral pink, orange, or red mycelial masses on the grass blades. In moisture-saturated air, the gelatinous masses may completely cover the grass leaves binding the blades and leaf sheaths together. Diseased patches fade when dry, and the turf appears bleached tan, yellow, or "scorched" in roughly circular- to irregular-shaped areas from 1 inch to more than 2 feet in diameter. The spots may be scattered, or a number of patches may merge to form large, irregular areas of blighted turfgrass with a reddish brown to tan cast.

Control: Follow the same cultural practices as outlined for dollar spot and necrotic ring spot. Several improved perennial ryegrasses, fineleaf fescues, hard fescues, and Kentucky bluegrass cultivars are resistant to red thread. The same fungicides that control dollar spot will also control red thread. Applications should start when the disease is *first* evident.

Separate well-illustrated Reports on Plant Diseases cover the importance, symptoms, disease cycle, and control measures of these three diseases: Report on Plant Diseases No. 408, *Summer Patch and Necrotic Ring Spot of Lawns and Fine Turfgrasses*; Report on Plant Diseases No. 407, *Dollar Spot of Turfgrasses*; and Report on Plant Diseases No. 413, *Red Thread and Pink Patch of Turfgrasses*.

PLANT DISEASES

Many Herbaceous and Woody Plants: Pythium and Phytophthora Root and Crown Rots

Species of the soil-borne fungi *Pythium* and *Phytophthora* are common soil inhabitants that are commonly called "water molds." One or more of these fungi attack essentially all plants

when the soil is saturated with water, poorly drained, and high in clay.

The primary problem caused by *Pythium* species is the damping-off of seedlings and basal rot of cuttings; but they are also commonly associated with root rots of established plants. *Pythium* root rot is favored by cool, wet, poorly-drained soils and by an excess of water. *Pythium* infects the younger feeding roots, causing a wet, odorless rot. The rot later takes on a light brown to black coloration. The soft to slimy, rotted outer portion of the root (cortex) can usually be easily separated from the inner core (stele). Affected plants are commonly stunted; they wilt easily and often die in hot, dry weather.

Phytophthora species are usually associated with root and crown or stem (trunk or collar) rots of established plants, but they may be a cause of damping-off and basal rot of cuttings. Like *Pythium*, species of *Phytophthora* enter the root tips and cause a water-soaked, odorless, reddish brown to dark brown or black rot. Species of *Phytophthora* cause a serious collar rot of apples, pears, stone fruits, raspberries, strawberries, rhododendrons, azaleas, beech, birches, pines, yews, junipers, dogwoods, elms, lilacs, lindens, oaks, sweet gum, willows, and many other plants. Foliar symptoms include chlorosis (yellowing), marked stunting, wilting, and death. Wilting occurs just prior to plant death and causes leaves to drop even when water is applied. *Phytophthora* collar and root rot are primarily a problem on sites that are poorly drained. High soil moisture is essential for the survival, movement of, and infection by species of both *Phytophthora* and *Pythium*.

Control: Avoid heavy, wet soils, low-lying sites, and standing water around the bases of plants. Plant shallow or on ridges; avoid winter injury; provide support for young trees by a stake, several stakes, or a trellis; and fertilize and prune properly to keep plants as vigorous as possible. Buy disease-free vigorous plants from a reputable nursery, florist, or commercial propagator.

If damping-off, root rot, or collar rot occurs, diagnose the problem promptly and apply a fungicide to protect other plants in the area. Some excellent fungicides against *Pythium* and *Phytophthora* diseases include Aliette, Truban or Terrazole, Subdue, and Banol. Carefully follow the manufacturer's directions and check label registrations, since none of these fungicides are registered for use on all susceptible plants.

With fruit trees, it is often helpful to remove soil around the base of a recently infected tree to expose the entire cankered area. Cut away all diseased tissues (which are usually brown) and leave the trunk area open to permit drying of the infected area and to prevent further disease development. Refill the area around the trunk with good fresh soil in late autumn.

Reports on Plant Diseases that cover problems caused by species of *Pythium* and/or *Phytophthora* include: Report on Plant Diseases No. 615, *Damping-off and Root Rots of House Plants and Garden Flowers*; Report on Plant Diseases No. 636, *Canker and Dieback Diseases of Wood Plants*, Report on Plant Diseases No. 701, *Strawberry Red Stele Root Rot*, and Report on Plant Diseases No. 812, *Phytophthora Collar Rot of Apple*. These well-illustrated leaflets provide much more detailed information on symptoms, disease cycles, and control measures.

Many Herbaceous Plants: Sclerotinia Disease, White Mold or Watery Soft Rot

This common disease is caused by three common soil-borne fungi that attack over 370 species of plants in 64 plant families. Plants grown outdoors and in greenhouses are commonly infected during cool, excessively wet periods where the plant population is high, vegetative growth is dense, and air movement is restricted. Characteristic symptoms and signs include a fluffy, white growth of the fungus on infected plant parts in which globular, flattened, elongated or irregular sclerotia are produced. The sclerotia are white at first, but later become hard and black. Sclerotinia causes damping-off or bed rot; stem and crown (collar) rot; wilt; leaf and petiole rot; flower or blossom blight; and fruit rot (depending on the vegetable, flower, or fruit plant infected).

Control: The soil in greenhouses and plant beds should be steam-pasteurized. Plant in well-prepared, well-drained soil in raised ridges or beds. If mulching with an organic material, avoid contact with the stems; the same is true of manure. You can lighten heavy, clayey topsoil by blending in generous amounts of sand, peat moss, or well-decomposed organic matter. Removing the infested soil and replacing it with new soil before seeding or setting out other plants in the vacant spot is another alternative.

Sanitation is important--collect and remove all diseased plant material promptly when infection is first detected and before sclerotia have formed that will later contaminate the soil. All

refuse should be burned immediately as far away as possible from growing plants. Do NOT place this refuse in a refuse dump or compost pile, because the sclerotia can remain viable for several years. Keep infested soils as weed-free as possible. Follow the best cultural practices to promote vigorous growth and drying of the soil and plant surfaces.

Place root and other crops in a clean, cool, and dry storage immediately after harvest. The humidity in storage should be 90 to 95 percent to prevent shriveling and shrinking, but there should be no free moisture on the walls, ceiling, or floor. Fungicides are beneficial if applied before infection occurs, at the time of planting, or to the base of established plants. Protection is most needed during extended cool and rainy periods in spring and early summer. Suggested fungicides are listed in University of Illinois Cooperative Extension Service Circulars 1184, 1259, and 1260, which should be available at your county Extension office. The timing and placement of applications will vary with the crop. For more information on this disease, a listing of host plants, pictures of the various diseases caused, disease cycle, and a full discussion of control measures, read Report on Plant Diseases No. 1008, *Sclerotinia Disease, White Mold or Watery Soft Rot*.

To obtain copies of any of the Reports on Plant Diseases mentioned in this or other newsletters, send a check, made out to the University of Illinois, to Extension Plant Pathology, N-533 Turner Hall, 1102 South Goodwin Avenue, Urbana, IL 61801. There is a 50 cents charge for each Report on Plant Disease.

Home, Yard & Garden Pest Newsletter is prepared by the following Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey: Entomology, Roscoe Randell and Philip Nixon. Horticulture, Thomas Fermanian, Floyd Giles, Daniel Meador, James Schmidt, Tom Volgt, and David Williams. Plant Pathology, Nancy Pataky, Malcolm Shurtleff, and Darin Eastburn. Agricultural Engineering, Loren Bode and Bob Wolf.

Information for this newsletter is gathered by these people with the help of staff members, county Extension advisers, and others in cooperation with the USDA Animal and Plant Health Inspection service.



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HOME, YARD & GARDEN PEST

Newsletter

No. 9 • May 30, 1990

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Leafminers

Leafminers are insects that live as larvae inside the leaf. More specifically, they feed on the spongy and palisade mesophyll that contain most of the chlorophyll-bearing chloroplasts. They live between the upper and lower epidermis, or top and bottom covering of the leaf. Several groups of insects, including sawflies, flies, moths, and beetles, have developed the ability to live as leafminers. This lifestyle protects the larvae from drying out and protects them from many kinds of predators and parasites. However, many predators and parasites can attack leafminers, and some feed only on leafminers.

Life cycles are similar for most leafminers. They normally overwinter as pupae in the soil or debris at the base of the plant. In the spring, the adults emerge to lay eggs on or in the leaves. These eggs hatch into larvae that feed within the leaf. Leafminers usually leave the leaf as fully grown larvae, dropping to the ground to pupate. They frequently have several generations per year.

Mines start out whitish or light green in color, turning brown as the epidermis over the mine dies. Black specks are often seen in the mine--these are usually the feces of the leafminer. If held up to the light, the leafminer larva can usually be seen as a silhouette in the mine. Damage to the leaf is normally limited to the mine itself, since the unmined part of the leaf is apparently able to continue producing food for the plant. Consequently, all but the most severe leafminer attacks do not affect the plant's health, causing only aesthetic damage.

Leafminers commonly attack columbine, chrysanthemum, beet, spinach, birch, alder, elm, honeysuckle, holly, and oak leaves. Birch

leafminers are probably the most serious, but they can be controlled when Cygon is applied to control bronze birch borers. Chrysanthemum leafminers are serious problems to the greenhouse industry, and holly leafminer is a serious problem in more southern states.

Control: Most leafminers can be controlled by either spraying the plants when mines are still small or picking off and destroying mined leaves. Both methods rely on reducing early generations of leafminers so that later generations are not produced that will cause more noticeable damage. Plants that are heavily attacked tend to be heavily attacked year after year. Because leafminer damage is mostly aesthetic, only heavily attacked plants or plants with very obvious damage should be treated.

Bird Mites

Bird mites are now being found in homes and will be more of a problem over the next few weeks. Bird mites feed on birds, becoming particularly numerous on, and sometimes killing, young birds in the nest. Many of the mites live in the nest itself, only getting on the birds while feeding. When the young birds leave the nest, some mites are carried away with them; but a large number of mites is usually left behind. Within a few days, these mites become hungry and start looking for a meal. Mites in nests that are under eaves, on windowsills, under air conditioners, and elsewhere on buildings will crawl into the building through cracks around windows. These mites will feed on people and pets, frequently causing a rash and itching sensation. (Scratching will cause sores to develop.) Although mites feed on people and other mammals, they are unable to reproduce and die within several weeks.

Control: Bird mites in a building can be killed by washing surfaces with soapy water. Spray pyrethroid aerosols (such as flying and crawling, household or indoor-outdoor insect sprays) in cracks and crevices and along window casements. Remove abandoned nests and wash the area with soapy water or spray the area with insecticidal soap. Prevent bird mites by removing bird nests as soon as they are empty or cover areas where nests are built with screening to prevent future nesting.

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Millipedes

Millipedes, or "thousand leggers," are close relatives of insects; they are black or brown, hard-shelled, and have many tiny legs. These slow-moving animals are usually about 1 inch long and curl into a coil when disturbed or when they die. They feed on decaying plant material in damp areas. The recent rains in Illinois have increased the number of millipedes that are coming into houses. Once inside the house--usually the basement--they die within a few hours from lack of moisture.

Control: Millipedes can be controlled by caulking cracks and crevices in the foundation to keep them from coming indoors. Remove plant debris, such as fallen leaves and bark mulch, and reduce moisture next to the foundation. Spraying the outside foundation and adjacent soil with diazinon is also somewhat effective against the millipedes, although there are no pesticides that are very effective in controlling millipedes.

LAWNS

Managing Landscape Waste

Here are basic recommendations for reducing the need to collect lawn clippings. Further information is contained in the fact sheet *Turfgrass Management Strategies for Reducing Landscape Waste*.

1. Return clippings to the turf whenever possible. When lawns are healthy and the existing thatch is thin, short clippings do not contribute to thatch.
2. Mow when turf is dry, removing no more than one-third of the grass blades at any one mowing. For example, for a desired height of 2 inches, mow when turf reaches 3 inches. Do not mow turf too short. Keep mower blades sharp.
3. Fertilize and water with care. Over-fertilizing and overwatering lead to rapid turf growth, which often leads to increased mowing and thatch production.
4. In most lawns, maintain thatch layer at 1/2 inch or less through proper irrigation, fertilization, and cultivation (through core aerifying, power raking, or vertical mowing).
5. Use good turf management as a first defense against turf pests. Use pesticides only when good management will not solve turf pest problems.

PLANT DISEASES

Blackberries, Black and Purple Raspberries: Orange Rust

Orange rust is the most common and serious of the several rust diseases that infect bramble fruits. It is most serious on wild blackberries. You can see the rust now on weak, pale green to yellowish canes that lack spines. The leaves on such canes are stunted or misshapen and covered with bright orange, powdery pustules. These plants are systemically infected, and the fungus grows throughout the roots, canes, and leaves.

Control: Grub out and burn all wild brambles *now*, including the roots. Include any cultivated plants that are rust infected. The best time to dig up and burn infested plants is early in the spring before the orange pustules break open and discharge their spores (which are airborne and infect healthy plants). Next spring, set out *only* certified, disease-free planting stock from a reputable nursery. For more information, read Report on Plant Diseases No. 708, *Orange Rust of Brambles*.

Trees and Shrubs: Leaf Tatter

This noninfectious problem appears in leaves of maple, oak, sycamore, and other woody plants. Symptoms are round to irregular holes that look as if they have been chewed out by insects. The damage is actually caused by winter injury to the buds. Heavy rains and hail may produce similar damage, but torn leaves usually indicate this latter type of injury. There is no control for leaf tatter.

Hackberry: Witches' Broom

Witches' broom is a very common disfiguring and unsightly disease of hackberry that is believed to be caused by the combined activity of a powdery mildew fungus and a minute eriophyid mite. A large common hackberry tree may have from a few to hundreds of brooms without obvious loss of vigor. Each "broom" consists of numerous thin, short, stubby twigs that arise close together, often at a swelling or knot on a branch.

Control: Pruning out and burning or otherwise destroying witches' brooms is of limited value. Where feasible, purchase broom-free trees of resistant species such as *Celtis sinensis* and *Celtis jessoensis*. Avoid planting the common hackberry if the presence of witches' broom is aesthetically unpleasant. For more

information, write for a copy of Report on Plant Diseases No. 662, *Witches' Broom of Hackberry*.

Spruce: Cytospora Canker

Colorado blue spruce and Norway spruce are most commonly affected by *Cytospora* canker in Illinois. Occasionally you can find the disease in other spruces (Koster's blue, red, Oriental, and white), white pine, balsam fir, and eastern hemlock. The first symptom is the appearance of brown needle tufts at the tips of branches followed by death of the lower limbs. Occasionally, branches in the center or top of a tree are attacked first. The needles may drop early from affected branches or remain attached for months, leaving dry, brittle twigs. Conspicuous patches of white resin commonly form on bark in cankered areas and drop on lower branches, or the resin may flow down the trunk.

Control: Plant healthy, vigorous young spruce on sites favorable for their growth. Avoid shallow or excessively drained soils, crowding with other trees or buildings, unnecessary bark wounds, and planting on exposed sites such as a southfacing slope. A thick organic mulch helps maintain good soil moisture and prevents deep freezing as well as alternate freezing and thawing. Water thoroughly during extended dry periods, moistening the soil to a depth of 12 to 14 inches. Every few years, have a soil test made and apply fertilizer. The *Cytospora* fungus attacks spruce that are under stress. Proper planting, watering, and mulching will largely prevent this disease. Severely cankered trees cannot be restored to good health. These trees should be cut down and burned to prevent them from infecting other trees. For additional information concerning *Cytospora* canker, write for a copy of Report on Plant Diseases No. 604, *Cytospora Canker of Spruce*.

Landscape Trees, Especially Elms and Poplars: Bacterial Wetwood and Slime Flux

Bacterial wetwood occurs in the trunk, branches, and roots of many shade and ornamental trees, but is usually not obvious in trees less than 10 years old. Wetwood can be found in virtually all older elm and poplar trees as a chronic disease. It may contribute to a general decline in tree vigor, especially in older trees growing under stressful conditions. The most obvious symptom is the appearance of light and dark streaks where liquid seeps out of cracks and wounds and flows down the bark. As the

liquid dries, it leaves a light gray to white incrustation. The liquid is toxic and commonly kills the cambium at the base of pruning cuts and around trunk cracks. Liquid on the bark surface is colonized by various bacteria, yeasts, and filamentous fungi that give it a slimy texture and often a foul odor. The gray to brown, foamlike liquid is called slime flux. Foliage in the tops of trees severely affected by bacterial wetwood sometimes curls, scorches, droops, turns yellow, and defoliates early. Scattered branches may wilt and die back, or the entire crown may gradually decline over several years. Wilting is much more common in younger trees.

Control: There is no cure or preventive treatment. The following practices may be of some help: (1) fertilize stressed trees to stimulate vigorous growth; (2) where feasible, have an arborist install perforated iron or plastic drain tubes to relieve gas pressure within the tree; (3) remove dead and weak branches, disinfecting tools by swabbing or dipping them in 70 percent rubbing alcohol before pruning another tree; (4) promptly prune and shape bark wounds. Remove diseased bark and underlying wood around infected pruning cuts. Then apply a coating of shellac as a disinfectant. For more information, read Report on Plant Diseases No. 656, *Bacterial Wetwood and Slime Flux of Landscape Trees*.

Iris: Leaf Spot

Leaf spot is a common disease, especially of rhizomatous species of iris. The disease weakens plants and makes them unsightly. Repeated severe attacks reduce blooming and may kill plants after several years. Leaf spot is most severe in mild, very damp weather, especially in sites where air movement is poor and diseased iris debris has been allowed to accumulate. The lesions are green to yellow and at first water-soaked, but they soon turn brown and dry, becoming surrounded by a water-soaked margin that later turns yellow. When severe, large dead areas (where the lesions enlarge and merge) may cause the leaves to turn yellow, die back from the tip, and curl.

Control: Collect and burn all leaf and flower stalks in the fall or early spring *before* the new fan leaves appear. Cut off and destroy infected parts of leaves. Plant iris in full sun in a rich, well-drained soil. Space plants, keep down weeds, and avoid sprinkling the foliage when watering. Do not work among plants when the foliage is wet. Plant more resistant species and cultivars of iris. The Siberian iris, the parent species of many forms and hybrids,

is remarkably resistant. The commonly grown bearded or German iris is very susceptible. Fungicide sprays are effective where cultural practices fail to check the development and spread of the disease. Apply a fine, misty spray at 7- to 10-day intervals to keep the young, susceptible growth protected. Adding a spreader-sticker or surfactant to the spray ensures better wetting and coverage. Only about a teaspoonful is needed per gallon to lower the surface tension and get good coverage. Suggested fungicides include Daconil, maneb or mancozeb, Benlate, Bayleton, Chipco 26019, and Topsin M.

Junipers: Phomopsis Blight

Phomopsis blight is the most common and serious disease of junipers, especially in prolonged, warm wet periods (April through early June) and again in late August and September. Look for a progressive dieback of new shoot growth that changes from light yellow to red-brown and finally an ash gray. Entire branches may gradually die.

Control: Plant only resistant species, varieties, and cultivars. An extensive list is given in Report on Plant Diseases No. 622, *Phomopsis Twig Blight of Juniper*. Where practical, prune out and burn all blighted parts as

they appear. Prune in dry weather. Fungicides give effective control when correctly timed. Since only new growth is susceptible, apply sprays at budbreak and repeat at 10- to 14-day intervals until the new growth has changed to dark green. Spray also when new flushes of growth appear in the summer and early fall or in response to pruning and shearing. Effective fungicides include Benlate, Zyban or Duosan, Cleary 3336, and mancozeb. Carefully follow the manufacturer's directions.

Color Picture Sheets on Plant Diseases

Sixty-two sheets, each covering fifteen to nineteen diseases in color, are available from the Vocational Agriculture Service, University of Illinois, 1401 South Maryland Drive, Urbana, IL 61801. Each sheet gives information on the name and cause of the problem, symptoms, importance, overwintering, etc. At present, there are six sheets on flower and house plant diseases, four on trees and woody ornamentals, one on turf diseases, eleven on fruit problems, and four on vegetable diseases. More sheets are planned for the future. Over 500,000 of these color picture sheets have been sold worldwide. For more information, including the cost, contact the Vocational Agriculture Service (217)333-3870.

PLANT CLINIC HIGHLIGHTS

May 14 to 24, 1990

HOST	DIAGNOSIS	COUNTY
Allium	Fusarium basal rot	Winnebago
Azalea	Cercospora leaf spot	Kane
Clematis	Pythium root rot	Winnebago
Elm	Dutch elm disease	White
Euonymus	Aphids	Champaign
	Phomopsis twig blight	Cook
Exacum	Sclerotium rolfsii	Champaign
Geranium	Bacterial blight	Out of State
	Botrytis blight	Out of State
	Botrytis blight	Winnebago
	Yellow net virus	Winnebago
Impatiens	Tomato spotted wilt virus	Grundy, Kane
Ivy	Anthraxnose	Cook
Maple	Spring leaf tatter	Peoria
	Verticillium wilt	Knox
Petunia	Botrytis blight	McHenry
Tulip	Botrytis blight	Champaign
		Rock island
Vinca	Phoma stem blight	Kane
	Rhizoctonia root rot	Winnebago

To obtain copies of any of the Reports on Plant Diseases mentioned in this or other newsletters, send a check, made out to the University of Illinois, to Extension Plant Pathology, N-533 Turner Hall, 1102 South Goodwin Avenue, Urbana, IL 61801. There is a 50 cent charge for each RPD.

Home, Yard & Garden Pest Newsletter is prepared by the following Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey: Entomology, Roscoe Randell and Phillip Nixon. Horticulture, Thomas Fermanian, Floyd Giles, Daniel Meador, James Schmidt, Tom Voigt, and David Williams. Plant Pathology, Nancy Pataky, Malcolm Shurtleff, and Darin Eastburn. Agricultural Engineering, Loren Bode and Bob Wolf.

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Extension specialist
Entomology



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HOME, YARD & GARDEN PEST

Newsletter

No. 10 • June 6, 1990

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Periodical Cicadas

Periodical cicadas started emerging in northern Illinois on Thursday, May 24, and have continued to emerge in even larger numbers. These cicadas typically sing for about two weeks before egg-laying occurs. If the cicadas are numerous in an area where there are trees with a trunk diameter of 1 1/2 inches or less, protection from egg-laying damage is necessary.

Control: Protect the trees with mesh bags, such as onion bags, or netting around the tree. Tie the netting or bag low on the trunk to keep the cicadas from walking under the netting and up the trunk. Sprays of Talstar or Tempo will give about 10 days of control, which may be a better option for you. Ambush or Pounce will give a similar length of control but can only be used in nurseries. Sevin is the only insecticide that is effective and available to homeowners. It will probably keep the cicadas away from sprayed trees for about three days.

Eastern Tent Caterpillars

Eastern tent caterpillars have finished feeding in most areas of the state and are coming down from trees to pupate. At this time, when the caterpillars are crawling on the sidewalk and house foundations, people usually request control.

Control: The only effective control of the caterpillars at this stage of their life cycle is to step on them. Insecticides will not be effective enough to warrant their application. Since the caterpillars are done feeding for this year, controlling the insects serves no purpose anyway.

Moths, however, will be emerging soon to lay their eggs on pencil-sized and smaller twigs for next year. The eggs should all be laid by the

end of June. Homeowners can rub eggs off twigs between the end of June and next spring to eliminate next year's population on the tree. Dispose of eggs that are rubbed off--do not drop them on the ground under the tree.

Euonymous Scale

We have received reports of Euonymous scale crawlers on leaves in central Illinois.

Control: Acephate (Orthene), dimethoate (Cygon), malathion, or diazinon can be applied as a crawler spray to provide control. Four applications should be made that are 10 to 12 days apart for the best control.

Pirate Bugs

Tiny insects that give a painful bite when you are working outside are probably pirate bugs. These insects are about 1/16-inch long and white and black in color when fully grown. If you are working in and around plants, the nymphs may get on your arms and bite as well. The nymphs are smaller and yellowish-brown.

Pirate bugs feed on other insects and are effective predators of mites, aphids, and other small insects. They appear to be attracted to perspiration, but will commonly bite people that are not perspiring heavily.

Control: Repellents containing DEET will help reduce the problem as will mowing tall grass and other vegetation in the area where bugs are numerous. For those who are working in vegetation and perspiring enough to wash off the insect repellent, there is little that can be done for protection.

Honey Bee Swarms

A honey bee swarm consists of thousands of bees that leave a hive to start a new colony. Swarming tends to occur in the spring when a successfully overwintered colony builds up its numbers on early spring nectar flows from flowering fruit and other trees.

The swarm forms a mass of bees on a tree branch, porch railing, or other elevated spot while a few of the bees scout for a permanent location, such as a hollow tree, for the new colony. This location is usually found within a

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few days, and the swarm will then leave and occupy their new, permanent home.

Control: Although you may be alarmed by a swarm of honey bees, stings are unlikely unless the swarm is disturbed. If you cannot wait the few days for the swarm to leave on its own, it can be removed by an exterminator or a beekeeper. Many county Extension offices, police, and fire departments maintain lists of beekeepers willing to remove swarms, but there is usually a fee for this service.

PLANT DISEASES

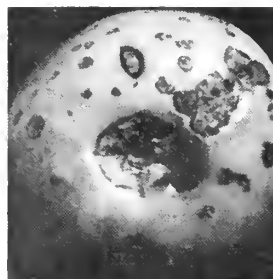
Bacterial Diseases of Vegetables

The frequent rains we have been receiving have made conditions favorable for many bacterial diseases that occur on vegetable crops. Bacteria are often spread from plant to plant by splashing water. They require a film of water on the plant surface to infect. If the rainfall continues as temperatures increase, then we can expect to see epidemic levels of many bacterial diseases. Bacterial diseases are common on beans, tomatoes, peppers, the cucurbit crops such as cucumber and muskmelon, and many other vegetable crops.

Common blight, halo blight, and bacterial brown spot are several bacterial diseases of snap beans that attack the leaves and pods. They produce similar symptoms that can be difficult to distinguish. Leaf lesions of common blight and halo blight start as small, water-soaked spots that turn brown and necrotic and become surrounded by a chlorotic or yellow halo. With common blight, the lesions can become quite large, killing most of the leaf tissue, and the yellow halo is fairly narrow. Halo blight lesions stay fairly small, but the chlorotic halo can be broad. Brown spot starts as chlorotic flecks of various sizes that have turned brown. These are not water-soaked and do not have a halo.

Control: These bacterial diseases are most often introduced into a planting on infected seeds, as the bacteria can survive on and in seeds produced by infected plants. The bacteria can also survive on infected bean debris. Therefore, control measures include a combination of planting disease-free, western-grown seed and a two- to three-year crop rotation. Also, avoid touching plants when they are wet.

Bacterial spot, Bacterial speck, and Bacterial canker are diseases that are common on tomatoes and peppers. Tomatoes are susceptible to



Bacterial spot of tomato

all three. Bacterial spot is also a problem on peppers, causing dark raised dots on the leaves and fruit. On peppers, bacterial spot can cause severe defoliation which leads to plant stunting and fruit sunburn. Bacterial speck attacks tomato leaves and fruit, with

young, green fruit being more susceptible than maturing fruit. As the name implies, the superficial, black lesions are very small--usually less than 1/16th of an inch in diameter. Bacterial canker of tomato is a systemic disease that spreads through the vascular system of the plant. Infected plants show signs of wilting, are less vigorous, and develop a brown discoloration of the vascular system. Bacterial canker can also produce spots on the leaves and fruit.

Control: These diseases can be seed-borne and may survive in infected debris, but are usually introduced each year on infected transplants. The best control is to plant only certified, disease-free transplants, or start your own plants directly from seed. Avoid touching plants when they are wet, because any bacteria present can be easily spread from plant to plant in drops of water. Water plants in the morning or early afternoon so they can dry before sunset.

Bacterial wilt is the most devastating disease of cucumbers and muskmelon in the Midwest. Unlike the bacterial diseases mentioned so far, bacterial wilt survives in and is spread by the striped and spotted cucumber beetles. The bacteria enter the plant through the wounds created by the beetle feeding. The bacteria then enter the vascular system and spread rapidly throughout the plant. Wilting of leaves, vines, and eventually the entire plant is caused by bacteria clogging the vascular system and preventing water flow. The disease is less common on other cucurbits such as squash, pumpkin, and watermelon.

Control: Control measures are aimed at stopping the disease before it starts by controlling the cucumber beetle and by using resistant varieties. Several insecticide sprays are usually required, although trap crops and insect screening may provide some protection in small plantings.

Angular leaf spot is another bacterial disease of cucurbit crops. Symptoms vary on different crops, but usually show up as water-

soaked spots on the leaves. The size of the spots is limited by the leaf veins, giving them an angular shape. The spots become light brown and necrotic, and the tissue may fall out, giving the leaves a tattered appearance. The disease can also attack stems, blossoms, and fruit. Under moist conditions, bacteria may ooze from infected tissue.

Control: Because the bacterium can overwinter in infected seed and possibly in infected crop debris, the use of disease-free seed and a one- to two-year crop rotation are the primary methods of control. Copper fungicides may be useful in limiting the spread of the disease, but should be used with care because they can injure plants if used repeatedly or at high rates.

Elm Diseases

Dutch elm disease (DED) has eliminated millions of elms in the United States, and the disease is still killing elms in Illinois. Leaves wilt, turn dull green to yellow, brown to red-brown, curl, and usually drop early on one or more branches. Twig tips often curl downward to form "crooks," and then branches die back. Entire trees may die in one to two months--others survive for a year or longer. A brown to black discoloration occurs in the white sapwood just under the bark in wilting branches. Positive identification is only possible through culturing in the University of Illinois Plant Clinic or another credited laboratory.

Control: A community-wide program is needed that includes removing and burning (or burying) all dead, weak, and dying elms when first found. You should clean up and burn all injured, weak, and dead elm wood (with tight bark) in the trees or on the ground--preferably before trees leaf out. Remove bark from stumps and firewood. The elm bark beetles that spread the DED fungus breed in weak and dead elm wood with tight bark. Repair and paint tree wounds promptly. Keep trees vigorous by proper watering, fertilization, and pruning.

Prevent the transmission of the DED fungus by severing root grafts of elms growing within 35 to 50 feet of one another using Vapam Soil Fumigant. Injections of a systemic fungicide into the root flare or lower trunk using Arbotect 20-S or a MBC-phosphate-carbendazin compound provides some protection for highly prized elms, but is the least effective and most expensive method of control. Treatment must be applied before a tree becomes infected or when less than five percent of the crown shows symptoms. For more information concerning

control, symptoms, diagnosis, and disease cycle for this deadly disease, obtain a copy of Report on Plant Diseases 647, *Dutch Elm Disease and Its Control*.

Elm yellows, or *phloem necrosis*, is actually killing more elms now in Illinois than Dutch elm disease. Elm yellows occurs throughout Illinois, but is more common in the southern two-thirds of the state. The first noticeable foliar symptoms are usually seen in mid-summer and include a rapid, general decline. Leaves droop, curl upward at the margins, turn yellowish green then bright yellow, and finally turn brown and drop off within a few weeks. Branches then die, followed by the entire tree within one growing season.

Elms that exhibit leaf symptoms after early August usually leaf out normally. These leaves wilt, turn yellow, and drop in late June or July. Usually, American elms show symptoms throughout the entire crown at the same time. The innermost bark of infected trees turns yellow then butterscotch or tan, sometimes flecked with dark brown before finally turning totally dark brown. When several pieces of the inner bark are chiseled out of dying trees and placed in a small, clean jar for five minutes, they have a faint odor of oil of wintergreen.

Control: An infected tree cannot be saved. All dead and diseased trees should be promptly removed, then burned or buried. There are elms resistant to the mycoplasma-like (MLO) bacterium that causes elm yellows. These include *Ulmus carpinifolia*, *U. glabra*, *U. laevis*, *U. parvifolia*, and *U. pumila*. For additional information on elm yellows, read the new Report on Plant Diseases 660, *Elm Yellows or Phloem Necrosis and its Control*.

Roses: Virus and Viruslike Diseases

Virus diseases are common but often go undetected because the symptoms are usually mild and easily overlooked. Some of these diseases cause serious damage--others only retard normal growth. The causal agents appear to be spread only by budding and grafting (except rosette or witches' broom discussed in an earlier *Home, Yard, & Garden Pest Newsletter*, No.9). Viruses are systemic and there is no cure. Foliar symptoms include overall yellowing or mottling; yellowing (chlorosis), or clearing of the veins; yellowish green to bright yellow spots and blotches; and various wavy "oakleaf," "watermark," or ring patterns. The leaves may also be misshapen, puckered, recurved, cupped, twisted, brittle, and smaller than normal. Affected canes are often stunted

to dwarfed or the new terminal growth is rosetted. Only one or a few canes of a plant may show symptoms. Any one disease may exhibit a broad range of symptoms.

Control: Commercial nursery growers have a responsibility to provide healthy rootstocks and disease-free budwood or cuttings taken only from properly indexed, virus-free mother plants. All rose plants showing symptoms in nurseries should be tagged by the propagator or commercial grower when symptoms are first evident. Infected mother plants should be destroyed. For symptoms, pictures, and other information, write for a copy of Report on Plant Diseases 632, *Virus and Viruslike Diseases of Roses*.

Geraniums: Diseases

Botrytis blight is very common now following all the damp weather, affecting the blossoms and leaves, as discussed in *Home, Yard, & Garden Pest Newsletter*, No. 6.

Bacterial blight or wilt is also a major problem in warm, humid weather. Leaves show two types of symptoms: (1) Small, round, water-soaked spots appear on the under-leaf surface and then become angular, sunken, and often surrounded by a diffuse yellow halo. The lesions finally turn dark brown to black and become hard and dry. (2) Wilting of the leaf margin results in large V-shaped yellow or dead areas bounded by the veins. Such leaves soon wither and hang on or drop. The stem rot phase is often called "black rot," when the stem and roots rapidly turn a dull gray to blackish brown. Plants gradually become defoliated except for a few dwarfed leaves at the shoot tips. The stems and branches rapidly blacken and shrivel into a dry rot.

Control: Purchase disease-free cuttings or plants from a reputable nursery or garden supply store. Florists should buy only CVI (culture-virus-indexed) cuttings from a commercial propagator. All infected plants should be promptly removed and destroyed including all old leaf and plant debris. There is no cure for infected plants. For more information concerning this highly infectious disease and other bacterial diseases, read Report on Plant Diseases 607, *Bacterial Diseases of Geranium*.

Sycamores, Maples, and Ashes:

Anthracnose Diseases

As predicted in earlier pest newsletters, anthracnose is very common all over Illinois. These diseases have "run their course" for this

year. Trees are dropping infected leaves in large numbers.

Control: There is no fungicide control now. Fertilizing to increase tree vigor is the only suggested control measure at this time. Read Report on Plant Diseases 621, *Anthracnose Diseases of Shade Trees* for good pictures, symptoms, disease cycle, and control measures.

White Ash: Flower Gall

Clusters of very irregular, bumpy (1/4 to 3/4 inch in diameter) brown galls are evident on male (staminate) flowers, especially on trees being defoliated by anthracnose. The galls are caused by minute mites and are most conspicuous on trees during the winter months.

Control: Since the galls do little harm, no control measures are usually recommended. Extension entomologists suggest using a miticide, applied after the buds swell and before new growth emerges in the spring.

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HOME, YARD & GARDEN PEST

Newsletter

No. 11 • June 13, 1990

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INSECTS

Turfgrass Grubs

At this time of year it is not unusual to observe grub activity on home lawns or golf courses. The annual white grub is pupating and will emerge as a 1/2-inch long, tan beetle. These beetles will soon be observed around yard lights or on window screens. They will mate and lay eggs in late June in the southern section of the state, in early-to mid-July in the central area, and in late July in northern Illinois.

Ataenius turfgrass beetles migrate from outside the golf course to the fairways. Egg laying occurred when spirea (bridleweath) was in full bloom. The grubs, which are only a damaging problem in the northern half of the state, have hatched and if they are numerous enough to cause wilting, they should be present now in the central part of the state, after June 20 in the north central part, and about July 1 to 10 in the lake shore area on the north side of Chicago. Fifty or more ataenius grubs per square foot will cause damage. This grub is rarely a problem on home lawns.

If there are large grubs in the turfgrass root zone, check the underside of the last segment for two rows of setae or spines that are parallel to the body. These are true white grubs with a three-year life cycle. These pests will remain in the root zone and cause damage during the growing season.

Control: Grub insecticides include Dylox, Proxol, Turcam, diazinon, Oftanol, and Triumph. Dylox, Turcam, diazinon, and Oftanol can be applied as granules or as sprays. Proxol and Triumph are applied as sprays. Do not apply diazinon to golf courses and follow instructions on the Triumph label.

Cicadas - Request to Advisers

We would like to obtain information from county Extension advisers on where periodical cicadas are occurring in their counties and where the cicadas are particularly numerous. Please give Phil Nixon or Roscoe Randell a call at (217)333-6650 or drop them a note mentioning where they are being found. If landscapers or others would like to provide this information, it would also be welcome. This information will be stored for use when the cicadas emerge again in 2007. Thanks for your help.

Aphids

Probably due to the cool weather and heavy rains that we've had so far this spring, aphids have not been as numerous as usual earlier in the spring. Recent warmer temperatures have caused aphids to occur in large numbers during the past week. Roses, poplar, and honeysuckle have been reported as being highly infested, but almost any plant is likely to have an aphid problem, particularly on young leaves and shoots.

Potato Leafhopper on Trees

Potato leafhopper numbers have greatly increased in the last few days. Samples of damage to redbud and red maple have been submitted to the plant clinic. Last year, potato leafhoppers were very numerous in late summer, creating considerable damage on these two trees as well as black locust trees.

Newly emerged leaves on red maple will be red and distorted, with leaves on redbud and black locust also being distorted with brown edges and V-marked brown areas near the edges. In the nursery, many types of woody plants will show distorted leaves from potato leafhopper injury.

Control: Potato leafhoppers are about 1/8-inch long, green, slender insects that tend to walk sideways to the other side of the leaf when disturbed. They can be controlled with pyrethroid insecticides such as bifenthrin (Talstar), cyfluthrin (Tempo), or permethrin (Ambush, Pounce). Ambush and Pounce can only be used in the nursery.

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Cabbageworms

Cabbage and related crops, such as broccoli and cauliflower, are often damaged by one or more species of worms. At this time of year the most noticeable one is the velvety green imported cabbageworm. It feeds on the leaves around the new, forming head. Later in the growing season cabbage loopers may appear and be a problem in July and August. Diamondback moth larvae are small, green worms which are less important because of their size.

Control: All three worms are controlled by the bacterial agent, *Bacillus thuringiensis*. It can be purchased under the trade names Dipel, Thuricide, Worm Attack, and others. The worms have to eat the applied *B. thuringiensis* material and will die in a day or two. This product does not affect predator or parasitic insects and is non toxic to warm-blooded animals, including people. Follow label directions when applying to infected plants.

Carpenter Bees

Carpenter bees look like bumblebees with black abdomens. These large bees primarily attack unfinished wood to build their nests. A 1/2-inch diameter hole is bored in the wood with the tunnel running up the board with the grain.

Control: These insects can be controlled by shooting a small amount of carbaryl (Sevin) dust into the hole. Most attacks can be prevented by finishing the wood with paint or varnish.

Rove Beetles

Small, black, elongate insects about 1/8-inch long that crawl on your skin and bite are probably rove beetles. These insects are excellent fliers, being particularly active during cloudy conditions and in the evening. Their bite is usually not very painful, but more of a nuisance. They develop in decaying vegetation such as thatch, fallen leaves, and mulches.

Control: Insect repellents help reduce the problem.

PLANT DISEASES

Strawberry: Leaf Variegation or June Yellows

Leaves on certain plants became irregularly mottled, streaked, or spotted with golden yellow to white and pale green areas. Variegation is most common when temperatures are cool. Seemingly healthy plants may become varie-

gated at any stage. Affected plants never recover and usually die within two or three years.

Control: Do not propagate from variegated mother plants. Destroy affected plants when first detected and replace with nonvariegated, "yellows-resistant," certified, virus-free plants. Never accept plants that show leaf variegation. There is no cure for leaf variegation and the disorder appears to be noninfectious. For more information read Report on Plant Diseases 706, *Leaf Variegation in Strawberries*.

Strawberry: Gray Mold or Botrytis Blight

This is the most common and serious disease of strawberries. It is especially severe in wet, cloudy seasons when plants are not protected by fungicides. The fungus attacks the blossoms and the developing fruit. Blossoms turn brown, die, and become covered by a dense, gray mold. Most commonly attacked are berries resting on damp soil; on mulch; touching a decayed berry, or dead leaves in lush, dense foliage. Fruit infections are soft, light brown, and enlarge rapidly. The berry soon dries out, turns a darker brown, "mummifies," and is covered with a gray, dusty mass of *botrytis* spores. Pickers handling infected fruits spread infection to healthy fruit, causing the good berries to turn into a rotted mass within 48 hours of being picked.

Control: The cultivars Canoga, Guardian, and Honeoye are partially resistant to gray mold. The best cultural controls include: (a) planting in a sunny site with good air and soil drainage; (b) properly spacing plants and fertilizer applications; (c) avoiding wide, matted rows and mulching plants with dry, organic matter or applying black polyethylene sheeting to keep fruit from contacting soil; (d) keeping weeds down; (e) picking fruit frequently and early in the day when plants have dried off; (f) culling out all diseased berries and removing them from the field; (g) always handling berries carefully to avoid bruising and refrigerating promptly.

Fungicide sprays are usually needed using a mixture of captan (3 pounds per acre or 4 level tablespoons per 1,000 square feet of bed) plus benomyl (Benlate) at the rate of 1/2 pound per acre or 1 level tablespoon per 1,000 square feet. Other good fungicides include a captan-Ronilan combination. Repeat sprays at 7- to 10-day intervals from just before the first blossoms appear through the fruit harvesting period. Always read and follow label directions when

applying any fungicides. The spray interval will need to be shortened if more than 1-1/2 inches of rain falls in 7 days. Captan and benomyl have no restrictions on use and they can be applied throughout the harvest period. Ronilan can be used until harvest and during the picking season if applied immediately after a picking. For further information read Report on Plant Diseases 704, *Gray Mold of Strawberries*.

Blackberries: Sterility

Blackberry plants often appear healthy, flowering profusely, but then fail to set fruit or only set some misshapen berries. This condition may be caused by a virus, fungus, insect damage, a hereditary abnormality, or a combination of these. There are several viruses that cause sterility. Diseased plants produce new, more vigorous canes with rounder and glossier leaflets than normal. These leaves turn a premature, brilliant red in autumn. The virus(es) spread in a planting.

Control: Purchase only certified, virus-free plants from nursery producers who will certify that their plants come from fruitful stock. If at all possible, destroy all neglected and wild brambles within 500 feet of new plantings. Rogue out plants that fail to set fruit--dig out as much of the root system as possible--and immediately destroy these plants. Remove and destroy old canes right after harvest, since anthracnose and insects may injure fruit. Follow the spray program for bramble fruits as outlined in University of Illinois Cooperative Extension Circular 1145, *Home Fruit Pest Control*. A mixture of ferbam plus Sevin or malathion is suggested.

Azalea: Leaf and Flower Gall

This unsightly disease is rarely damaging to greenhouse- or outdoor-grown azaleas and other rhododendrons. The disease, caused by a fungus, results in severe distortion, swelling, and thickening of leaves, flowers, stems, and seedpods. The white-to-pink galls are fleshy and bladderlike. All or only part of a leaf may be affected. Sometimes a fleshy rosette of leaves forms at a shoot tip. Flower infections appear as hard, waxy, irregular galls. Affected parts usually turn red, pale green, or whitish. As the galls mature, they turn white or pink with a smooth, shining surface. In humid weather the galls are covered with a chalk-white, velvety bloom of fungus spores. The galls then rapidly shrivel, turn brown, and become hard.

Control: Purchase and plant only hardy, disease-free plants from a reputable nursery. If

only a few galls are present, pick off and destroy them (burn or haul away with the trash) when first evident--before they turn white and spores are formed. Fungicides that control fungal leaf spots (e.g., captan, mancozeb, maneb, ferban, zineb or Daconil) also control leaf and flower gall. Add a commercial sticker to the spray mix to ensure good coverage. For more information read Report on Plant Diseases 639, *Azalea Leaf and Flower Gall*.

Many Flowers and Vegetables: Aster Yellows

Aster yellows is caused by one or more strains of a minute bacterium that is transmitted from plant to plant by the aster or six-spotted leafhopper, as the insect feeds. Over 300 kinds of plants in 48 families are affected by this bacterium. Symptoms are highly variable. The most common is a general yellowing, stunting of the plant, and rosetting of leaves. The older and outer leaves are usually normal, while the inner and younger leaves are usually dwarfed and yellowed. The tight rosette or "witches' broom" is common on many plants. Carrot and other root crops develop excessively pale, hairy roots with a bitter taste. Infected ornamental plants are usually yellowish, stunted, stiff, and erect with numerous spindly shoots. The flowers on such plants are often a sickly yellow-green wholly or in part, dwarfed or lacking.

Control: This disease is very difficult to control because of the wide host range and because the leafhoppers can transmit the bacterium as long as they live--70 days or longer. It helps to eradicate all susceptible overwintering weeds. Destroy infected plants when first found. Do not plant a susceptible crop next to a yellows-infected crop. Applying a suggested insecticide is often beneficial. Suggestions are given in University of Illinois Cooperative Extension Circular 897, *Insect Pest Management for Commercial Vegetable and Greenhouse Growers*. Spray before removing infected plants. Placing aluminum foil strips as a mulch between rows increases control by disorienting the leafhoppers. There are no resistant or immune crop varieties. For much more information on symptoms, disease cycle, a listing of susceptible plants, and other controls read Report on Plant Diseases 903, *Aster Yellows*. (Huge swarms of aster leafhoppers have been noted flying from the south and covering much of the upper Midwest.)

Raspberries, Blackberries: Virus Diseases

Raspberry yields may be reduced 50 percent or more by a virus or combination of viruses. Once infected, a plant remains diseased for life. The viruses are spread by the feeding of aphids--not by pruning or otherwise mechanically injuring plants. Symptoms are most evident in cool weather and are often confused with other problems.

Leaf curl appears as a down-curling of the tip leaves; later the leaflets appear rounded, dwarfed, and crinkled with the margins curled tightly downward and inward.

Common mosaic causes the greatest loss of any bramble virus. Canes are short and weak with mottled and puckered leaves showing large, irregular green "blisters" that arch upward. In hot weather such leaves may be symptomless or show only a faint mosaic pattern. In late summer the leaves show a fine, yellowish, speckled mottling. Affected plants become more stunted each year with dwarfed, yellow mottled and sometimes deformed leaves. On black and purple raspberries the tips of

young canes often curl downward, turn black, and die. Leaves formed in cool weather are faintly to severely mottled and puckered. Fruit on mosaic-infected plants tends to be small, dry, and seedy. Other viruses that attack bramble fruits in Illinois include black raspberry streak, red raspberry ringspot, and raspberry bushy dwarf.

Control: Destroy all wild and neglected brambles, if possible, within 600 to 1,000 feet before planting only certified, virus-free plants. Separate black and red raspberries (if possible) by 150 feet or more to reduce virus cross-infection. Destroy infected plants when first seen--symptoms are most evident during cool, cloudy weather in mid-to-late spring. Check again in early summer and again in early to mid-fall. Spray plants a day or two before their removal with malathion (2 tablespoons of 25 percent wettable powder) to kill any aphids that may be virus carriers. Maintain strict aphid control at all times--especially in late spring and early summer when aphid populations are likely to be high. For more information on virus diseases of bramble fruits obtain a copy of Report on Plant Diseases 710, *Virus Diseases of Brambles in the Midwest*.

PLANT CLINIC HIGHLIGHTS May 25 to June 7, 1990

HOST	DIAGNOSIS	COUNTY
Ash	Verticillium wilt	Ford
Barberry	Botryosphaeria canker	Macon, White
Bluegrass	Brown patch	Champaign
Crabapple	Apple scab	Champaign McDonough
Dogwood	Septoria leaf spot	Champaign
Elm	Dutch elm disease	Champaign
Gardenia	Iron chlorosis	Peoria
Ginseng	Sclerotinia white rot	Pike
Honeysuckle	Honeysuckle aphid	Woodford
Iris	Fungal leaf spot	Douglas
Juniper	Ice injury	Kane
Maple	Anthracnose	Carroll Champaign
	Spring leaf tatter	Iroquois Grundy
	Maple vein gall	Coles
Melons	Pythium root rot	Will
Oak	Anthracnose	McDonough Vermilion
Peach	Peach leaf curl	Tazewell
Peony	Root rots	Winnebago
Pine	Pine wilt	Ford
Rose	Winter injury	Champaign
Sycamore	Anthracnose	Vermilion

To obtain copies of any of the Reports on Plant Diseases mentioned in this or other newsletters, send a check, made out to the University of Illinois, to Extension Plant Pathology, N-533 Turner Hall, 1102 South Goodwin Avenue, Urbana, IL 61801. There is a 50 cent charge for each report.

Home, Yard & Garden Pest Newsletter is prepared by the following Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey: Entomology, Roscoe Randell and Philip Nixon. Horticulture, Thomas Fermanian, Floyd Giles, Daniel Meador, James Schmidt, Tom Voigt, and David Williams. Plant Pathology, Nancy Pataky, Malcolm Shurtleff, and Darin Eastburn. Agricultural Engineering, Loren Bode and Bob Wolf.

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Roscoe Randell

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Extension Specialist
Entomology



HOME, YARD & GARDEN PEST

Newsletter

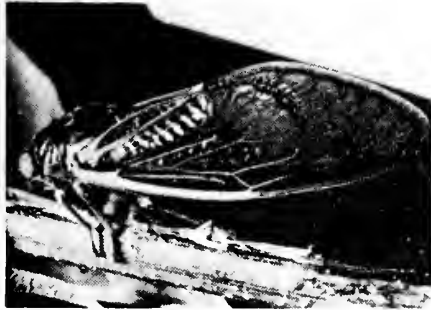
No. 12 • June 20, 1990

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Periodical Cicada Update

Cicadas are now in the potentially damaging phase of their life. The only damage done by these very visible insects in the northeastern section of the state is done during egg-laying. Slits are cut into twigs by the female cicada ovipositor or egg-layer. This activity will produce "flagging" or dead twigs on older forest trees, but



Periodical cicada

it can damage young trees in the landscape. Egg-laying will last about seven to ten days and adult cicadas will begin disappearing as they die.

Control: Homeowners can control cicadas on small trees and shrubs with a spray containing Sevin. Repeat every four or five days if necessary. Do not use Sevin on blooming plants because of the possibility of bee kill.

Elm Leaf Beetles

Adult elm leaf beetles have now left their overwintering sites in northern Illinois to lay eggs on tree foliage. In southern Illinois, the first generation is ending, producing adults for the next generation. The adults eat holes in the foliage and the newly hatching larvae skeletonize the leaves by feeding on the under-

sides, leaving the netting of veins and the upper leaf surfaces to turn brown.

Adult elm leaf beetles are yellowish to dull green and approximately 1/4-inch long. They feed on elms, especially the Chinese or Siberian type. The larvae are sluglike and almost black.

Control: Elm leaf beetles will not severely injure the host tree, but skeletonizing does reduce the attractiveness of shade trees. Sevin or malathion will control this insect when it is present. However, since there are two or more generations each year, sprays will have to be repeated.

Spruce Spider Mite

Spruce spider mites attack most conifers and related evergreens in the spring, becoming more of a problem as summer approaches. Samples have been reported recently on juniper and spruce. Damage can be so severe that part or all of the infested plant may die. Damage appears as a darker, dull color; lighter color; or brown-colored foliage, depending on how severe the infestation has become. Close inspection will reveal tiny, light spots on the needles and occasionally fine, silk webbing. The mites are easy to see with a microscope, but almost too small to be seen with the naked eye. One method of detecting the mites is to hold white paper under a branch and strike it several times. The mites will be more easily seen on the paper; they usually produce a red streak if squashed.

During the hot, dry days of summer, the mites stay in the egg stage, occasionally hatching and causing more feeding damage in the late summer and fall when temperatures moderate.

Control: Sprays of dicofol, sold as Kelthane, fenbutatin oxide, sold as Vendex, or insecticidal soap will kill the mites. Because these pesticides only kill hatched mites, two or three applications should be made weekly to eliminate hatching eggs. Dimethoate, sold as Cygon, should also be effective. Because Cygon lasts longer, one application should be adequate for most hosts of the spruce spider mite.

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Ash, Lilac Borer

Lilac borer lays its eggs at this time of year on lilac and ash. This borer primarily attacks stems that are at least 1-inch in diameter.

Control: On lilac, control is achieved by pruning out the older, larger stems, leaving the younger, smaller ones. It is more difficult to control in ash. Particularly young, recently transplanted trees are attacked, so newly transplanted ashes that are adapting to site and replacing roots that were damaged during transplanting are very susceptible.

The lilac borer adult is a moth that relies on tree wounds to lay its eggs. Storm breakage and pruning wounds usually provide these egg-laying sites. Prevention of borer attack involves reduced pruning for the first few years after transplanting and promoting vigorous growth through proper watering, fertilizing, and other cultural practices.

Control of lilac borer in ash includes the application of chlorpyrifos (Dursban) at full to late bloom of bridal wreath spirea or Zabeli honeysuckle with another application four weeks later. This will correspond roughly to this week in northern Illinois with the second spray being applied at this time in southern Illinois.

Young Ticks Are Active

The three most important ticks that attack people in Illinois are the *American Dog Tick*, *Lone Star Tick*, and *Deer Tick*. Only the adult of the American dog tick attacks people and these 3/16-inch long ticks are usually easily found when they attach to people. The other two ticks attack people in all three active stages; larva, nymph, and adult, but the larva does not attack people as often as the nymph and the nymph of the deer tick is the most common stage that transmits Lyme Disease to people.

Nymphs of the lone star and deer tick are easily missed when they feed on people. Each is only slightly bigger than a period printed on this page, and the larvae are slightly smaller than a period. Nymphs of both of these ticks are now being found on people and will be present for the next couple of months. If you are out in wooded or other areas where tick attacks are likely, check yourself and each other every few hours for ticks. If a tick is found, grasp it with tweezers where the head enters the skin and pull out with gradual pressure. Treat the bite with an antiseptic.

Control: Tuck pant legs into boots and apply a repellent containing DEET. Wear light-

colored clothing so that ticks can be easily found before they reach your skin. Since ticks must be attached for at least 24 hours to transmit Lyme Disease or Rocky Mountain spotted fever, these diseases can be avoided with occasional inspections.

Midge Galls on Trees

Tree galls caused by the larvae of tiny flies called midges are becoming numerous. Recent examples that we have seen include linden twig gall, oak twig midge, and gouty vein gall. Linden twig gall on little leaf linden was sent in by Sandy Mason, horticulture adviser in Macon County. This gall appears as 1/2-inch, woody swellings on twigs. Oak twig midge forms an enlargement on white oak twigs. The gall is thicker on one side of the twig than the other, causing the twig to bend into a shepherd's crook. Gouty vein gall appears as enlarged veins on sugar maple leaves.

There is little known information about the life cycle of these galls. Most galls start in the early spring due to feeding by newly hatched larvae at about the same time as bud break.

Control: The appearance of these galls can be disturbing to homeowners, but little can be done once the galls have formed. Insecticide sprays at or shortly after bud break may be somewhat effective in preventing gall formation. Since galls rarely reduce tree growth, control is usually not necessary. Galls on small trees that are in conspicuous locations can be removed by hand.

PLANT DISEASES

Turfgrass: Summer Diseases

Now that hot weather has arrived, night temperatures commonly stay above 68 to 70° F. Since showers or high humidity are common, we can expect *Rhizoctonia brown patch* and *Pythium blight*.

Brown patch appears on higher cut turf found in lawns, parks, athletic fields, and golf course fairways as roughly circular, light brown, matted down patches up to about 2 feet in diameter. The patches sometimes develop green centers and may resemble the "frog-eyes" of summer patch and necrotic ring spot. (See Report on Plant Diseases No. 408, *Summer Patch and Necrotic Ring Spot of Lawns and Fine Turfgrasses*.) Diseased patches of grass, however, often appear to be sunken. In

light infections of brown patch, the affected turf generally recovers in two or three weeks. When the attack is severe, the crown, rhizomes, and stolons may turn brown and rot, killing or thinning the turf in large areas. Irregular, water-soaked spots that turn a straw or ash brown color, and often surrounded by a dark border, are common on the leaves and leaf sheaths. Disease is worst in lush, succulent turf that has been both highly fertilized with nitrogen and watered, especially at night.

Control: Good surface and subsurface drainage is important. The soil pH should be between six and seven. Fertilize based on a soil test. Avoid over-fertilizing with a quickly available, high-nitrogen fertilizer during the summer months. Increase light penetration, air movement, and drying of the grass surface by pruning or removing dense trees and shrubs and wider spacing of landscape plants. Keep the thatch below 1/2-inch by dethatching in early spring or mid-autumn. When the above cultural practices do not control brown patch, a preventive fungicide may be needed. Suggested chemicals are listed in University of Illinois Cooperative Extension Service Circular 1076-90, *1990 Turfgrass Pest Control*, and include Banner, Chipco 26019, Daconil, Duosan, Dyrene, Fungo, Rubigan, Tersan 1991. For more information read Report on Plant Diseases No. 411, *Rhizoctonia Diseases of Turfgrasses*.

Pythium blight is caused by a number of common soilborne fungi that can cause seedling blight, root rot, and foliar blight from just above freezing to about 95° F. In hot, wet, or very humid weather, when the grass is dense and lush and there is little air movement, pythium blight can be devastating. Look for small, distinct, round to irregularly shaped, sunken spots up to 6 or 12 inches in diameter. These patches suddenly appear in wet, calm weather. At first, the grass is water-soaked, slimy, and dark. As the sun dries, the grass the leaves quickly fade from a reddish brown to a light tan. The leaves shrivel, twist, and may collapse. Clusters of blighted plants may merge to form streaks or irregular areas due to the fungus (or fungi) being spread by surface-drainage water or mowing when the grass is wet. At night or early in the morning, when the air is moisture-saturated, the leaves collapse and are matted together by a fluffy, white mold.

Control: Follow the same cultural practices as outlined for brown patch and avoid mowing when the grass is wet. Preventive fungicides

are listed in University of Illinois Cooperative Extension Circular 1076-90 and include Banol, Koban, Subdue, Terrazole, Terremec or Terraneb, and Chipco Alette. The first application, carefully following the manufacturer's directions, should be made as night temperatures stay above 68° F, when daytime air temperatures are 80° F or higher, and the forecast is for continued wet or very humid weather. The fungicides suggested for control of pythium blight may be alternated with another fungicide to control brown patch, dollar spot, and other diseases to give broad spectrum disease control. For more information read Report on Plant Diseases No. 410, *Pythium Blight of Turfgrasses*.

Iris: Mosaic

There are a number of viruses that affect iris. Look for fine, light yellow-green, or yellowish green, mosaic-like mottling and streaking on the leaves, flower stalk, and bud sheath. The symptoms become more pronounced as plants mature. When severe, plants show wide, pale green and yellowish-green stripes, and the entire plant may be stunted to dwarfed. Such plants produce inferior blooms which in yellow flowers may show clear, feather-like markings. Flowers may be reduced in size and are often twisted to one side. Symptoms are most obvious under cool conditions. The viruses are transmitted by aphids and soilborne nematodes.

Control: Dig up and destroy infected plants when first discovered; they will not recover. Purchase only large, healthy bulbs or rhizomes from a commercial grower who has "cleaned up" his stock. Virus-free plants, started in tissue culture by meristem propagation, are available. Keep weeds down--a wide variety of weeds harbor both viruses and aphids. Spray regularly with an insecticide to control aphids, following suggestions of University of Illinois Extension entomologists. For more information read Report on Plant Diseases No. 654, *Mosaic Diseases of Iris*.

Pines: Needle and Gall Rusts

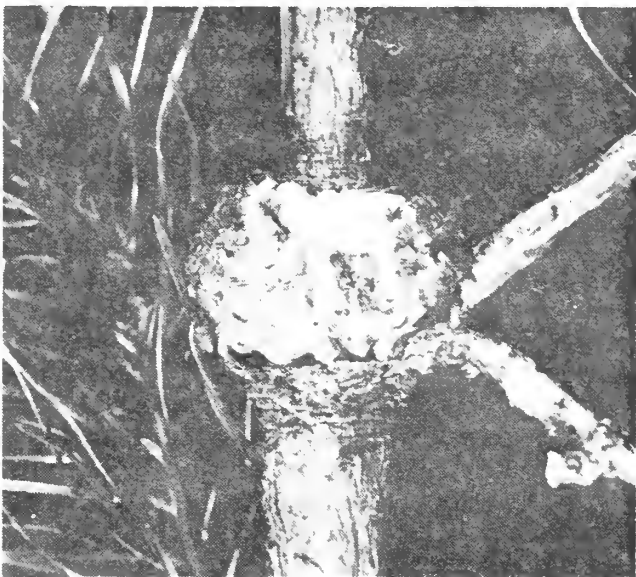
These diseases are worse following cool moist springs.

Needle rusts are evident as cream colored, yellow, orange-yellow, reddish, or bright orange to brown, dusty pustules on the needles. The needles often turn brown and may drop off. The disease(s) is most serious on nursery seedlings and young trees. The rust spores are

blown onto pines from a wide range of weeds and garden plants including amsonia, asters, azalea, blueberry, campanula, erigeron, ferns, fireweed, flowering currant, gayfeather, goldenrod, gooseberry, groundsel, gumweed, heliopsis, hydrangea, ironweed, Jerusalem-artichoke, Laborador-tea, leatherleaf or cassandra, loosestrife, marigold, Michaelmas daisy, morning-glory, oaks, poplars, pyrola, ragwort, silphium, sowthistle, sunflower, tickseed, willows, and wood-nymph among others.

Control: Destroy worthless alternate hosts (for example; goldenrod, sowthistle, fireweed, ragwort) within 900 feet of valuable pine plantings. This breaks the life cycle between pines and the alternate hosts of the needle rust fungi.

Gall rust appears as perennial, more or less spherical galls on the branches or trunk, up to a foot or more in diameter. Witches' brooms or



Eastern gall rust on a pine stem

deep cankers may form instead. Foliage beyond the canker or gall is discolored, and later wilts and dies. The surface of galls appears whitish, yellow-orange, or bright orange and blister-like in spring. Alternate hosts include oaks, chestnut, sweetfern, sweetgale, Indian paintbrush, peregrina, lousewort, toadflax, buckleya, birds-beak, owlclover, cow-wheat, and myriagale.

Control: Where practical, remove galls by annual pruning. Destroy nearby alternate hosts. Start with rust-free nursery stock.

Many Ornamentals: Fusarium Wilt

Fusarium wilt, or yellows, is caused by a number of very specialized forms and races of

the common soilborne fungus *Fusarium oxysporum*. Many popular garden and greenhouse flowers are attacked. The wilt is most serious and widespread in Illinois on aster (China-aster), carnation, chrysanthemum, gladiolus, lily, and narcissus. Once the fungus is introduced into soil it can live indefinitely, independent of any host plant. This makes general sanitation and any normal rotation program ineffective methods of control.

Symptoms of fusarium wilt are commonly confused with root and crown rots, stem cankers, insect injury, drought, compacted or poor soil, and verticillium wilt. Overall symptoms include a wilting, yellowing, withering, and dying of the foliage. Fusarium wilts are most severe at 75° to 90° or 95° F. Affected plants are commonly stunted with symptoms starting at the plant base and progressing upward, often starting on one side of the plant. When infected stems are split, brown to black streaks are evident in the vascular system. Plants started from bulbs, corms, or tuberous roots (for example, crocus, dahlia, freesia, gladiolus, iris, ixia, lily, narcissus, and tulip) show a dark discoloration within underground parts that may extend into the leaf bases.

Control: Disinfest greenhouse, seedbed, and potting soil before planting with steam or fumigate the soil with Vapam Soil Fumigant or Vorlex. These soil fumigants must be used several weeks before planting and will also control other pathogens, weeds, insects, and nematodes in the soil. Also treat all containers, tools, and work surfaces that come into contact with plants or soil.

Carefully follow the manufacturer's directions when using a soil fumigant because they are highly toxic. Do not grow susceptible plants in fusarium-infested soil where the same or closely related plants have grown within the past 10 years. Buy only healthy, top-quality, disease-free planting material. Fusarium wilt-resistant varieties and cultivars are available for some plants (aster/ China-aster, carnation, chrysanthemum, gladiolus, lily, marigold, narcissus, sunflower, tulip, and zinnia) for growing in wilt-infested soil.

For other controls, disease cycle, pictures, and a listing of ornamental plants susceptible to fusarium wilt (including vegetables, fruits, field crops, trees, and shrubs) read Report on Plant Diseases No. 650, *Fusarium Wilt Diseases of Herbaceous Ornamentals*.

Diseases of Pepper

Pepper Viruses: Now is a good time to check for signs of virus infection on young pepper plants, especially on purchased transplants. There are many viruses that can infect pepper, but only a few of these are important in Illinois. The most common viral disease of pepper in Illinois is caused by the Tobacco Etch Virus (TEV). The symptoms are a mild chlorotic mottling and distortion of the leaves. Concentric ring patterns may form on the leaves and fruit. Infected plants are often stunted and bushy, especially if infected early in the season, and usually produce misshapen fruit. TEV is transmitted by aphids, most commonly the green peach aphid. The virus can overwinter in weeds, but more commonly comes on transplants. Tobacco Mosaic Virus (TMV) causes symptoms that are similar to those of the TEV, but the mosaic patterns are usually more pronounced, and there may be some clearing of the leaf veins. Leaves may also be puckered and distorted, and the fruit are small and misshapen. TMV is moved from plant to plant by mechanical transmission--that is, by infected sap carried on garden tools or hands. No insect vector is known.

Control: It is important to identify and remove infected plants early to reduce the risk of spreading the disease to neighboring healthy plants. After removing infected plants, wash tools and hands before touching the healthy plants. Insecticide sprays aimed at controlling the aphid vectors of TEV are usually not an effective method for controlling the disease.

Phytophthora blight of peppers: Warm, wet conditions favor the development of this blight. All parts of the plant may be affected. If infected in the seedling stage, the plants are often killed. On older plants symptoms may appear on the stems, leaves, and fruit. Stem lesions start as dark green, water-soaked areas which later dry and become brown. Stem lesions can start at any level on the plant, but occur most commonly near the soil line. Leaf symptoms include small spots, circular to irregular in shape, and appear scalded. The spots enlarge, and the leaf tissue dries to a papery texture, becoming white to light tan in color. Fruit usually becomes infected through the stem. The fungus grows into the fruit and initially causes the tissue to become dark green and water-soaked. Later the fruit rots and shrivels, but remains attached to the plant. The pathogen can overwinter in soil or on and in seed. Disease development is favored by moderately warm temperatures, high humidity,

and films of water on plant surfaces from rain, dew, or sprinkler irrigation.

Control: Plant in well-drained soils, provide good weed control, and follow a two- to three-year crop rotation schedule. Plant only high-quality, disease-free seed. Collar rot can be reduced by planting on ridges or raised beds. Fruit rot can be reduced by staking or mulching to keep the fruit off the ground. Some varieties of pepper are resistant to the disease.

Rhizoctonia Stem Canker of Potato

Cool, wet soils favor the development of Rhizoctonia stem canker. Plants are most susceptible when young. Rhizoctonia attacks newly emerging and underground sprouts, causing delayed emergence and damping off. Well-defined, reddish-brown lesions develop just below the soil line. These lesions can expand and girdle the shoot or stolon. Sometimes a white fungal growth will develop on the stems just above the soil line. Rhizoctonia also produces small, hard, black structures, called sclerotia, on tubers.

Control: Good cultural practices and growing conditions that favor rapid germination and growth are the principle means for controlling rhizoctonia stem canker. Avoid planting seed tubers that have rhizoctonia sclerotia on their surface. Plant in warm, well-drained soils. Form hills after sprouts have emerged.

Tree Tips for Buyers of New Homes

1. Be sure that root flares are evident at the tree base and that they show an outward spread at the soil line. If not, the tree may be planted too deeply.
2. Dead twigs and branches could indicate root injuries, cankers, wood decay, or other infections.
3. Pale and thinning foliage or small leaves that may be discolored could mean root rot, verticillium wilt, gas injury, nutrient deficiency, or other problems.
4. Multiple trunk scars could indicate careless construction. Was the house built as carelessly? Were the tree wounds properly shaped into a vertical ellipse with rounded ends and cared for?

5. If the house is built close to a tree, root damage probably resulted. In five years, you may have a severely crippled tree or no tree at all.

6. Plaster, bricks, concrete, lime, scraps of wood, and other trash beneath foundation shrubbery breed termites and wood decay, and make it difficult to establish and maintain foundation plantings. Trash is also an indication of a sloppy contractor.

7. Rapid twig dieback indicates recent root injuries.

8. Look for new, large, multiple pruning scars on the trunk or large branches. Why were they cut? Are you in for future trouble?

9. Any constriction around the trunk (from a wire, chain, fence, or girdling tree roots) strangles the tree, leading to reduced growth, dieback, or even death.

10. Loose bark at the tree base often indicates mower, herbicide, or other damage; wood decay probably has already occurred.

11. New pavement or other construction over the root zone (which extends far beyond the outer drip line) cuts off air and water from the roots, killing them. Construction damage is also an invitation for infection by the verticillium wilt fungus and root rots.

12. Standing water in grass near the tree indicates poor drainage. The soil water level changes with construction. Root rot commonly results.

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PLANT CLINIC HIGHLIGHTS

June 8 to June 14, 1990

HOST	DIAGNOSIS	COUNTY
Apple	Fire blight	Champaign
Arborvitae	Pestalotia needle blight	Cook
Ash	Ash flower gall	Champaign
Azalea	Azalea leaf and flower gall	Wabash
Barberry	Winter injury	Edgar
Boxwood	Pseudonectria canker	Peoria
Crabapple	Apple scab	Out of state
Exacum	Botrytis	Champaign
Japanese Maple	Canker	DuPage
Maple	Spring leaf Tatter	Champaign
	Potato leafhopper/	
	Wind tatter	Champaign
	Verticillium wilt	Vermilion
Oak	Anthraxnose	Champaign
Peony	Botrytis blight	Champaign
Redbud	Potato leafhopper/	
	Wind tatter	Champaign
Spruce	Cytospora canker	Cook
		Out of state
Sweetgum	Winter injury	McDonough

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HOME, YARD & GARDEN PEST

Newsletter

No. 13 • June 27, 1990

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Black Vine Weevil

The black vine weevil feeds on more than 100 different kinds of plants, including flowers, weeds, trees, and woody ornamentals. The injury is severe on taxus (yew), the roots of which are destroyed by the larvae feeding. *Taxus capitata* seems to be very susceptible.

Heavily infested plants turn yellow and eventually die if the injury continues. Damage has also been observed on rhododendrons and azaleas but has consisted primarily of foliage injury caused by the adult weevils feeding. Injury to taxus has appeared throughout northern Illinois. The importance of this pest as an economic insect has increased with the popularity of various taxus species for ornamental purposes and the corresponding increase in the size and number of taxus plantings in nurseries. Occasionally, hundreds of plants are killed with dramatic suddenness after growing to the salable stage.

Only one generation of black vine weevil occurs outdoors annually. The adults appear during June and early July. They feed on the foliage at night but hide during the day, primarily in debris and loose soil under plants. During July and August egg-laying occurs on the soil under the plants that the adults feed on. As the eggs hatch, the larvae burrow into the soil and feed on the roots. They overwinter in the soil as larvae and change to pupae in late May or early June.

The beetles of this genus are unusual in that no male has been observed. Eggs are deposited without fertilization and only produce females. The beetles cannot fly, so infestations spread slowly from one area to another, although they may spread rapidly in a specific area. Adult weevils feed on the foliage but

rarely eat enough leaves to create a problem. The typical crescent-shaped feeding wound is useful in detecting the presence of an infestation. Damage and destruction of plants are caused by the larvae consuming smaller roots and stripping bark from the larger ones.

Control: Black vine weevils were controlled in the 1960s by drenching infested plants with a residual insecticide such as chlordane. However, the weevils became resistant to chlordane and it is no longer available. Now, when adult feeding appears on the foliage, drench with either Orthene or Turcam. Wet the soil surface under the shrubs to control weevil grubs hatching from eggs. Repeat one or two times at two- to three-week intervals until there is no fresh, adult feeding damage.

Iris Borer

Control: Iris borers are best controlled by drenching plants and root zones with a mixture of 4 teaspoons of Cygon 2E in a gallon of water. Treat when the first blossoms appear.

Sod or Lawn Webworm

Adult webworm moths, if present, should be emerging at this time from infested lawns. (So far the webworm activity seems to be low with very few moths being observed.)

The buff-colored webworm moths have a wing span of about 1 inch. At rest, they look tubular because their wings wrap around their body. The moths are flushed from hiding places when grass is mowed or shrubbery is disturbed. They fly in a jerky fashion, a few feet at a time before diving down to rest on grass. The moths are attracted to lights at night. The elongate, oval eggs are dropped among in the grass by the females. The eggs are tiny, dry, and nearly impossible to find.

The larva, about an inch long when mature, is gray to dusky green with a dark brown head and brown spots over its body. The larvae often hide in a silk-lined tunnel in the thatch of the lawn. Their excrement appears as clusters of small pellets that are pale to dark green—some the size of a pinhead. The resting stage between the larva and adult is a brown, torpedo-shaped pupa about half an

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inch long. When empty, the pupa case looks like a dark-brown piece of cellophane.

The sod webworm passes the winter as a larva, tightly coiled in a closely woven silk case covered with soil particles. In the spring, the larva resumes feeding, grows rapidly, and pupates in the cell. The webworm moths emerge in the early evening and mate shortly afterward. About a day after emerging, the female moths begin to lay eggs a few inches above the lawn, usually during the early evening. Each female lays about 500 eggs. In hot weather, the eggs hatch in six days. The larvae require four to five weeks to complete their development. The pupal stage lasts eight to ten days. The entire life cycle thus usually requires six to eight weeks. So, under normal conditions, two generations occur each year.

Sod webworm larvae feed on bluegrass. They clip the blades of grass just above the sod. Brown spots appear in the turf where the larvae are numerous. These brown areas will usually recover, whereas similar spots caused by grubs will not.

Control: Webworm control is often too late since it is usually applied after most of the damage has been done and about the time the worms are ready to stop feeding and pupate. The larva eats about 70 percent of its total food supply in the last ten days of its development. This is why severe damage can occur within a few days. **EARLY DETECTION IS IMPORTANT FOR SUCCESSFUL CONTROL.**

Large numbers of moths flying zigzag just above the grass at dusk and collecting on doors and windows and around outside lights mean that the caution sign should be out. In central Illinois, moth flights occur between the first week of June and the middle of August. They are heaviest when the second-generation moths emerge in late July and August. Normally, that is when lawns are damaged the most and treatment is required. However, additional moth flights continue well into September. Careful inspections are the only positive way of finding early infestations. A good time for this is two weeks after a heavy moth flight.

The presence of unusual numbers of birds, especially robins and starlings, may indicate an infestation of webworms. By the time the birds invade the lawn, however, the damage is usually extensive. Furthermore, the webworm larvae are nearly mature, and it is too late to apply chemical control measures. Brown spots are another late indicator of probable webworm

infestations, although many other things can cause brown spots in lawns.

A well-kept, properly fertilized and watered lawn will support a considerable webworm population without serious damage. On the other hand, a lawn in poor condition will be affected more seriously by an equal number of webworms. A lawn that is kept mowed will be somewhat less attractive for egg-laying than one where the grass is permitted to grow tall.

To determine whether control is needed, inspect the lawn frequently in June, July, and August. If two or more larvae are found per square foot, treat immediately. For lawns with a history of webworm problems, or as a preventive measure, apply treatments two weeks after a heavy moth flight (usually in late July or early August in central Illinois). Occasionally, overwintering larvae (in May) or first-generation larvae (in June) become numerous enough to cause damage and require control.

Most chemical controls are applied as sprays, which are intended to stick to the grass blades where the webworms feed. Sprays applied in 3 gallons of water per 1,000 square feet of lawn area, or as granules, will control webworms. The insecticides effective for sod webworm control include Sevin, diazinon, Dursban, trichlorfon (Proxol, Dylox), or Turcam.

PLANT DISEASES

Diseases Now Active

Many of the diseases covered in past newsletters are *still* active. These include anthracnose diseases of maple, oak, ash, sycamore, and other trees; black spot and powdery mildew of roses; necrotic ring spot, dollar spot, red thread, leaf spot, brown patch, and *Pythium* blight of turfgrasses; *Botrytis* blight or gray mold on a wide range of ornamentals and vegetables; *Phomopsis* blight of junipers; apple and crabapple scab and fire blight; iron chlorosis on pin and other oaks, certain maples, sweet gum, gardenia, blueberry, rhododendrons and azaleas; Dutch elm disease and elm yellows; oak wilt; crown and root rots caused by *Rhizoctonia*, *Fusarium*, *Pythium*, and *Phytophthora*; pine wilt, needle blights, and rust diseases of pines; leaf curl and plum pockets of peach, plum, cherry, apricot, and May-day tree; iris leaf spot and mosaic; *Sclerotinia* white rot of many plants; spotted wilt of impatiens, cineraria, and other greenhouse ornamentals; aster yellows on many plants; virus diseases of geraniums and

bramble fruits; crown gall of euonymus and other plants; Verticillium wilt of many plants; Volutella blight of pachyandra; Vinca (periwinkle) dieback; Cytospora canker of spruce; and powdery mildew of a growing number of plants.

Control: Plant disease is almost entirely preventive if control management practices start *before* symptoms become evident. Once disease is obvious, very little can be done "until next year." We suggest homeowners and growers keep a log or diary of when diseases appear. Read over past newsletters and Reports on Plant Diseases that cover these disease problems and make plans to start control measures at the proper time. In home gardens, simply pick or snip off infected or insect-infested parts, place them in a paper bag and then in the trash every couple of days. Sanitation is still an excellent control measure to reduce inoculum, thus helping to prevent future disease attacks.

Boxwood: Canker, Dieback, Decline

Infected branches often start growth later in the spring than normal ones. Leaves on such branches curl upward close to the stem and turn grayish green to bronze before finally becoming straw-colored. Leaves may wither and drop early, leaving bare twigs. This fungal disease often follows winter or drought injury, nematodes, root rots, nutrient imbalance, and poor soil drainage. Twigs, branches, and main stems die back. Small, waxy, pinkish to black mounds often develop on affected parts. The bark at the base of larger branches may die and slough off.

Control: Good sanitation is essential in early spring before growth starts and whenever infected parts are evident. Cut out cankers on larger branches and cover the wounds with shellac. The following spray program, using a copper or liquid lime-sulfur fungicide, is effective: (1) spray while plants are dormant in late winter or early spring *after* old leaves have been removed and before new growth starts; (2) spray 10 to 14 days later; (3) spray when new growth is half complete; and (4) spray in autumn when fall growth has ceased. Carefully follow the manufacturer's directions when using any fungicide.

Black Leg of Potato

Black leg of potato, also known as bacterial stem rot, is caused by the bacterium *Erwinia carotovora*. Symptoms can appear on plants at

any time. On older plants, the disease shows up as interveinal yellowing and upward curling of leaves. Infected plants may wilt during hot weather. The internal stem tissues of these plants will be gray-brown in color, and with time may turn inky black and become soft and mushy. Infections on younger plants cause stunting and erratic growth. If soils are extremely wet or cold and dry at planting, infected seed pieces may decay before shoot emergence. The bacterium can also infect tubers, causing them to decay in the field or later in storage. Tuber symptoms range from slight vascular discoloration to complete soft rot. Young tubers are more susceptible to infection than those with fully developed skins.

The bacterium enters the plant through wounds on leaves, stems, tubers, or seed pieces. The disease is commonly spread to noninfected seed pieces during cutting, but the bacterium can also survive in the soil and infect seed pieces that have not had time to heal. Tuber infection is favored by wet soil conditions.

Control: Planting whole tubers or disease-free seed pieces is an important part of managing black leg. Also, plant in warm, moist but well-drained soils that promote rapid wound healing and growth. Planting on raised beds can increase soil temperatures and improve drainage. Maintain good sanitation practices during seed piece cutting and planting. Rogue out infected plants early in the season. Although no potato varieties are truly resistant, some cultivars, such as Norgold and Kennebec are more susceptible. To minimize postharvest disease, allow tubers to mature before harvest and hold them at 50° to 55°F and 95 percent relative humidity for 10 to 14 days to promote proper suberization.

Disease-Resistant Apple Varieties

The loss of mancozeb (Dithane M-45, Dikar, Manzate 200) and the possibility of new restrictions or loss of other fungicides for apples will make disease control on apples more difficult and probably more expensive. Growers should give serious consideration to planting disease-resistant apples.

All the disease-resistant varieties are highly resistant or immune to scab, the fungus disease that requires the greatest number of sprays in Illinois. They also have varying degrees of resistance to cedar rusts, mildew, sooty blotch, fly speck, and fire blight. Some fungicide sprays probably will be needed, but the number should be considerably less.

Varieties worthy for trial are:

William's Pride - dark-red skin with crisp, firm flesh ripening one week after Lodi and seven to eight weeks before Red Delicious. Requires several pickings.

Redfree - good coloring red-skinned apple ripening three to four weeks before Red Delicious. Susceptible to cedar rust.

Jonafree - resembles Jonathan in appearance and somewhat resembles Jonathan in flavor. Ripens with Jonathan one week before Red Delicious. Susceptible to fire blight.

Liberty - a "McIntosh type" apple that ripens one to two weeks after Red Delicious. The flesh is firmer and stores better than McIntosh.

Many Woody Plants: Crown Gall

This highly infectious bacterial disease infects at least 142 genera of plants in 61 widely separated families. The disease is economically important on apple, apricot, blackberry, cherries, cottonwood, crabapples, eunymous, grape, honeysuckle, nectarine and peach, pear, plum and prune, poplars, pyracantha, raspberry, rose, walnut, and willow. Plants affected by crown gall often grow poorly and are

stunted, weak, and more susceptible to winter injury. The crown gall bacterium only enters through fresh wounds (less than 24 hours old). The disease first appears as small overgrowths on the stem (trunk), crown, and roots, usually near the soil line or a graft or bud union. The gall or tumor is white or flesh-colored at first, more or less round, and quite soft and spongy. Tumors develop in the same places the following year, or part of the gall may decay and slough off, with new tumor tissue developing in other parts of the same gall. On some host plants, secondary tumors develop at points several inches from the primary gall.

Control: Carefully dig up and dispose of all severely infected plants. Do not replant the same type of plant in the same spot for at least five years. Plant only certified, disease-free nursery stock with smooth graft union, free of suspicious overgrowths or enlargements on the roots or stems. Protect susceptible plants against winter injury. Avoid wounding while transplanting, cultivating, and moving. Pruning, budding, and grafting tools should be dipped in fresh liquid household bleach between cuts. Control chewing insects. Resistant rootstocks are available for apple, apricot, and peaches. For other control measures and additional information, obtain a copy of *Crown Gall*, Report on Plant Diseases 1006.

To obtain copies of any of the Reports on Plant Diseases mentioned in this or other newsletters, send a check, made out to the University of Illinois, to Extension Plant Pathology, N-533 Turner Hall, 1102 South Goodwin Avenue, Urbana, IL 61801. There is a 50 cent charge for each report.

PLANT CLINIC HIGHLIGHTS

June 15 to 21, 1990

PLANT	DIAGNOSIS	COUNTY
Geranium	Botrytis	Madison
Hibiscus	Anthraco-nose	Out of state
Maple	Leaf tatter	Vermilion
	Potato leafhoppers	Champaign
Oak	Anthraco-nose	Champaign
		Cook
		Vermilion
		Winnebago
	Oak twig midge	Cook
	Canker, dieback	Cook
Pachysandra	Volutella leaf stem blight	Lake
Rhododendron	Phytophthora rot	Champaign
Spruce	Spider mites	Clinton
Sycamore	Anthraco-nose	Champaign
Vinca	Rhizoctonia root rot	Madison
Zoysia	Rhizoctonia	Madison

Home, Yard & Garden Pest Newsletter is prepared by the following Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey: Entomology, Roscoe Randell and Philip Nixon. Horticulture, Thomas Fermanian, Floyd Giles, Daniel Meador, James Schmidt, Tom Voigt, and David Williams. Plant Pathology, Nancy Pataky, Malcolm Shurtleff, and Darin Eastburn. Agricultural Engineering, Loren Bode and Bob Wolf.

Information for this newsletter is gathered by these people with the help of staff members, county Extension advisers, and others in cooperation with the USDA Animal and Plant Health Inspection service.

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HOME, YARD & GARDEN PEST

Newsletter

No. 14 • July 3, 1990

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Earwigs

Jim Daugherty, agricultural Extension adviser, reports that earwigs are being found in Peoria County. They have also been reported in northeastern Illinois. Earwigs become active near the end of June as nymphs that develop into adults by early July. They do not disappear until late August, when they enter the soil to lay eggs.

Earwigs feed primarily on decaying plant material at night, hiding in cracks and crevices during the day. They commonly enter houses but do not reproduce indoors.

Control: Earwigs can be kept out of the home with foundation sprays of diazinon or chlorpyrifos (Dursban). They will also feed on some flowers, particularly marigolds, zinnias, and roses. Protect affected flowers with applications of carbaryl (Sevin) or rotenone. Be sure to keep the insecticide off blooms to reduce the chances of killing bees.

Cicadas - Deformed and Diseased

We have been receiving reports for the last month about deformed periodical cicadas in the northern third of Illinois where the cicadas have emerged this year. When any insect emerges as an adult, it has to crawl out of the old skin of the previous growth stage. The new stage that emerges is wet and soft but begins to harden immediately. If the insect is slow in shedding its skin, parts of the new skin may harden and stick, causing part of the insect to be deformed. These deformities include twisted or shortened wings, bent legs, or very small abdomens. Occasionally, the insect may dry while partly out of the old skin, which produces an insect that appears half adult, half immature.

Any time that large numbers of insects emerge in a short time period, such as the periodical cicada, many deformed insects are found even though the percentage is small. Insects are not very active at temperatures in the 50s and almost inactive in colder temperatures. This year, the periodical cicadas emerged in late May and early June, when nighttime temperatures were unseasonably cold. Since the cicadas emerge in the hours just before dawn—usually the coldest part of the day—these cold temperatures probably caused a larger proportion of deformed cicadas than would be found in a normal emergence.

Pam Cater, Extension horticulture adviser in Lake County, sent in several periodical cicadas with white, cottony abdomens. These cicadas were infected with a fungus called *Massospora*, which only infects the genitalia of adult cicadas and commonly causes the abdomen to fall off.

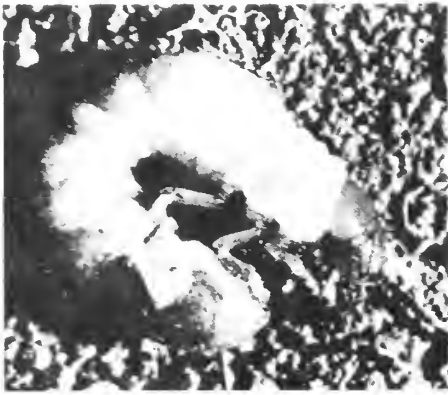
Bagworms

Bagworms have hatched and are about 3/8-inch long in central Illinois. Bagworms commonly attack red cedar, and other junipers, arborvitae, and spruce, although many trees and shrubs, both evergreen and deciduous, may be attacked.

Control: When less than an inch long, these insects can easily be controlled with many insecticides. When larger, *Bacillus thuringiensis* (Dipel, Thuricide), trichlorfon (Proxol, Dylox), and cyfluthrin (Tempo) are more effective than other insecticides.

Annual White Grubs

Annual white grub adults are 1/2-inch long, tan beetles. They have emerged in the southern two-thirds of Illinois. These grub adults are attracted to yard lights and other lights at night. In most turf areas, egg laying will peak in central Illinois about July 6 to 10, one week earlier in the southern third of the state, and one to two weeks later in the northern part. Daily flight activity for egg laying occurs soon after dark, peaks about 10:00 to 10:30 p.m., and ends about 1:00 a.m. This egg-laying



Annual white grub

activity can be observed along residential sidewalks and driveways. If you observe the lawn surfaces with car lights approaching, you may witness these adults with membranous wings unfolded from beneath their covers flying just above

the lawn. Adequate soil moisture and a moderate number of beetles can add up to many eggs laid in many lawns with a low to moderate grub population in August and September. The first evidence of grub damage usually occurs about six to eight weeks after egg laying. Adequate soil moisture, the presence of beetles, and bluegrass turf add up to the potential for future annual white grub activity. However, the great number of lawns and other turf areas with optimum soil moisture this year may dilute the number of grubs in one particular lawn but may increase the total grub population for future years, which was greatly reduced in 1987 through 1989 by drought and high soil temperature in July and August of those years.

Fall Webworm

The first generation of fall webworm is active in southern and central Illinois. In the latter area they appear to be most common on mulberry. Last year they were most common on elms. In southern Illinois, this first generation tends to be most numerous on sweet gum and redbud. There will be a second generation in southern and central Illinois starting in late July. Northern Illinois has fall webworm for only one generation each year—first appearing in late July.

PLANT DISEASES

Woody Plants:

Canker and Dieback Diseases

Canker diseases are common, widespread, and destructive on all kinds of trees and shrubs, especially those under stress from transplant

shock, an excess or deficiency of water (even going back to the drought of 1988!), or prolonged exposure to extreme temperatures. Sudden hard freezes in mid- to late fall or spring can also cause trees to be more susceptible to canker diseases. Other stress factors include summer or winter sunscald, frost cracks, nutritional imbalances, extensive defoliation from insects or disease, soil compaction, changes in the soil grade, mechanical injuries (such as hail, wind, a heavy ice or snow load, fire, lawn mowers, construction equipment or vehicles, or rodents), pruning wounds, root rot, insect borers, nematodes, dogs, or improper digging, storage, and shipping.

Cankers are localized diseased areas in the bark that often cause an open wound. The lesion is often a definitely marked dead area, usually round to oval or elongate in shape, which may enlarge and girdle the twig, branch (limb), or trunk. The result is a gradual or rapid wilting, withering, and dying back starting at the shoot tip and progressing down the branch. The leaves on affected parts are often smaller than normal, first pale green, then yellow or brown, curled, and sparse.

Control: Grow only well-adapted species and varieties or cultivars. Prune out affected plants in dry weather, including all dead and discolored wood. Make cuts several inches behind any sign of disease. Remove and burn or bury all affected parts when first noticed. Avoid leaving branch stubs. Make cuts as flush with the branch or trunk as possible, and sterilize pruning tools between cuts by swabbing them with 70 percent rubbing alcohol or freshly prepared liquid household bleach (1 part bleach in 9 parts clean water). All bark and wood injuries should be treated promptly. Cut away all loose or discolored and splintered wood. Clean, shape, and smooth the wound into a streamlined oval or ellipse with rounded ends and its long axis oriented vertically. Then paint the wound surface liberally with an antiseptic coating of shellac.

Keep plants growing vigorously through proper application of fertilizer (in mid- to late autumn or early spring), soaking the soil to a 12-inch depth every ten days during hot, dry periods (probably not this year!), pruning, and protecting in winter. For more information on other controls, many excellent pictures, disease cycles for annual and perennial cankers, and an alphabetical listing of principal canker and dieback-producing fungi on woody plants in the

Midwest, refer to Report on Plant Diseases No. 636, *Canker and Dieback Diseases of Woody Plants*.

Gladiolus: Virus Diseases

There are a number of viruses that infect gladiolus. Identification of each virus based solely on symptoms is difficult because

varieties often react differently to the same virus. The most common virus infections are caused by the cucumber mosaic or white break mosaic, and bean yellow mosaic, which occur worldwide on a range of cultivated and wild plants and are mainly transmitted by the feeding of aphids. Bean yellow mosaic (or mild mosaic) is



White break mosaic of gladiolus

also mechanically transmitted on contaminated tools. Other viruses that attack gladiolus include tobacco ringspot, which infects over 250 species in 54 plant families, tobacco rattle (notched leaf), and tomato ringspot (stunt). Symptoms of virus infection include conspicuous blotches in the flowers that are white, light gray, or yellowish (white break mosaic). Flowers may be crinkled or otherwise deformed. Foliar symptoms include blotches or squares between the leaf veins that may be gray, yellow, brown, or reddish. Plants may be stunted or have an overall yellow appearance. Leaves and flower stems often develop an angular, light- and dark-green mottling (mild mosaic) when temperatures are mild and plants are growing rapidly. The symptoms tend to be masked at high temperatures (over 85°F). Leaves on affected plants develop brown or yellowish ringspot patterns when affected with tobacco ringspot virus.

Control: Plant only certified, disease-free corms, preferably culture-virus-indexed from a reputable nursery. Remove and destroy all infected plants when symptoms first become evident—they will not recover and the virus(es) are passed on through the corms. Eradicate all nearby broadleaf weeds that serve as virus reservoirs or may harbor aphids that later move into gladiolus plantings. Avoid growing gladiolus near bean, clover, cucumber, melon,

or tomato plants. For other controls, photos, and additional background on these diseases, read Report on Plant Diseases 612, *Gladiolus Viruses*.

Melon and Cucumber Diseases

Gummy stem blight occurs on all cucurbits, including cucumber, muskmelon, and watermelon. On squash and pumpkin, the disease is called black rot, but it is caused by the same fungus. Plants die quickly if infected in the seedling stage. On older plants, all above-ground parts can be affected. Leaf symptoms appear as tan, circular to irregular lesions and often begin at the leaf margins. Lesions can expand toward the center of the leaf, causing large areas of the leaf to become blighted. Small, black fruiting bodies, pycnidia and perithecia, usually develop on the necrotic tissue. Infection of the stem causes cankers or lesions that are initially oily green and later turn tan. Sap may exude from these lesions, which then dries to form drops of resin-colored gum (thus the name gummy stem blight). Lesions can expand to girdle the stem, causing wilt and dieback of entire vines or plants. Fruit symptoms vary on different crops but usually start as small, water-soaked, circular spots. These spots usually become dark colored with age, and gummy exudate and fruiting bodies may develop in the spots. The fungal pathogen overwinters in infected crop debris and can also be carried on infected seed. The disease is favored by rainy weather and moderate temperatures. Pruning, picking, and insect wounds can be infection sites, especially on older stems and leaves.

Control: Two- to three-year crop rotation schedules, planting only disease-free seed, and good sanitation practices (removal of infected plant debris) are the best means for controlling gummy stem blight. Protecting plants with fungicide treatments may be necessary, especially when plants are young.

Leaf diseases are caused by several pathogens, in addition to the gummy stem blight pathogen. Angular leaf spot, caused by the bacterium *Pseudomonas syringae* pv. *lachrymans*; Alternaria leaf spot, caused by the fungus *Alternaria cucumerina*; and anthracnose, caused by the fungus *Colletotrichum orbiculare* are the most common leaf diseases in Illinois. As the name implies, symptoms of angular leaf spot appear as necrotic areas on the leaves that are limited in size by the leaf veins; thus they take on an angular appearance. These spots start as small, water-soaked areas on the

underside of the leaf. Later the spots turn tan to brown and may be surrounded by yellow haloes. Under humid conditions, a milky white bacterial ooze can be seen coming from the water-soaked lesions. The bacterium can also attack stems and fruit. *Alternaria* leaf blight and anthracnose, both caused by fungal pathogens, produce roughly circular tan to brown lesions on the leaves. Concentric rings develop on leaf spots caused by *Alternaria*, whereas small, black structures develop in the necrotic areas of anthracnose leaf spots. Both diseases can cause sunken circular lesions on fruit.

Alternaria leaf blight is most common on muskmelon (cantaloupe) and less important on cucumber, watermelon, and squash. However, anthracnose commonly occurs on cucumber, muskmelon, and watermelon. All three of these diseases survive from season to season in infected plant debris, and two- to three-year crop rotation schedules can help control them. Angular leaf spot and anthracnose are spread from plant to plant by splashing water and thus are most likely to occur after periods of

rainfall. Wind is the mechanism for dispersal of the fungal spores of *Alternaria*. Warm, humid conditions and wet plant surfaces favor the development of all three diseases. Additional control measures include using resistant varieties (for angular leaf spot and anthracnose), using disease-free seed and protective copper sprays (for angular leaf spot), and using fungicide sprays for anthracnose and *Alternaria* leaf blight.

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PLANT CLINIC HIGHLIGHTS

June 22 to 28, 1990

PLANT	DIAGNOSIS	COUNTY
Apple	Fire blight	Iroquois
Arborvitae	Phomopsis twig blight	JoDaviess
Barberry	Winter injury	Champaign
Elm	Dutch elm disease	Livingston
Evergreen	Phomopsis twig blight	Champaign
Locust	Leafhoppers/ plant bugs	Kankakee
Maple	Anthracnose	Bond Clinton Schuyler Winnebago
	Verticillium wilt	Clinton
	Nectria canker	Bond
Oak	Anthracnose	Cook
Pine	Pine shoot moth injury	Lawrence
	Pine needle scale, root injury	Winnebago
Rose	Black spot	Champaign
	Rose rosette	McDonough
Spruce	Cytospora canker	Vermilion
	Spider mites	Adams
Vinca	Stem blight	Lake

Home, Yard & Garden Pest Newsletter is prepared by the following Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey: *Entomology*, Roscoe Randell and Philip Nixon. *Horticulture*, Thomas Fermanian, Floyd Giles, Daniel Meador, James Schmidt, Tom Voigt, and David Williams. *Plant Pathology*, Nancy Pataky, Malcolm Shurtleff, and Darin Eastburn. *Agricultural Engineering*, Loren Bode and Bob Wolf.

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HOME, YARD & GARDEN PEST

Newsletter

No. 15 • July 11, 1990

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Giant Aphids

Giant bark aphids are large, about 1/4-inch long. They have very long legs and are cream-colored with black spots. Their cornicles, tailpipe-like tubes off the back end of the body, are very short. This aphid's larger size and long legs cause many to identify them as spiders at first glance. They are found on oak, sycamore, linden, birch, hickory, pecan, walnut, and willow trees. When present in large numbers, giant bark aphids can kill branches from their feeding. These aphids are now being found on trees in central Illinois.

Giant willow aphids were found in Grundy County by Bryon Kirwan, county agricultural Extension adviser. This aphid is found on various willows, particularly pussy willow. This aphid is nearly the same size and color as the giant bark. Unlike the giant bark though, it has long cornicles and a long spine.

Pine Shoot Moths

The dying of new shoot or "candle" growth on pines, especially Scotch, mugho, Austrian, and red varieties, usually indicates the presence of pine shoot moths. The Nantucket pine tip moth attacks pine terminals in southern Illinois, while the European pine shoot moth is more common in central and northern regions.

Both insects tunnel inside the candle. The European pine shoot moth larva usually tunnels almost the length of the candle. Terminals attacked by European pine shoot moth are usually light in color with the candle bent over like a shepherd's crook. They usually do not have accumulations of pitch.

Terminals attacked by Nantucket pine tip moth will have died back with accumulations of white, dried pitch at the base of the needles.

Usually this pitch is 1/8- to 1/4-inch thick. Nantucket pine moth larval tunneling is usually at in the candle base and nearby year-old wood. If the infestation of Nantucket pine tip moth is large, they will tunnel into the rest of the candle.

Control: Dimethoate, sold as Cygon, is used to control both moth species. The Nantucket moth is controlled by sprays in southern Illinois in early April and mid-June. Due to the systemic action of Cygon, applications now may still be effective. European pine shoot moth is controlled with a spray in late June in central Illinois and early July in northern Illinois. According to Don Orton in *Coincide*, (see Issue No. 4, April 25) applications for European pine shoot moth coincide with the bloom of catalpa and Hills of Snow hydrangea.

Cottony Maple Scale Common on Maples and Locusts

Cottony maple scale, which appears as white, popcorn-like masses on the twigs of silver maple, honey locust, or other shade trees are beginning to show up in certain areas of northern Illinois, according to Fredric Miller, area Extension adviser in entomology in north-eastern Illinois.

Cottony maple scales are brown, 1/4-inch diameter insects that feed on the sap of various trees. They may also be found on other maples, linden, walnut, and other trees.

In June, mated female scales produce white, cottony, 1/4-inch diameter egg sacs that make the scales' presence obvious. These eggs hatch into yellowish crawlers during the first two weeks of July that migrate to the foliage and settle down along veins under the leaf.

Control: Once the crawlers settle on the leaves, they are resistant to most insecticide sprays, a feature that they keep for the rest of their lives. Before the leaves drop from the tree in autumn, the scales migrate to the twigs where development is completed through the following spring.

Although the scales may cover most of the tree's branches, they are unlikely to kill the tree. Numbers of twice-stabbed lady beetles will

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increase on the tree, feeding on all stages of the cottony maple scale. Adult twice-stabbed lady beetles are about 1/8-inch in diameter and black with two red spots on the back. The larvae are whitish like the maple scale's egg cases, but they have legs.

Control: Although insecticide sprays of malathion, diazinon, or acephate (Orthene) are effective against the crawlers when present in early July, these sprays may also kill twice-stabbed lady beetles. Spraying silver maple and honey locust trees with a dormant oil in the spring, before the leaves start to emerge, will kill overwintering scales, but will not harm the lady beetles that winter in protected areas beneath loose bark. Do not use a dormant oil spray on sugar, Norway, Japanese, or any other hard maple.

Why Do Insect Outbreaks Come and Go?

Every year we get calls about a "new" insect problem ("new" insect being one that has been around, but has been much more numerous for the last couple of years, and seems to be increasing in number every year with no end to the problem in sight). We also get calls about insects that can't be found--insects that were present for the last few years in large numbers, but are now almost unknown. Landscapers call to find out where huge numbers of insects are hiding and what can be done to keep them from suddenly appearing and severely injuring their plants.

These variations in insect numbers are due to changes of the insect population in nature. We don't know all the reasons for the changes, but many are linked to climate, plant hosts, and natural enemies. This year is a good example of the effect of climate on insects. Last December, temperatures fell to about 20 degrees below zero, which may be responsible for the drop in elm leaf beetles in northern Illinois and of bagworms throughout the state. And the hot, dry weather of the summer of 1988 and 1989 in some areas of the state caused box elder bugs to be so numerous that it seemed like the world was turning red and black. But where are the box elder bugs this year?

Similarly, where have all the annual white grubs been for the last two years? Research shows that at low moisture levels and with soil temperatures over 90°F, many white grub eggs never hatch. With heavy rainfall and early season low temperatures this year, the situation has been reversed. Almost every white

grub egg laid this summer will probably survive. Damage to turf may not be too bad this year because the grubs will be spread over large areas, but this year's weather will probably cause large numbers of white grub adults next year. If we have typical rainfall next year, these large numbers will concentrate in watered turf areas, causing heavy damage.

Some insect outbreaks in Illinois are apparently strongly linked to natural enemies. When pest numbers are low, the predators, parasites, and diseases that attack these pests are also low. When the climate is favorable enough for the pests to gradually increase in number, their natural enemies lag about two years behind in their buildup of numbers. This allows the pests to reach outbreak population levels for about three years before the natural enemies cause their numbers to drop.

For instance, cottony maple scale in northern Illinois is apparently controlled by the twice-stabbed lady beetle in the third or fourth year of an outbreak. Similarly, there is a parasitic tachinid fly that appears to be a factor in the crash of Eastern tent caterpillar populations. There was an outbreak of tent caterpillars for the last three years in southern Illinois, but this year the numbers are low. In the northern third of the state, this was the third year of an outbreak of the same insect. So, we will probably not have many of these caterpillars in northern Illinois next year.

There is also evidence that plants change their chemistry to combat insects. Even under the same weather conditions and without natural enemies, insects that have been on the same plant for more than one generation tend to drop in numbers. Research shows that plants increase the amount of some chemicals in their leaves and reduce others. The increased chemicals act as insecticides and anti-feedants. The reduced chemicals have been found to be nutrients and other compounds that the insects use to manufacture hormones that they need to survive. Chemicals mimicking insect growth hormones may also be produced. Some plants will grow tougher leaves that the insects cannot feed on as easily.

It is interesting that these insect outbreaks rise and fall whether we use insecticides or not. Sprays are useful to reduce insect problems in small areas such as specific landscapes or towns, but nature controls the insect numbers on a grand scale and our efforts are pitiful in comparison.

PLANT DISEASES

Honeysuckle: Leaf Blight

Leaf blight, caused by the fungus *Insolito-basidium (Herpobasidium) deformans*, is now widespread on honeysuckle following the rainy weather in May and June. Yellowish green blotches on the leaves turn tan and are now blackish brown. A whitish "bloom" of spores appears on underleaf surfaces in damp weather. The leaves roll, twist, wither, and drop early. Only young leaves are infected.

Control: It is too late to spray this year, but fungicides containing copper, maneb, or mancozeb are effective when applied as new growth appears. Several applications at seven-to-ten-day intervals are suggested.

Many Ornamentals, Vegetables, and Fruits: Bacterial Soft Rot

With bacterial soft rot, roots, fleshy stems, tubers, rhizomes, bulbs, buds, leaves, and fruit become soft, mushy, slimy, or pulpy--usually with a putrid odor. Foliage wilts, shrivels, and may collapse when the lower stem or underground parts decay. Infections occur through wounds (insect or nematode injuries, freezing or hail injury, harvest or cultivator wounds, etc.). Rot is most destructive in heavy, poorly drained soils in warm-to-hot, moist weather.

Control: Avoid planting in poorly drained, infertile soil. Control soil insects following suggestions of Extension entomologists. Carefully dig up and destroy infected plants. Spray to control foliage-feeding insects. Control foliage blights and fruit rots. Avoid wounding plants when cultivating, digging, and handling at or after harvest. Store only dry, blemish-free vegetables and fruits in a dry, well-ventilated room at the recommended humidity and temperature. The storage area should be swept clean. Where possible, precool leafy vegetables to 45°F or below, then place in cold storage as soon after harvest as possible. For calla lily and iris, cut out rotted portions in the bulb, corm, or rhizome. Then dry thoroughly for a day or two before planting or placing in storage.

Woody Plants: Wood Rots and Decays

Wood rot diseases are caused by more than 1,100 different wound-infecting fungi. Nearly all woody plants are susceptible to decay of the trunk, large branches, and roots. Decay usually develops over several years and may not noticeably shorten the life of an affected tree or shrub. In living trees, most of the decay is confined to the older, central wood (heartwood). Once the tree is cut, however, the outer wood

(sapwood) is colonized by the wood-decay fungi, as are the wood products made from the tree, if moisture and temperature conditions are favorable for fungi growth. Trees extensively invaded by a wood-decay fungus may show a gradual decline in vigor. Twigs and then branches die back. Affected trees become structurally weak and more susceptible to ice and wind damage.

Most wood-rotting fungi produce fruiting structures of the bracket (shelf) or hoof type--called corms--or the mushroom type. These fruiting structures commonly do not appear until several years after decay is advanced. Decay fungi cause the colonized wood to become water-soaked, spongy, stringy, crumbly, or flaky. Such wood may also be discolored--usually brown, white, yellow, or some shade of red, for several feet or more above and below where the fruiting structures appear. Infection nearly always occurs through moist, unprotected breaks in the bark where the wood beneath is exposed. Entry wounds include branch stubs and pruning cuts; mowing cuts and bruises; cuts made by knives, bicycles, and vehicles; summer or winter sunscald; fire scars, lightning strikes, frost, or drought cracks; damaged roots, insect wounds, sapsucker punctures, or breaks due to ice or snow and windstorms.

Control: Grow only species of shade, ornamental, and fruit trees and shrubs that are well-adapted to the area. Plant only vigorous, disease-free nursery stock. Keep plants vigorous through proper fertilizing and thorough watering during summer droughts and late in the fall. Wrap the trunks of newly transplanted, thin-barked trees, and prune periodically to remove all dead, dying, interfering, and broken branches. Prune broken stems below the damaged portion so that water will drain off and not collect on the wound surface. The severed ends of roots should be made blunt rather than left jagged. Pruning is best done in the dormant season when the weather is dry. Make as few changes as possible in the soil grade or drainage patterns in the vicinity of trees. Avoid compacting soil over the roots.

Control wood-boring insects by following recommendations of Extension entomologists. Avoid all unnecessary bark wounds. Cut away all loose or discolored bark and remove splintered wood. Clean, shape, and smooth the wound into a streamlined oval or vertical ellipse. Then scrub the surface liberally with 70 percent alcohol or shellac. Tree wound dressing is of questionable value and is largely cosmetic.

Raspberries: Winter Injury and Phytophthora Root Rot and Wilt

We have received calls on the sudden dying of raspberries. Much of this can be attributed to winter injury, probably due to the severely cold weather in mid-December. Affected canes and laterals are weak, lack vigor, and usually die just before fruiting under other stresses. The leaves on these plants are mottled and lack good color.

Phytophthora root rot and wilt starts in low areas in heavy, poorly drained soils and spreads rapidly within rows. Young canes wilt, wither, and die when they are 12 to 18 inches tall. New shoots keep emerging, then they too wilt and die. Roots on affected plants are dark and decayed. Heritage red raspberry is very susceptible to Phytophthora.

Control: Drench with Ridomil, following label directions on rates, application, and harvest restrictions. Plant in well-drained soil with certified, virus-free plants. For winter protection suggestions, contact your county Extension office or Extension horticulturist.

Russian Olive: Phomopsis Canker and Dieback

Across the Midwest, Russian olive trees appear ragged, with dying or dead twigs and branches from a wound-infecting fungus called *Phomopsis elaeagni*. Although the fungus alone rarely kills trees, it can cause Russian olives to rapidly lose their attractive appearance and can weaken a plant enough to allow other pathogens and pests to become established. This disease and verticillium wilt make Russian olive trees generally unsuitable for ornamental plantings. Cankers on affected trees are oval to elongate and depressed. The diseased bark on cankers varies from orange-brown to dark reddish-brown with the white sapwood beneath turning dark brown to black. The dead, withered leaves on cankered branches remain attached for some time.

Control: Plant disease-free, vigorous nursery stock. Avoid trees with evidence of Phomopsis canker and dieback. Avoid all unnecessary bark wounds. Make pruning cuts flush with the branch to avoid leaving stubs. Sanitation is critical. Cut down and destroy all infected trees in ornamental plantings. Attempts to prune or surgically remove cankers on branches and trunks have largely proven unsuccessful. There are no effective fungicide controls. For more information, read Report on Plant Diseases No. 606, *Phomopsis Canker and Dieback of Russian Olive*.

Rhododendrons: Phytophthora Wilt, Dieback and Root Rot

This widespread disease is caused by many common species of the soilborne fungus *Phytophthora*, which thrives in heavy, wet soils. Leaves may be a dull, yellowish green or watersoaked before wilting and withering from a brown to black rot of the lower stem and roots, or terminal buds and leaves turn brown, roll up, and droop. Brown to black sunken, girdling cankers may form on the stems. Roots may decay and slough off easily. All parts above the canker or rot later wilt and die.

Control: Grow varieties and species well adapted to your area. Plant in partial shade, sheltered from strong, dry, winter winds in a fertile, deep, well-drained soil. Keep soil well mulched (3 to 8 inches deep) with peat moss, well-rotted compost, pine needles, ground corn cobs, shredded bark, wood chips, or rotted sawdust. Renew the mulch annually. The soil pH should be 4.5 to 5.5 and high in organic matter. Avoid over-fertilizing and water thoroughly during summer droughts and late in the fall. Control insects (weevils and grubs, for example) following suggestions of Extension entomologists. Bud and twig blight and dieback can be controlled by spraying three times, seven to ten days apart, starting at budbreak using a copper, chlorothalonil (Daconil) or benomyl (Banlate) fungicide. To control root and crown rot, dieback and wilt, apply a fungicide as a drench around plants and then repeat at three- to twelve-week intervals in spring and autumn, or blend granules into the soil just before planting. The following fungicides are effective against soilborne species of *Phytophthora* when applied at the early onset of symptoms: etridiazole (Truban or Terrazole), Banrot, metalaxyl (Subdue), fosetyl-A1 (Aliette) and propamocarb (Banol).

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HOME, YARD & GARDEN PEST

Newsletter

No. 16 • July 18, 1990

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Fall Webworm

Second generation fall webworm is present in southern Illinois and should appear next week in central Illinois. The only occurrence of this insect in northern Illinois should begin in a week or two. Fall webworm feeds on a wide variety of trees, but is most common on crab-apple, walnut, pecan, and hickory.

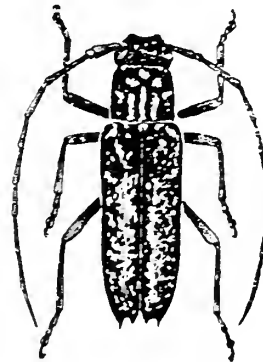
This caterpillar lives in colonies that spin silk tents over the ends of branches, enclosing the leaves. The hairy caterpillars feed on the leaves inside of this tent, enlarging the tent every few days to include more leaves. Fall webworm has two races; one race has a wide black stripe down the back, while the other race lacks the stripe, making the general color yellowish to orangish.

Control is more effective on younger caterpillars. Eliminating the caterpillars before they have eaten many leaves reduces the damage to the health and appearance of the tree. If insecticides are used, smaller caterpillars are killed more easily than larger ones. The silk tent is waterproof, so to be effective insecticides must be sprayed with enough force to break up the tent. *Bacillus thuringiensis* (sold as Dipel, Thuricide, Sok-Bt, and Caterpillar Attack) is effective in controlling this insect, as are various chemical insecticides.

Pruning out the silk tents removes the caterpillars and is an effective control. Many tents will be too high to be reached by this method, and those can be sprayed or ignored. Damage occurring this late in the summer is not very severe to the health of the tree, since the leaves that are eaten have already accomplished most of their purpose for the tree.

Twig Pruners and Girdlers

Dean Carr, Extension agricultural adviser in Vermilion County, reports the appearance of twig pruner this year. The adult beetle lays its egg in the bark of a twig in the spring. The egg hatches into a larva that bores into the twig and feeds during the summer. Later in the summer, the borer severs the wood of the branch, leaving the bark intact. Winds blow the damaged branches out of the tree; the larva continues to develop in the fallen branch.



Twig pruner

The insect overwinters as a pupa and emerges from the branch in the spring as an adult.

The twig girdler beetle also lays its eggs in twigs, but the beetle then girdles the twig by chewing a continuous notch around it. This damage occurs later in the summer, with the girdled branches blowing out of the tree with heavy winds. The eggs hatch in the fall, and the resulting young larva overwinters in the branches on the ground. In the spring and summer, the larva grows and develops in the branch, pupating and emerging as an adult in late summer.

Control of both insects can be accomplished by destroying fallen twigs and branches in the late summer and fall. Infested, fallen branches may be as long as 2 feet. Both insects cause relatively smooth breaks. The twig pruner leaves a smooth cut in the center of the twig, but the bark breakage will be more ragged. The twig girdler cut will be smooth in the bark and outer wood, but the pith and inner wood may have a more jagged break.

Japanese Beetle

Japanese beetles are feeding on ornamental plants in the eastern edge of Illinois. This insect occurs down the length of the state, but mainly in the easternmost counties. The insect is about 1/2 inch long, robust, and roundish in shape. It is metallic green and has coppery

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wing covers and white spots on the sides, just below the wing covers.

The larva is one of the white grubs that feed on the roots of turfgrasses. The adults are active in the daytime and feed for about a month on a variety of plant leaves and flowers, including smartweed, rose, grape, raspberry, linden, and birch.

Control is difficult, with handpicking as effective as insecticide sprays. Sprays of carbaryl (sold as Sevin) and acephate (sold as Orthene) are usually somewhat effective. Very valuable plants can be covered with nylon netting or mesh bags.

Japanese beetle traps may also be effective. These traps have a pheromone and a floral lure so that both sexes of beetles are attracted. Place the traps at least 50 feet from the plants that you want to protect. A problem with these traps is that they may attract beetles to your yard from a long distance, ones that probably wouldn't have come to your yard if the trap wasn't present.

List of Available Resources in Entomology

Extension circulars, pesticide applicator training manuals, fact sheets, picture sheets, and slide sets covering a variety of insect pest management situations are available from the University of Illinois. Some can be ordered from the Office of Agricultural Communications and Education, others from the Office of Agricultural Entomology, and still others from Vocational Agriculture Services. An extensive, up-to-date list of these resource materials, with information on their cost and how to order them, is available from the Office of Agricultural Entomology, 172 Natural Resources Building, 607 East Peabody Drive, Champaign, IL 61820. To receive a copy of this list, send a check for \$1.00 payable to the University of Illinois.

PLANT DISEASES

Plums and Cherries: Black Knot

Black knot is a widespread disease on wild plums and cherries and in home orchards where pruning and spraying are not practiced regularly. The disease will eventually stunt or kill infected trees unless effective control measures are taken. Elongated, rough, girdling black swellings develop on twigs, branches, and even the trunk. The knots are a velvety olive green in spring. Gradually they become hard,

brittle, and coal black by autumn. Affected parts may die back. Trees gradually weaken and die.

Control: Purchase only disease-free nursery stock. Never buy trees with visible knots or abnormal swellings on the twigs and branches. Prune and burn (or bury) all infected wood in late winter or early spring **before** growth starts and as soon as new knots appear. Make cuts 4 to 8 inches behind any obvious, black knot swellings. Knots on the trunk or on large limbs should be carefully cut out with a knife and chisel, removing about an inch of healthy bark and wood beyond any visible gall tissue. Wounds over 1 1/2 to 2 inches in diameter should be painted with shellac. If possible, destroy (burn) all available wild, neglected, or worthless plum and cherry trees. Fungicide sprays should be applied (1) just before the buds break open, (2) at pink bud, (3) petalfall, and (4) at 2-week intervals until mid-June following the spray schedule for plums as given in University of Illinois Cooperative Extension Service Circular 1145, *Home Fruit Pest Control*.

For more information concerning control measures, resistant cultivars, and disease cycle, read Report on Plant Diseases No. 809, *Black Knot of Plums and Cherries*.

Peach: Perennial Canker

This serious disease has several names including dieback, peach canker, Valsa canker and Cytospora canker. The disease may kill young trees, while older trees lose productivity and longevity.

Cankers form on the fruit pedicels, twigs, scaffold limbs, and trunk. Wounds or dead areas in the bark must occur before the causal fungi can invade. Once established, gum is exuded at the point of infection. (The presence of gum or sap exudate on the scaffold limbs or trunks of peach trees may also be caused by insect borers, winter or mechanical injury, and other diseases. With perennial canker the inner bark tissue collapses. Older cankers are generally oval in shape with the outer bark generally broken and disorganized. The canker enlarges from year to year with callus rings forming around the canker as a defense mechanism. Limbs are gradually girdled and killed.

Control: Destroy all wild and infected stone fruit trees before planting new, disease-free nursery stock. Choose winter-hardy rootstocks. Fertilize in late winter or early spring to avoid succulent, cold-tender growth in the fall. Prune peaches annually using the open center system.

For details, read Illinois Extension Circular 1013, *Growing Tree Fruits in the Home Orchard*. Prune from late winter until just after bloom. Remove all weak and dead wood and all cankered branches that can be spared. Make cuts at least 4 inches below a canker. Do not leave branch stubs. Paint the wounds as described for black knot. Clean out cankers on large limbs and trunks. Avoid mechanical injury to tree trunks. Control insects and other diseases. Follow the spray program outlined in Extension Circular 1145, *Home Fruit Pest Control*. For more information about this disease, read Report on Plant Diseases No. 806, *Perennial Canker of Peach*.

Wet Feet: Many Plants

Excessive rains in April, May, and June kept the soil in much of Illinois near field capacity. This killed plants such as yew (*Taxus*), white pine, *Prunus* species, roses, rhododendrons, and others. Roots require oxygen to grow. Saturated soil creates an anaerobic condition and also allows such soil-inhabiting fungi as *Pythium*, *Fusarium*, and *Rhizoctonia* to attack the weakened rootlets, adding to the problem.

Apple Diseases: Black Rot and Frogeye Leaf Spot; Sooty Blotch and Flyspeck

Black rot and *frogeye leaf spot* are caused by the same fungus that also causes a serious canker and dieback disease of twigs, limbs, and trunk. Disease occurs from fruit rotting before harvest and in storage, a weakening of the tree from defoliation, and a blighting and dieback of twigs and limbs. Fruit develop a small, light brown spot that enlarges and forms concentric, brown or black rings. The rotted fruit turns black and shrinks into a wrinkled "mummy" that commonly hangs on the tree over winter.

Frogeye leaf spot is a round to irregular lobed lesion with a light brown-to-gray center surrounded by one or more dark brown concentric rings and a purple margin. Black specks (pycnidia) develop in the rotted fruit, leaf spots, and slightly sunken, reddish brown cankers that form in the bark of old, stressed, or injured trees. The cankers slowly enlarge and darken. Larger cankers expand slightly each year.

Control: Keep trees vigorous through annual pruning, thorough watering during extended droughts, and fertilizing. Good orchard sanitation is a primary control measure. All mummified fruit and all dead, cankered,

or infected twigs and limbs should be pruned out, removed from the orchard, and either burned or buried. Follow the suggested program for apples as given in Extension Circular 1145, *Home Fruit Pest Control*. Handle fruit with care while picking, sorting, and packing to avoid bruises and cuts. For more information about this disease and its causal fungus that attacks many other woody plants, read Report on Plant Diseases No. 814, *Black Rot and Frogeye Leaf Spot of Apple*.

Sooty blotch and *flyspeck* are caused by fungi that usually occur together on the same fruit. Both diseases are controlled in the same way. Sooty blotch appears as superficial, dull black spots or blotches up to 1/4 inch or larger and may merge to cover most of an apple. Flyspeck appears as clusters of 6 to 50 or more slightly raised, black, shiny



Sooty blotch of apple

round dots that resemble fly excreta. Like sooty blotch, they are superficial and can be removed by vigorous rubbing. The diseases are most prevalent in damp, low, more shaded areas of an orchard.

Control: Keep trees well pruned to an open center for maximum air circulation and follow a full apple spray program as outlined in Extension Circular 1145. Thorough coverage is essential; the most crucial period is during cool, wet weather in August and September. For more information, read Report on Plant Diseases No. 815, *Sooty Blotch and Flyspeck of Apple*.

Rust of Sweet Corn

Common rust is starting to show up on sweet corn in Illinois. This disease is named after the rust orange spores that form in the small pustules on leaves, husks, and tassels. Early in the season, these small pustules appear in bands across the leaf blade, but later occur in a more random pattern on the leaves. Late in the season, the rust-colored spores will gradually be replaced by dark brown to black spores. Severe infection can reduce yield if it occurs when the plant is young. However, if the plant remains relatively disease-free until silking, then even severe rust infections will not greatly affect yield or quality. This fungal path-

ogen does not overwinter in Illinois, but is blown up from Central America and the southern United States by spring and summer winds. Thus, the disease cannot be controlled by crop rotation.

Control this disease by using a hybrid that is resistant to rust. Resistant or moderately resistant hybrids include: Miracle, Honey and Pearl, Golden Glade, Gold Dust, Sugar Loaf, and Seneca Horizon. Hybrids with little or no rust resistance include Buttersweet, Candy Bar, Florida Staysweet, and Sweet Sue.

Common Smut of Sweet Corn

Common smut is one of the easiest diseases to recognize because of the large galls and masses of powdery black spores that can destroy an ear of corn. Ear or kernel infections are the most noticeable and most destructive, but the fungus that causes corn smut, *Ustilago maydis*, can also infect and cause galls on

leaves, stalks, and tassels. Young galls are firm to spongy, with a semi-glossy, light external covering. As the galls mature they become more spongy, and the internal tissue turns into a mass of black, sooty spores. The pathogen overwinters in the soil, but spores are wind-dispersed, so crop rotation does little to reduce the incidence of smut. The only practical means of control is the use of resistant hybrids. Resistant hybrids include: Buttersweet, Calico Bell, Honey 'n Frost, Melody, Miracle, and Snopak. Hybrids with moderate resistance include: Classic, Even Sweeter, Flavor King, Merlin Super Sweet, and Springdance. Susceptible hybrids include: Candy Bar II, Silver Bullet, Spartan, Springsweet, and Yankee Bell.

Botrytis Leaf Blight of Onion

Botrytis leaf blight shows up as small, whitish spots that may be surrounded by light green halos. Spot centers tend to become sunken and straw colored. Severe infection can cause tip dieback or a blasting of the entire leaf. For infection to occur, there must be free water on the leaf surfaces. Thus, the disease is most likely to develop following periods of persistent dew and high relative humidity. The disease is also favored by temperatures above 70 degrees F. Botrytis leaf blight frequently shows up after there have been high levels of atmospheric ozone. The ozone damages and may kill leaf cells, and the botrytis pathogen is able to colonize these weakened areas.

Controls of this disease include destruction or disposal of onion debris and the regular use of fungicides.

PLANT CLINIC HIGHLIGHTS

June 29-July 12, 1990

PLANT	DIAGNOSIS	COUNTY
Amur maple	Verticillium wilt	Champaign
Apple	Diaporthe canker	Winnebago
	Scorch, nitrogen deficiency, apple scab	Ogle
	Fire blight	Champaign, Dewitt
Arborvitae	Phomopsis twig blight	Jo Daviess
Bramble	Spur blight, anthracnose	Champaign
Elm	Dutch elm disease	Madison, McHenry
Ginseng	Thielaviopsis root rot	Pike
Locust	Phomopsis canker	Kane
Maple	Anthracnose	Lake
	Potato leafhopper damage	McDonough
Oak	Anthracnose	Calhoun
	Leaf blister	St. Clair
	Sphaeropsis canker	Madison
	Vein pocket gall	Calhoun
Pine	Pine needle scale	Winnebago
Raspberry	Anthracnose	Winnebago, Adams
	Spur blight	Adams
Strawberry	Black root rot	Bureau, Piatt
Sweet gum	Bleeding necrosis	St. Clair
Tomato	Septoria leaf spot	Marshall
Tuberous begonia	Pythium crown & stem rot	Lake

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HOME, YARD & GARDEN PEST

Newsletter

No. 17 • July 25, 1990

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INSECTS

Deer Flies

Deer flies are very numerous in many areas of Illinois this summer. These small relatives of horse flies are about 1/4 inch long and have clear wings with brown patterns on them. They may have yellowish or brown abdomens. They feed by slicing the skin with their mouthparts, making the bite very painful, and lapping up the blood that oozes out of the wound. They are more common in and near wooded areas and lay their eggs on vegetation near water. The larvae develop in damp soil in woodlands.

Control is most effective through the use of repellents containing DEET, which is usually effective for 2 to 3 hours. Since these flies commonly bite exposed areas of the shoulders and neck, be sure to apply the repellent to these areas as well as other exposed skin areas. Because deer flies are strong fliers and tend to stay in wooded areas, sprays against the adults are not usually effective. Treatments against the larvae are not recommended.

Japanese Beetle

Japanese beetles appear to be expanding their range in several Illinois areas. Mike Hardiman, St. Clair County Extension Adviser, reports that this beetle is being commonly found in Collinsville. Japanese beetles are being found in Urbana, and they seem to be expanding their infestation in northeastern Illinois, particularly in the Elmhurst area. Refer to last week's newsletter for information about their appearance, habits, and control.

Cicada Killer

Cicada killers are large wasps that appear in late summer, preying primarily on annual cicadas and other large insects such as

katydids. They are about 1 1/2 inches long and black with yellow markings; their wings are reddish. They live in groups, usually burrowing into a bare soil area such as flower garden areas, along house foundations, and under trees where it is too shady for grass to grow.

Females burrow holes in the soil that are 1/4 to 1/2 inch in diameter, usually with a small pile of loose soil at one side of the hole. The tunnel goes down into the soil for about 6 inches and then turns and runs parallel to the soil surface for another 6 inches. At the end of the tunnel, one or more cells are constructed.

Females find adult annual cicadas in the trees, attack, and sting them; the two usually fall to the ground together. The cicada killer climbs a tree while dragging the cicada. After climbing to a suitable height, the cicada killer can fly to her burrow with the dead cicada. The wasp apparently cannot get airborne with the cicada from the ground, since in areas where no trees are available, she drags the cicada along the ground to her burrow.

One or two cicadas are placed in each cell in the burrow, and one egg is laid per cell. The larval wasp hatches in a few days and feeds on the living, paralyzed cicadas. The resulting adult cicada killer emerges the following summer.

Female cicada killers are capable of stinging people but rarely do, even if provoked. Most stings result from someone grabbing the wasp by the hand or stepping on it barefooted. Females normally ignore people. Where females have nesting burrows, male cicada killers will also be present. The males are usually numerous and spend much of their time flying in the area. Anything or anyone entering the area is normally inspected by these flying male wasps. People commonly get upset by these large wasps buzzing around them; but these males cannot sting because only the females have stingers, which are modified egg-laying structures.

Control of cicada killers is normally unnecessary since people are rarely stung. Nesting areas near doorways where visitors will feel threatened by these wasps can be eliminated by treating the soil with diazinon. Establishing grass or other groundcovers in this

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area will usually reduce the number of nests in following years.

Green June Beetle

Green June beetles are 1 inch long, robust, metallic green beetles with yellowish wing cover margins; they are very active during sunny periods. They feed as adults on several kinds of fruit including peaches, nectarines, plums, apples, and various berries. They will also feed on corn and some vegetables.

The biggest problem is that they fly about without regard to what is in their path. Large beetles flying around, making a loud buzzing sound, and crashing into people are very disturbing. They lay their eggs in organic debris with the larval stage being a white grub that feeds on decaying material such as piles of grass clippings, hay, or straw, the edges of compost piles, and the heavy thatch in poorly managed turf areas. The grubs rarely cause damage by their feeding habits; but they have been known to destroy turf areas since in the process of feeding on thatch, they can loosen the sod until the roots dry out and die.

Control against the larvae to prevent subsequent adults can be accomplished by removing the decaying material that is their food source or by drenches of carbaryl (sold as Sevin). Adults can be controlled with Sevin sprays or dusts if you can locate their food source. Be sure to observe restrictions on harvest intervals for fruits and vegetables.

Strawberry Root Weevil

These are being found in southern Illinois and will likely appear throughout the state in the next few weeks. It is a very hard-shelled, black, roundish weevil with a broad, short snout. These adult weevils feed on a wide variety of plants, with damage most severe on strawberry, yew, and hemlock. They enter the house for the winter where they usually do not feed, but occasionally they will eat some house plants. They eat the leaf margins until much of the leaf is removed.

Control is difficult; sprays of acephate (sold as Orthene) are relatively effective against plant feeding. In the home, chemical control is usually not effective; removal by hand or vacuuming are the most effective methods.

Yellownecked Caterpillar

Yellownecked caterpillars are being found on pecans, other hickories, and walnuts in the southern half of the state. These caterpillars

are reddish brown when young with several whitish stripes. As they get older, they turn black, keeping the whitish stripes, and have a yellowish to orangish area behind the head that gives them their name. When fully grown, they are about 2 inches long.

They feed in groups of about a hundred, eating the leaflets of their host trees. They do not live in a silk tent, but migrate down to the trunk of the tree to molt. Although each group may strip the leaves from several tree branches, this damage occurs late enough in the summer that it is not very harmful to the tree. Thus treatment is not usually necessary to preserve the health of the tree.

If **control** is desired, *Bacillus thuringiensis*, (sold as Dipel or Thuricide), malathion, chlorpyrifos (sold as Dursban), or acephate, (sold as Orthene) can be used.

Walnut Caterpillar

Walnut caterpillars are close relatives of yellownecked caterpillars and feed on the same trees in the same way. Young walnut caterpillars are also reddish brown but do not have whitish stripes; older caterpillars are black with long white hairs. Decisions on control and control options are the same as for yellownecked caterpillar.

PLANT DISEASES

Firethorn (*Pyracantha*): Scab

Scab is a widespread and unsightly disease that blackens the brilliantly colored orange-red fruits as well as the leaves and stems. It is worst when spring and summer are cool and moist. Velvety, sootlike lesions appear on the shiny green leaves. Affected leaves first turn yellow and then dark brown before dropping prematurely. Black lesions also form on the new shoots and may cause twig dieback. Young infected fruits shrivel and fail to mature. On older fruits the skin becomes black, rough, scabby, and unsightly.

Control: In the southern half of Illinois, in protected locations, grow resistant varieties (such as Mojave, Shawnee, and Yunan). These varieties may not be winter hardy even in southern Illinois. The firethorn cultivars Chadwick, Kasan, Lalandei, Monrovia, and Wyatt are very susceptible. Collect and burn or bury all diseased plants during autumn or winter. It will also be necessary to apply a fungicide four times: at budbreak, just before

the blossoms open, at petal-fall, and again 10 to 14 days later. Adding a spreader-sticker to the spray will improve coverage. Suggested fungicides include benomyl, Daconil, mancozeb, Duosan, Zyban, Topsin M, or Cleary 3336. Carefully follow the manufacturer's directions when mixing and applying any fungicide. For more information, read Report on Plant Diseases No. 638, *Firethorn (Pyracantha) Scab*.

Stone Fruits: Brown Rot

This common and destructive disease affects all stone fruits including the blossoms, fruit spurs, twigs, small branches, and fruit. One to several small, round, light brown spots form on a fruit as it ripens. In warm, moist weather the rot spreads very rapidly. Within 2 or 3 days the entire fruit becomes semi-watery, decayed, and light brown. Tannish gray spore tufts break through the fruit skin, giving it a powdery appearance. Infected fruit continue to rot after harvest, turning into black, shriveled mummies, some of which remain on the tree over winter. Blossoms suddenly wilt, turn brown, and wither, and later they are covered with a tan-gray mold. Oval or elliptical, brown, sunken and definite cankers form on the fruit spurs, twigs, and small branches. Gum commonly oozes out from the canker margins during wet periods. The result is a wilting of leaves, which turn dull green, then light brown, wither, and die.

Control: Sanitation is **critical**. All dropped and rotted fruit should be promptly picked up and destroyed. Remove all mummies from trees. Prune out all cankers and blighted twigs after the last picking and during the dormant season. Prune trees annually to an open center. Remove and burn or bury all wild and neglected stone fruit trees. Follow a routine spray program for stone fruits as outlined in Illinois Extension Circular 1145, *Home Fruit Pest Control*. Stone fruit cultivars differ in resistance. For more information about this serious disease, symptoms, disease cycle, and other control measures, read Report on Plant Diseases No. 804, *Brown Rot of Stone Fruits*.

Lawn Diseases

Helminthosporium leaf spot has progressed into the crown and root rot phase called melting-out. Fungicides applied now for this disease are worthless. Some lawn care companies are applying Chipco 26019 or other leaf spot fungicides or are recommending to home lawn owners that they spray now. For more information about leaf spot and its control, see *Home, Yard,*

and Garden Pests Newsletter No. 3, April 18. Report on Plant Diseases No. 405 gives full details on the importance of the disease, symptoms, disease cycle, and control measures. The best, long-term solution is to overseed next month with a blend or mixture of resistant grasses.

Summer patch and *necrotic ringspot* are now very evident as straw-colored patches up to 2 to 3 feet in diameter, often doughnut-shaped and sunken with "healthy" grass in the centers. For more information, see *Home, Yard, and Garden Pests Newsletter* No. 8, May 23, and Report on Plant Diseases No. 408.

Dollar spot is also active now. This disease and its control were also discussed in *Home, Yard, and Garden Pest Newsletter* No. 8, May 23, and Report on Plant Diseases No. 407. On lawn grasses, dollar spot and young summer patch or necrotic ringspot patches look alike.

Rhizoctonia brown patch and *Pythium blight* are active during wet periods when nighttime temperatures are 70 degrees F or more. For more information, see *Home, Yard, and Garden Pests Newsletter* No. 12, June 20, and Report on Plant Diseases Nos. 410 and 411.

Anthracnose is a widespread but generally minor disease of all turfgrasses. Grass under stress from a variety of causes is most susceptible. Water-soaked lesions occur on the leaves. These lesions later become bleached and girdle the tiller, and scattered individual or small patches of plants turn yellow and die. Older leaves are colonized and die. Occasionally, on individual grass blades round to oblong or elongated lesions are found that are reddish brown surrounded by a yellow halo. Anthracnose fungi commonly infect grass blades from the tip down. The best diagnostic feature is the appearance of small, raised, black fruiting bodies (acervuli) which are very common on senescing leaves. With a hand lens you can see the acervuli are covered with long black bristles and resemble pin cushions.

Control: Keep the turfgrass growing vigorously by good surface drainage, maintaining a soil reaction (pH) of 6 to 7, and by growing locally adapted, disease-resistant grasses in blends or mixtures. Purchase only top quality, certified seed, sod, sprigs, or plugs. Plant at the suggested rate in a fertile, well-prepared seedbed. Fertilize according to local

recommendations and soil tests. Mow frequently at 1 1/2 to 2 1/2 inches for lawn-type grasses and remove no more than 1/3 of the leaf height at one cutting. Keep the mower blades sharp. Water thoroughly during droughts (soil should be moist 6 inches deep). Increase light penetration and air movement over the grass surface by pruning or removing dense trees, shrubs, and hedges. Remove excess thatch when grass is growing vigorously in the fall or early spring when it accumulates to 1/2 inch. Core aerify compacted areas one or more times each year. Follow suggested insect and weed control programs for the area and grasses grown. The cultural practices briefly described should keep anthracnose and most other turfgrass diseases well under control. Several fungicides that also have proven effective are listed in Extension Circular 1076, *Turfgrass Pest Control*. For more information on anthracnose and its control, read Report on Plant Diseases No. 416, *Anthracnose of Turfgrasses*.

PLANT CLINIC HIGHLIGHTS

July 13-19, 1990

PLANT	DIAGNOSIS	COUNTY
Amelanchier	Lesser peach tree borer	Lake
Barberry	Winter injury	Vermilion
Blackberry	Aphids	Jefferson
Crabapple	Apple scab	Morgan
Cyclamen	Rhizoctonia, botrytis, bacterial soft rot	Kane
Magnolia	Growth regulator herbicide injury	Edwards
Maple	Anthracnose	Knox, Peoria, Richland
Oak	Potato leafhopper, Anthracnose, jumping oak galls, wetwood	Richland, Champaign, Kane
Peony	Rhizoctonia stem blight	Richland, Cook
Pine	Pine chafer injury, Zimmerman pine moth injury	Whiteside, Champaign
Spruce	Spider mites	McHenry, Peoria
Walnut	Growth regulator injury	Morgan

Bacterial Diseases

The 1990 growing season has been a banner year for bacterially-caused plant disease. The repeated wetting periods (rains), ideal temperatures, and strong winds have elevated these relatively minor diseases into major, uncontrolled outbreaks. The bacterial disease of the week is bacterial spot of stone fruits. This disease, caused by a *Xanthomonas* sp. is damaging all varieties of stone fruits (peach, nectarine, plum, apricots, etc.). Symptoms are most evident on the foliage of these trees and are manifested by the sudden and repeated defoliation of leaves (generally quite yellow). Infected fruit develop numerous, small, round, brown to black spots. These spots are usually on the "sunny side" of the fruit and can become so numerous as to coalesce--causing fruit to become misshapen and to crack, allowing secondary rotters (fungi) entrances.

Control: Grow cultivars with resistance to bacterial spot. Plant trees in fertile, well-drained soils and prune trees annually to permit good air circulation and vigor. Although bactericidal sprays suppress development of this disease, the very best way to control the disease is through resistant cultivars and good cultural practices. For more information on this disease, obtain a copy of Report on Plant Diseases No. 810, *Bacterial Spot of Stone Fruits*.

Home, Yard & Garden Pest Newsletter is prepared by the following Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey: Entomology, Roscoe Randell and Philip Nixon. Horticulture, Thomas Fermanian, Floyd Giles, Daniel Meador, James Schmidt, Tom Voigt, and David Williams. Plant Pathology, Nancy Pataky, Malcolm Shurtleff, and Darin Eastburn. Agricultural Engineering, Loren Bode and Bob Wolf.

Information for this newsletter is gathered by these people with the help of staff members, county Extension advisers, and others in cooperation with the USDA Animal and Plant Health Inspection service.



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HOME, YARD & GARDEN PEST

Newsletter

No. 18 • August 1, 1990

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

FIELD DAY

Field Day Set for August 15

The 1990 University of Illinois Turfgrass, Nursery, Landscape, and Trial Garden Field Day will be held August 15, 1990 at the University of Illinois Ornamental Horticulture Research Center on South Lincoln Avenue in Urbana, Illinois. Registration, with coffee and donuts, will be from 8:00 to 9:00 a.m. After some introductory remarks, research plot tours will be held from 9:30 to 11:55 a.m. After lunch, there will be workshops and classes from 1:15 to 3:00 p.m.

Research plot tours will cover the areas of Turf Pathology, Turf Herbicides, Nursery Weed Control, Turf Cultivars, Turf Entomology, Ornamental Grasses, Turf Fertility, and Nursery Fertility. There will be an insect and disease diagnosis table, so bring in samples that you want identified.

Registration is \$20.00. Those who pre-register will receive a box lunch. Those who register at the door will not be able to purchase lunch. Send in your registration to: Tom Voigt, 1011 Plant Science Lab, 1201 South Dorner Drive, Urbana, Illinois 61801 (Phone: 217-333-7847).

INSECTS

Potato Leafhoppers

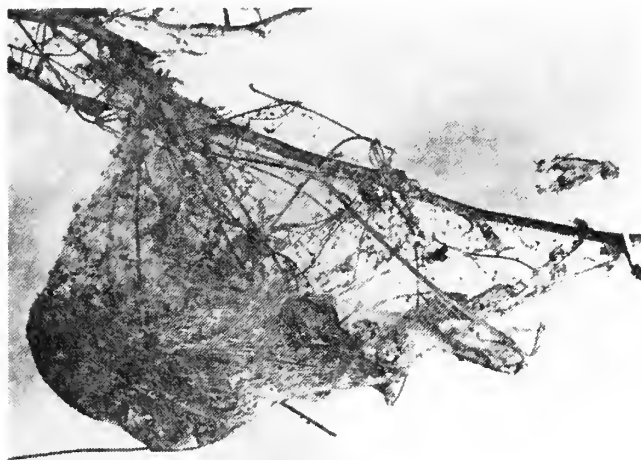
These green, wedge-shaped insects are flying about or hopping on many host plants in Illinois this summer. This insect does not overwinter in Illinois but is carried in on storm fronts. As the leafhopper sucks plant juices from the foliage of various plants, it injects a toxin with its saliva. This toxin causes a bronzing or pink color to the foliage of infested

trees such as red maples, red bud, and others. Some shrubs have also been damaged. Nursery managers and commercial applicators can use Sevin, Tempo, or Talstar for leafhopper control.

In home vegetable gardens, leafhoppers are also damaging snap and lima beans as well as potatoes, causing a curling or crinkling of the leaves. The toxin these hoppers secrete into vegetables causes a browning of the tips and edges of the leaf and the death of the entire leaf or plant. Sprays or dusts containing Sevin will control leafhoppers on the vegetables listed.

Fall Webworm

The second generation of fall webworm has emerged in southern Illinois and seems to be most common on walnut, hickory, and crab-apple. They should be showing up in the rest



Fall webworm

of the state in the last few days of July and early August.

Yellownecked Caterpillar

Dave Robson, Sangamon County Horticulture Extension Adviser, reports that many backyard apple trees and crabapples are being defoliated by caterpillars in central Illinois. Additional host trees include flowering peach, cherry, almond, quince, elm, butternut, hickory, walnut, chestnut, beech, and linden. When young, the larvae are reddish in color with a yellow neck, hence their name. They have black

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heads and four light stripes along each side of their body. Young larvae usually begin feeding in July and skeletonize the leaf, while older larvae consume everything but the petiole. They usually feed in groups.

Control of the yellownecked caterpillar can be achieved by physically removing them or spraying with Orthene, Sevin, Dipel, Thuricide, or malathion when feeding damage is first noticed. Young larvae are much easier to kill, so try to spray as early as possible.

Zimmerman Pine Moth

Zimmerman pine moth can be controlled in August when its eggs are hatching. Adult moths emerge at this time of year, mate, and lay eggs back on the bark surface. When the eggs hatch, the young larvae wander around on the bark, eventually crawling under a loose piece of bark for the winter. In the spring, usually during April, they emerge from the bark, wander on the bark, and then bore into the tree. They attack many pines, especially Scotch pine.

Control: While the larvae are under the bark or in the tree, they cannot be controlled with insecticides. Only when they are wandering on the bark can they be controlled. Timing spray applications in the spring is difficult due to "early" and "late" springs. Correct timing of August sprays is much easier, allowing more dependable control.

Chlorpyrifos (Dursban) or dimethoate (Cygon) sprays in early August in southern Illinois, mid-August in central Illinois, and late August in northern Illinois should effectively control this insect. Because these insecticides should last for 3 to 4 weeks on the trunk of the tree, one application should be sufficient.

New Tick Control Available in Illinois

Permethrin, which is sold as Permanone, has recently received a 24(c) registration for use in Illinois. About 35 other states have similar state labels for this insecticide. This pyrethrin is applied to clothing, making it toxic to ticks and other biting pests. It should be used in combination with repellents containing DEET for maximum effectiveness.

Permanone is particularly effective against deer tick and other ticks. If DEET is applied to the skin, particularly the lower legs, ticks that are picked up will be repelled from the treated skin to your clothing, where they will crawl until finding an area of skin to attach to that

has not been treated with DEET. With Permanone applied to your clothing, particularly to trousers, these ticks are killed while crawling across the clothing.

Fleas

Fleas seem to be particularly abundant this year, and many people are already experiencing flea problems in their homes. Although flea problems are more common in homes where pets are kept, homes without pets can also get fleas. Fleas can usually be prevented in homes by treating pets with a flea and tick powder monthly during the warm months of the year.

In a home with pets, fleas can be eliminated by treating the pets with a flea and tick powder weekly for 2 or 3 months. Rub the powder into the skin to get effective control. Since fleas greatly prefer to bite dogs or cats instead of people, by treating the pets, you eliminate the adult fleas before eggs are laid.

To get quicker **control** in homes with pets or to eliminate fleas in petless homes, application of a mixture of an insect growth regulator and another insecticide is effective. The insect growth regulator used against fleas is methoprene (sold as Precor). This insecticide mimics an insect hormone that keeps the larval fleas from growing into adults. Since this insecticide is not effective against the biting adult fleas, another insecticide, usually a pyrethroid, is included to kill adults.

These insecticides are applied as a light spray to carpets, the undersides of upholstered furniture, cracks and crevices along baseboards, and in other areas. Precor is effective for 90 days, eventually eliminating the fleas since no adults are produced. Since Precor is effective as an insect hormone that is not found in people or pets, its toxicity to mammals is very low. The pyrethroid included in these mixtures is also low in toxicity and lasts for only a week or two.

Annual Cicadas

Annual or dogday cicadas have emerged, and their singing can be heard in the evening throughout Illinois. These cicadas are different from the periodical cicadas that have been discussed frequently this summer in this newsletter. Annual cicadas are about 2 inches long and greenish or brownish in color. They live on tree roots as nymphs for 2 to 5 years, with some adults emerging every year.

Males sing in the evening to attract females for mating. Females insert their eggs into the twigs and branches of trees, but are not nu-

merous enough to cause significant egg-laying damage like the periodical cicadas. The eggs hatch in several weeks, and the nymphs drop to the ground where they burrow into the soil to feed on tree roots. Due to their relatively small numbers, control of annual cicada is not needed.

PLANT DISEASES

Hawthorn: Leaf Spot or Blight

This serious disease affects mostly English hawthorn and Paul's scarlet thorn. Such hawthorns may defoliate by midsummer. Infected nursery trees produce little new growth and commonly lose all their leaves. Small, angular to irregular, reddish brown or dark brown spots appear on the leaves. The centers of older lesions form small, raised, dark brown to black fungus fruiting bodies (acervuli). On dead or fallen leaves, lesions are uniformly dark brown or black. Elongated lesions develop on the petioles and the large veins on the underleaf surfaces.

Control: Collect and burn or compost fallen dead leaves. Grow only resistant hawthorns such as Washington and Cockspur. English types are very susceptible. Prevent leaf spot or blight by applications of a fungicide starting in early June. Three or four sprays are needed spaced 7 to 10 days apart. Suggested fungicides include benomyl, captan, Daconil, Cyprex, maneb, and mancozeb. Daconil, maneb, and mancozeb also control rust diseases. For more information on this disease, its disease cycle, and control, read Report on Plant Diseases No. 637, *Leaf Spot or Blight of Hawthorn*. This disease was also discussed in *Home, Yard, and Garden Pests Newsletter* No. 4, April 25.

Gladiolus: Corm Rots

Gladiolus is susceptible to a number of corm rots. When planted, shoots may fail to emerge or the foliage may turn yellow and die prematurely at any time during the growing season. Fewer and smaller blooms are produced on plants grown from diseased corms. The most widespread and serious corm rots include *Fusarium* rot, *Penicillium* rot, *Botrytis* corm rot, *Curvularia* corm rot, *Septoria* hard rot, *Stromatinia* dry rot, *Penicillium* core rot, and Bacterial scab. The symptoms of these diseases closely resemble one another. Some of the pathogens cause leaf or flower lesions.

Control: Purchase only large, top-quality,

disease-free corms from a reputable nursery. Inspect the corms carefully and discard those with rot lesions. Soak the remaining healthy looking corms for 15 to 30 minutes in a warm water solution (80 to 85 degrees F) containing 2 tablespoons of benomyl (Benlate 150%WP), Merctect 360 F, TBZ, or ornalin. Plant in a sunny location in fertile, well-drained soil where air movement is good. Rotate to a non-host plant for 4 or 5 years before replanting gladiolus in the same location. Control *Botrytis* leaf and flower spot and other fungal leaf spots by spraying weekly during damp or rainy periods, starting when such diseases first appear.

Suggested fungicides include Topsin M, benomyl, maneb, mancozeb, captan, Daconil, Chipco 26019, ornalin, or Botran. Adding a few drops per gallon of a commercial spreader-sticker (surfactant) will improve coverage. Spray cut flower spikes with benomyl before shipment. Ornalin also makes a good post-harvest cut flower or corm dip for *Botrytis* control. For good pictures, description of symptom, disease cycle information, and other controls, read Report on Plant Diseases No. 651, *Gladiolus Corm Rots*.

Poplars and Willows: Cytospora Canker

This disease has caused the decline and/or death of many thousands of valuable ornamental trees in landscape, windbreak, and recreational areas. The



Cytospora canker.

disease commonly kills Lombardy poplars by the time they are 10 to 15 years old. The disease usually attacks woody plants growing outside their normal range or under stressful conditions such as a poor site, frost damage, extended drought periods, extremely cold winter

weather, transplant shock, or severe pruning (pollarding). Circular to oval or elongate, brown, sunken cankers appear on the twigs, branches, and trunk. The cankers commonly enlarge and girdle the affected part causing the portion beyond the canker to die. Vertical cracks form in older cankers and along the margins. As the cankers enlarge, the diseased outer bark may become black, brown,

gray, reddish brown, or yellow and sunken, depending on the tree species and stage of disease development. The sapwood appears reddish brown to black and water-soaked. The canker fungi usually invade wounds, branch stubs, or the base of dead twigs.

Control: Grow varieties of poplars (including aspens and cottonwoods) and willows that are well adapted to the area and planting site. Select only vigorous, disease-free nursery stock; avoid planting such highly susceptible varieties such as Lombardy, Simon, and Siouxland poplars. Resistant varieties are now available. Black and peach willows are reported to be resistant. Pruning all dead and dying branches and surgical removal of cankers on trunks is often beneficial. This work is best done by a licensed and experienced arborist with the proper tools, which are sterilized between cuts. Treat all bark and wood injuries promptly and cover the wound with shellac or 70% alcohol.

Keep trees vigorous through proper application of a balanced fertilizer based on a soil test, watering deep during hot, dry weather (soil should be moist 10 to 12 inches deep), proper pruning, and winter protection of young trees. Avoid all unnecessary bark wounds and chemical injuries. For much more information concerning this serious disease, including many other hosts of *Cytospora* canker, read Report on Plant Diseases No. 661, *Cytospora Canker of Poplars and Willows*.

English Ivy: Leaf Spot Diseases

This popular ground cover is attacked by several common leaf spots:

Bacterial leaf spot and stem canker is the most common disease. It is first seen as small, round, dark green, "oily" lesions that enlarge into roughly circular to angular areas with greenish brown, water-soaked margins and reddish brown to black centers. A yellow halo surrounds older lesions. The centers eventually become dry and cracked. Black cankers may form on the stems and petioles, causing shoot growth to be dwarfed and unthrifty and the foliage to be yellowish green.

Colletotrichum leaf spot appears as irregular, brown to reddish brown spots as large as about 3/4 inch in diameter. Black specks (fungus fruiting bodies or acervuli) commonly appear within the lesions on the upper leaf surface. Lesions on the petioles and stems may cause premature defoliation, stem dieback, and even death of plants in scattered patches.

Scab is identified by the small, raised, round to irregular spots with reddish brown

margins and grayish white, slightly depressed centers. The centers are later sprinkled with dark fungus fruiting bodies called sporodochia. The spots, if numerous, may merge to form irregular blotches on the leaves.

Control: Remove and burn or compost diseased plant parts. Remove dead leaves, stems, and other plant debris very early in the spring before new growth starts. Thin the stand periodically to prevent dense growth. Water early in the day while the temperature is still rising. (All leaf spot pathogens require free water on the foliage for infection to occur). Avoid excessive splashing of water or sprinkling (syringing) while irrigating. Whenever possible, keep water off the foliage and space the plants well. Where leaf spots have been severe in the past, apply fungicide sprays starting when the new leaf growth begins in the spring. Suggested fungicides include benomyl (Benlate), fixed copper compounds, Duosan, Zyban, mancozeb, and Chipco 26019. Copper compounds are the only ones that will check bacterial leaf spot. Apply several sprays, 7 to 10 days apart, starting when disease first appears. Keep the foliage protected during rainy spring and early summer weather. When buying plants be sure they are vigorous and disease-free.

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HOME, YARD & GARDEN PEST

Newsletter

No. 19 • August 15, 1990

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

AGRONOMY DAY

Agronomy Day September 13

The University of Illinois Agronomy Day will be on September 13, 1990 from 7:00 a.m. until about 1:00 p.m. All tours will leave from the Agronomy-Plant Pathology South Farm on Wright Street, south of Florida Avenue in Urbana. Tours will provide information on field crop tillage, weed control, plant pathology, and entomology. For additional information, call (217)333-4424.

INSECTS

White Grub Situation

Annual white grubs have hatched in Illinois. If damage will occur, it should be visible in turfgrass areas now in the southern third of the state, and early symptoms should begin to appear in central Illinois.

Questions often asked about grub biology and management include the following:

Where did the grubs come from? Tan, 1/2-inch long beetles laid eggs in turfgrass in late June and July. These beetles were visible around lights and on window screens at night. Peak egg laying took place from about 10:30 to 11:00 p.m.

What conditions favor grub activity? Dry soils and high temperatures, such as occurred in 1988, discourage egg laying and reduce egg hatch. Moist soils favor egg laying, which is why egg laying occurs primarily in watered turf in most years. But this year, with many turf areas having optimum soil moisture, egg laying occurred in many areas, and the total population was diluted in any one home lawn. Open areas in lawns with partial light and

warm soils next to driveways and sidewalks are favorite egg laying sites.

How do I inspect for grub activity? Check areas where grub damage has been a problem in previous years and in partially lighted and warm soil areas. Cut out a square of turf, pull it back to check for grubs in the root zone, and then replace it and tamp it down. Also, look for wilted turf, which will be loosened from the soil if grubs are present. Grubs simply chew off the roots of turfgrass. These roots tend to regenerate; but if grub numbers are high, the roots will continue to be pruned or eaten.

How many grubs does it take to cause damage? At least 10 to 12 grubs per square foot are required to cause damage. In wilted grass areas where the sod can be rolled back, the number can be as high as 50 to 60 per square foot. Very few, if any, grubs will be found under trees or shrubs. The highest counts are often between the sidewalk and street next to a driveway.

If I find 10 grubs per square foot in a few spots, will these numbers increase? No, if it is late August or September, hatch is complete and what you can detect is all you will have. Scouting for grubs requires attempting to roll back sod in more than one area of the lawn, determining where the heaviest population is located, and treating the areas above the threshold of 10 to 12 grubs per square foot.

How long is the season of potential grub damage? After the initial damage is observed in late August or September, grubs may be found feeding on the grass roots until the soil temperature drops to 50 degrees F or lower. This could be as late as Thanksgiving in southern and central Illinois.

What can be used to control grubs in a home lawn? Diazinon applied as granules or as a spray will control annual white grubs during a three-week period after being drenched into the grub infested soil. Homeowners and lawn care companies may use d'iazinon. Another product available to homeowners is Oftanol, but its dependability for control is suspect. Some lawn care companies are applying it with success, and others have ceased using it for grub control. Turcam and Dylox are available for use by lawn care companies to be applied either as a

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spray or as granules. Proxol and Triumph can be applied by lawn care companies as sprays. All treatments need to be drenched into the soil to be effective. All treatments require two to three weeks to control the grubs present.

What can a homeowner do to assure effective grub control if it is needed? Apply an effective product such as diazinon and drench it in immediately. If the grub treatment is commercially applied, be prepared immediately to water it into the soil surface.

Do animals search out grub infestations? Yes, both skunks and raccoons may visit a lawn at night using their noses to roll back infested sod to find grubs to eat. Skunks and raccoons can literally "plow" large areas of a home lawn, park, or golf course in order to feed on grubs. Birds sometimes find a grub infested area, but only do minor turf damage.

Imported Willow Leaf Beetle

These insects have been reported in Peoria and DuPage Counties. The adult beetles are about 1/4-inch long and metallic blue-black. The larvae are black and about 1/4-inch long when fully grown. The larvae feed on the epidermis and mesophyll of the leaf, leaving one epidermis intact, which turns brown. The adult beetles eat notches out of the leaves, and when numerous eat entire leaves. They have two generations per year; the second generation of larvae is now present in northern Illinois. They are rarely seen outside the northern third of the state.

Although these insects can eat much of the foliage of willows, they do not seem to harm the trees to a great extent. The biggest problem that they cause is dropping out of the trees onto people, getting into their hair and inside their clothing.

Control includes avoiding trees that are heavily infested so that the beetles do not bother you. The larvae can be controlled with sprays of carbaryl (Sevin) or *Bacillus thuringiensis* 'san diego' (M-One). M-One will not kill the adult beetles and many of the beetles will fly away when the Sevin is sprayed, reducing the amount of control needed. Sprayed trees are frequently reinfested with beetles from nearby unsprayed trees.

Imported Long-horned Weevil

Imported long-horned weevils are 3/16-inch long, tan beetles with brown spots and wide, short muzzles. As larvae, they feed on the roots of a variety of ornamental plants, emerging in mid-summer as adult beetles. These

beetles come into homes to spend the winter. They normally do not feed, so they do not cause any damage. Because they do not feed and are hard shelled, they are not easily killed with insecticides.

Control these insects by caulking cracks and crevices in the foundation to keep them from entering the home and by vacuuming them up when found indoors.

Syrphid Flies

Yellow and black, 1/2-inch long insects that hover near your arms, particularly when you are perspiring, are usually syrphid flies. These insects have flattened abdomens and very short antennae. Syrphid flies do not sting or bite.

Most people call them sweat bees, but sweat bees are usually about 3/16-inch long and bluish or black. Sweat bees do not do much hovering, preferring to land on the arm. If they are disturbed, they will sting.

Another yellow and black insect that is attracted to perspiration is the yellowjacket. This 1/2-inch long wasp, which will sting, has a cylindrical abdomen and easily seen antennae.

PLANT DISEASES

Phlox: Blight, Leaf Drop

Older leaves turn brown and die from the base of the stem upwards. Shoots may die. This disease is most severe on older clumps where soil nutrients or water are exhausted. Varieties differ in susceptibility. (Do not confuse with the white, flour-like growth of the cosmopolitan powdery mildew.)

Control: Divide old clumps; apply a complete fertilizer in spring based on a soil test; keep down weeds; control insects and mites; and destroy tops and fallen leaves in autumn.

Sanitizing Agents and Disinfectants

Sanitation is a basic disease control measure, which involves (1) cleaning up sources of infection, including plant debris; (2) controlling weeds--which may harbor diseases; (3) steaming the soil in greenhouse beds and potted plants (See University of Illinois Cooperative Extension Service Circular 1213, *Soil Disinfestation: Methods and Materials*, for details); (4) disinfecting tools, equipment, and plant-growing surfaces in greenhouses and other appropriate areas. Old plant containers, trowels, spades,

cutting tools, walkways, bench tops, potting tables, and the like should be disinfected.

To disinfect, preclean the items with tap water (you can add a little household detergent) to remove soil or salt buildup. Then spray or rinse with an appropriately diluted sanitizer. Some effective sanitizing agents include 38 to 40 percent commercial formaldehyde (dilute one part of formaldehyde to 18 to 20 parts of water) and a freshly prepared liquid household laundry bleach solution (one part of bleach to nine parts of clean water). Rubbing alcohol is also a good disinfectant. Some commercially available disinfectants include Amphyl (about one ounce in five gallons of water) and Physan-20 (about one ounce in two gallons of water). Because commercial sanitizing agents and the household bleach solution are quite reactive and break down rather quickly upon contact with air and especially with organic matter, precleaning prior to disinfection is important. Mix and use all disinfectant solutions promptly. Formaldehyde should **not** be used within a few feet of growing plants.

Chrysanthemum: Late Season Diseases

Septoria produces small, dark brown to black spots that appear first on the lower and inner leaves. The spots gradually enlarge and may emerge to blight large areas of the leaves. Speck-sized, dark fruiting bodies (pycnidia) of the *Septoria* fungus are visible in older spots. Affected leaves wither and drop early.

Control: Spray the foliage at 5- to 10-day intervals starting when disease first appears. Suggested fungicides to control *Septoria* include maneb, mancozeb, Captan, Daconil, Duosan, Zyban, Chipco 26019, or Ziram. Benlate can be added to any of the other fungicides to give broad-spectrum control. Fungicide sprays also control *Ascochyta stem and ray blight*, *anthracnose*, and other *fungus leaf spots*. Maneb, mancozeb, Rubigan, and Bayleton will control *rust*. If *Botrytis flower blight* is a problem later, the following fungicides will do a good job if properly applied: maneb, mancozeb, Benlate, ornalin, Daconil, Zyban, Duosan, Chipco 26019, Topsin M, and Botran. If *powdery mildew* is the problem, use Benlate, Karathane, Bayleton, Rubigan, or sulfur. You may need to add a small amount (one teaspoonful per gallon) of a commercial spreader-sticker to the spray mix to ensure the best coverage. After the season is over, collect and compost, bury, or burn crop debris.

Getting Ready for Winter

Trees and shrubs express winter injury by (1) frost cracks (a vertical separation of bark and wood on the south or southwest sides of the trunk that may extend to the center of the tree), (2) blackened sapwood and death of the entire plant, (3) death of twigs and branches, (4) discolored cankers on exposed limbs or at the trunk base (sun scald), (5) injured or dead taproot and side roots, and (6) death or injury to leaf and flower buds.

Preventing winter injury to trees and shrubs will help prevent death from a number of canker, wood decay, and wilt diseases next year. Here are some tips to avoid winter injury:

1. Select only well-known, hardy species of plants. Grow plants with borderline hardiness in locations protected against winter sun and drying winds. Plant in well-drained soil. Yews, roses, *Prunus* species, rhododendrons, and other plants are very susceptible to "wet feet."

2. Plants growing in raised planters or containers are most susceptible to root killing from low temperatures.

3. Provide hardy plants, especially evergreens, with adequate moisture in late summer and early fall. The soil should be moist 12 inches deep after watering.

4. Fertilize evergreens in the fall after the first killing frost with a slow-release nitrogen product; but do not apply to plants exhibiting fertilizer stress.

5. Apply a 2- to 6-inch lightweight organic mulch over evergreen, rose, and fruit tree roots to prevent deep freezing plus alternate thawing and freezing, which shears off feeding roots.

6. Shade exposed evergreens against midday and late afternoon sun and wind by erecting barriers of canvas, plastic, cheesecloth, burlap, or slat screens placed 2 feet away on the south or southwest sides.

7. Broadleaf and other evergreens can often avoid winter "leaf burn" or kill if you apply a special "no wilt" latex or plastic antitranspirant spray such as Wilt-Pruf NCF, Vapor Gard, Exhalt 4-10, D-Wax, Plant Shield, Stop-Wilt, or Plantcote. Apply the spray to the foliage in late fall and repeat during midwinter when the temperature is above 40 degree F.

8. Protect young thin-barked trees against frost cracks by wrapping the trunks with sisal-kraft paper or strips of burlap, tying a 6-inch board upright on the south-southwest side of the trunk, wrapping young trees with aluminum foil, or applying a coat of whitewash. Frost cracks may reopen each year, providing entry for wood decay fungi and insects. Trees that

are very subject to frost crack, when growing in exposed locations, include apple, ash, beech, elm, horsechestnut, linden, London plane, maple, oak, poplar, sycamore, tuliptree, walnut, and willow.

9. Boxwood, junipers, yews, and other multiple-stemmed evergreens that tend to spread, split apart, and break under a load of ice or snow can be protected by tying the branches together this fall with strong cord.

10. Apply winter protection against mice, rabbits, and deer to apple, crabapple, blueberries, bramble fruits, grapes, pines, and many other susceptible plants.

Protect against mice chewing the bark off the crowns and roots of young and old trees

from late fall into early spring by keeping trunk bases free of grass, weeds, and debris within a foot of the trunk, leaving the ground bare; put anticoagulant poison baits (for example, Warfarin) in holes and runways; and banking soil against the trunk.

Protect against rabbits by erecting a cylinder of hardware cloth 3 feet or more high and a foot away from the trunk. For young trees you can wrap the trunk and lower branches with several layers of newspaper in early November and remove the papers in late March (southern Illinois) or April (in central and northern Illinois). To protect bramble fruits and blueberries, erect an 18- to 36-inch high chicken wire fence surrounding the planting.

Protect against mice, rabbits, and deer by using a repellent such as Gustafson 42-S or thiram 42-S plus indoor white latex paint or Wilt-Pruf NCF (1 pint of 42-S and 1 quart of latex paint or Wilt-Pruf in 2 gallons of water) that is sprayed, brushed, or rolled on the trunk and scaffold limbs.

To repel deer, dip pieces (3/4 inches by 6 inches long) of felt weather stripping in creosote, let the strips drip dry, and hang one or two strips on each young tree in late fall. Freshly treated strips attached in the fall usually are effective all winter. Repeat the creosote treatment once a month during the growing season, using an oil can to treat the felt strips.

PLANT CLINIC HIGHLIGHTS

July 20 to August 2, 1990

PLANT	DIAGNOSIS	COUNTY
Apple	Apple Scab	Ford
Ash	Suspect Ash Decline	Madison
Birch	Anthraco-nose, Iron Chlorosis	Champaign
Bluegrass	Helminthosporium Melting Out	Winnebago
Chrysanthemum	Rhizoctonia Stem Rot	Will
Crabapple	Apple Scab	McDonough
Cyclamen	Rhizoctonia, Botrytis, Bacterial Soft Rot	Kankakee
Elm	Dutch Elm Disease	Cook Sangamon
Geranium	Blackleg	Cook
Grape	Anthraco-nose	McLean
Lilac	Powdery Mildew	Champaign
Linden	Verticillium Wilt	Champaign
Maple	Anthraco-nose Iron Chlorosis, Nitrogen Deficiency	Piatt Iroquois
Oak	Actinopelte Leaf Spot Anthraco-nose Iron Chlorosis	Shelby, Piatt McLean Champaign, Piatt, Winnebago
Pear	Fire Blight	McDonough
Raspberry	Anthraco-nose	McLean
Rose	Black Spot, Rose Rosette Common Rose Canker	Monroe Champaign
Spruce	Cytospora Canker Spider Mites	Richland Macoupin, Richland, Rock Island
Strawberry	Black Root Rot	Douglas
Walnut	Bacterial Blight	McDonough

Home, Yard & Garden Pest Newsletter is prepared by the following Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey: *Entomology*, Roscoe Randell and Philip Nixon. *Horticulture*, Thomas Fermanian, Floyd Giles, Daniel Meador, James Schmidt, Tom Voigt, and David Williams. *Plant Pathology*, Nancy Pataky, Malcolm Shurtleff, and Darin Eastburn. *Agricultural Engineering*, Loren Bode and Bob Wolf.

Information for this newsletter is gathered by these people with the help of staff members, county Extension advisers, and others in cooperation with the USDA Animal and Plant Health Inspection service.

Roscoe Randell

Roscoe Randell
Extension Specialist
Entomology



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University of Illinois at Urbana-Champaign
and Natural History Survey • Champaign, Illinois

HOME, YARD & GARDEN PEST

Newsletter

No. 20 • August 29, 1990

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

LAST ISSUE

This is the last issue of the *Home, Yard, and Garden Pest Newsletter* for 1990. Thanks go to those of you who let us know when various pests and pest problems occurred throughout the state. Your input helped make the newsletter more useful.

Suggestions or criticisms concerning the newsletter are always welcome, but are especially important as we reflect on this year's issues and start formulating ideas to make the 1991 newsletter as useful as possible. If you would care to comment on articles that you found particularly useful or useless, or have ideas on future directions for the newsletter, please send them to Roscoe Randell, 172 Natural Resources Building, 607 East Peabody Drive, Champaign, IL 61820. You can also make your comments to any of the contributors listed at the end of the newsletter.

IF YOU DO NOT RECEIVE AN ORDER FORM THIS WINTER FOR NEXT YEAR'S NEWSLETTER, PLEASE CONTACT YOUR COUNTY ADVISER.

LAWNS

Diseases of Turf Insects

Reduced numbers of several turf insects this year are probably due to their being killed by diseases that are more common during wet weather. Sod webworms are killed by microsporidian diseases including *Nosema* and *Thelohania*. Infected larvae are sluggish, and both larvae and pupae are darker in color than healthy ones. Chinchbugs and billbugs are both killed by *Beauveria*; diseased insects will be covered with a whitish fungus.

Greenbugs

Greenbugs damaging turf have been reported by Don Meyer, Agriculture Extension Adviser in McLean County, and have also been found in areas of the state other than Bloomington. This summer's weather patterns and the lack of reports of this insect in many areas of the state indicate that these insects have probably not migrated in on storm fronts from the southern parts of the country; they are more likely the result of overwintering populations. Greenbug damage occurs as reddish brown turf that starts under tree canopies before moving out into other turf areas.

Nematodes for Grub Control

Nematodes are being marketed for the control of grubs in turf in Illinois. These nematodes have been found to be effective against Japanese beetle grubs; but the results of our research last fall, as well as that of other midwestern states, indicate that these nematodes are not effective in controlling annual white grubs. Because the Japanese beetle is common in only small areas of Illinois, and the annual white grub is the predominant turf damaging grub, applications of these nematodes are not likely to provide acceptable control in most areas of Illinois.

INSECTS

Bugs: 1990 in Review

Although insects will continue to be a concern in Illinois for several more months, enough of the summer of 1990 has passed to assess the year's trends in insect populations. Usually, climate has the greatest effect on insect numbers in any year. There were two major climatic factors this past year.

One factor was the extremely cold temperatures in the last two weeks of December 1989. In much of the state, temperatures dipped as low as 20 degrees F below zero. At the same time, there was snow cover in most of the state that insulated the soil so that it barely froze. Insects whose natural distribution does not extend very far north of Illinois and that

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overwintered above the snow line were greatly reduced in numbers in 1990. Examples include bagworm, elm leaf beetle, and mimosa webworm.

The other major climatic factor on insect numbers was rainfall. Particularly in the spring of 1990, rainfall was very high. Along with this rainfall, temperatures tended to be rather low. A major cause of death in insects is fungus disease. These fungus diseases tend to be more prevalent in cool, damp conditions. Insects whose numbers have probably been reduced from fungus diseases include boxelder bug, chinch bug, sod webworm, billbug, and recently, potato leafhopper. Inland floodwater mosquitoes were very numerous in the spring of 1990 due to the heavy rainfalls that assisted egg hatch and larval development of these insects.

Other insects were numerous in 1990 due to natural periods of abundance. The emergence of periodical cicadas in the northern third of Illinois was the most predictable of these. Eastern tent caterpillars were very numerous in the northern half of the state and are likely to be numerous again next spring. This insect has reached the end of a period of abundance in the southern half of the state and is likely to be low in numbers again in 1991. Fall webworm numbers are high for the second year in a row in Illinois, and these numbers will likely be high again next year, before dropping in subsequent years.

Cecropia Moth

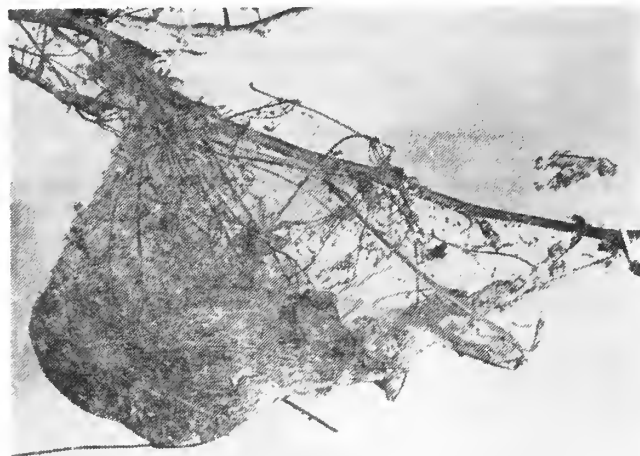
Green caterpillars that grow to 3 or 4 inches in length with red and yellow bumps on their backs are probably cecropia moth larvae. These caterpillars feed on many trees and shrubs--including cherry, birch, plum, maple, walnut, and willow. Although each larva eats many leaves, only a few larva will be on any one tree, so control is rarely needed.

These caterpillars spin a cocoon on the branch of a tree and overwinter there. In late spring, reddish brown moths with a 6-inch wingspread and crescent markings on their wings will emerge, mate, and lay eggs for the next generation.

Fall Webworm

Fall webworms are numerous in central Illinois, particularly in the Springfield area. The caterpillars live in large groups within silk tents that are spun on the ends of the branches of crabapple, walnut, hickory, and many other trees. These insects are different from the eastern tent

caterpillars that were very numerous in some of these same areas earlier in the spring. Eastern tent caterpillars spin a web in the branch crotch and move out of the tent to feed. Fall webworms feed on foliage within the web, expanding the web as leaves are eaten.



Fall webworm

Control is frequently not necessary because this insect occurs so late in the summer that the loss of these leaves is usually not very harmful to the tree. Pruning out the webs is an effective control, as are sprays of *Bacillus thuringiensis* (Dipel, Thuricide, Caterpillar Attack), carbaryl (Sevin), or chlorpyrifos (Dursban).

Horsehair Worms in Crickets

Crickets that are stepped on or dropped into water at this time of year frequently have a slender, brown, several-inch long worm crawl out of them. These are horsehair worms and are parasites of crickets, grasshoppers, and cockroaches. They are not a threat to people or their pets.

These worms usually emerge into water, which is where they reproduce. They are very active, frequently twisting themselves into knots--giving them their other common name, gordian worms.

PLANT DISEASES

Correction

In the last *Home, Yard and Garden Pest Newsletter* (No. 19 for August 15) on page 4, a note suggested using creosote to repel deer. This product is no longer available. Instead, one way to prevent deer eating foliage on trees and

shrubs (or rubbing off their antlers) is to drill holes in bars of soap and hang several of these on trees you suspect will be damaged. Another solution is to tie bags of hair on the trees.

Diagnosing Nematode Problems

In every acre of soil in the United States, tiny wormlike animals called plant-parasitic nematodes feed upon roots and sometimes above-ground plant parts of all crop plants, including those grown in the home garden and yard. Most nematodes average about 1/50 to 1/25 of an inch, are transparent, and are not visible without the aid of a microscope. Consequently, they usually go unnoticed, and the damage they cause is attributed to other factors.

A plant responds to nematode damage as it would to any root disorder. Aboveground symptoms appear as stunting of plants in patches that are usually elliptical to oval in outline. Wilting and deficiency symptoms are also telltale signs of nematode damage. Other factors may produce the same symptoms, however; and nematode damage is often incorrectly diagnosed as a nutrient deficiency, drought, or insect injury. Belowground, some nematodes cause a stunted, reduced root system. Others stimulate formation of branch roots, giving the root system a bearded appearance. Still others produce galls and dark-colored lesions. The same symptoms can, however, be caused by other agents.

To diagnose nematode infestations correctly, it is necessary to see and identify them in association with injured plants. Consequently, nematodes must be recovered from soil or plant roots and, because of their small size, be identified under a microscope. Soil samples can be collected at any time of year, as long as the sampling tool can be inserted in the ground. Tools that can be used include a soil sampling tube, trowel, or narrow-blade shovel. For agronomic and vegetable crops, collect soil and roots at a distance of 2 inches from the plant base to a depth of 8 inches. Collect subsamples from spots around 10 to 20 plants showing moderate symptoms or from the margins of a severely damaged area. For fruit crops and ornamentals, collect soil and roots within the circumference of the dripline to a depth of 12 to 15 inches. Repeat this process three or four times around the plant. Include feeder roots along with the soil sample. From commercial turf and home lawns, collect soil and root samples from margins of the affected area where the grass still appears normal.

Collect 10 to 20 cores in a systematic manner to a depth of 6 inches.

Regardless of the crop sampled, place a 1-quart soil sample in a sturdy plastic bag. Strong freezer bags are excellent. Fasten the open end of the bag securely. Next, complete the "Nematode Soil Sample Form" (available at your county Extension office) and submit it with the packaged sample. Do **not** expose samples to temperatures above 90 degrees F. If the sample must be held for a period of time, store it in a refrigerator. Address the package(s) to: Plant Clinic, 1401 West St. Mary's Road, Urbana, IL 61801. The cost of a complete nematode analysis is \$20.00 per sample. For more information on collecting soil samples for nematode analysis, refer to Reports on Plant Diseases No. 1100, *Collecting and Submitting Soil Samples for Nematode Analysis*, and No. 1107, *Predictive Soil Sampling and Analysis Procedures for the Soybean Cyst Nematode*. Other excellent extension publications on plant-parasitic nematodes include these Reports on Plant Diseases: No. 1101, *Root-knot Nematodes*; No. 1102, *Foliar Nematode Diseases of Ornamentals*; No. 1103, *Lesion Nematodes*; No. 1104, *Pine Wilt Disease*; No. 1106, *The Ectoparasitic Nematodes of Illinois*; and No. 1108, *Nematode Parasites of Turfgrass*.

Hackberry: Island Chlorosis

This disease appears as bright yellow islands and blotches on leaves, giving the foliage on one or more branches an overall yellow appearance. The islands and blotches are bordered by small leaf veins so they generally appear rectangular, square, or block shaped. Although the disease is common on hackberry, it apparently does little harm. The cause is a gemini virus that is transmitted by the feeding of leaf hoppers. The disease appears on leaves produced in the middle of the season, and symptoms become evident in late June or early July.

Control: No measures are suggested.

Dahlia: Stunt

Virtually all dahlias growing in private and public gardens (and in nurseries) are infected with one or more viruses that produce a stunting, dwarfing, and rosetting of affected plants. The dahlias appear "bushy," often with curled, crinkled, dwarfed, distorted, mottled, yellow, and light or dark green leaves. Bloom is usually greatly reduced over a period of several years. Infected plants never recover, and there is no cure.

Control: Start dahlias from seed or buy top-quality young plants from a nursery that follows a good insect spray program. Weekly sprays to control aphids and leafhoppers that transmit the viruses are needed. Follow recommendations of University of Illinois Extension entomologists. Keep down weeds. Destroy the most severely affected plants. If you love dahlias, expect some mosaic, dwarf, or stunt --they go with the territory!

Preparing for winter

Here are some things to do before winter:

1. Keep the grass mowed until it stops growing; this helps prevent snow mold and winter injury damage.
2. Prune oak trees as a preventive for oak wilt. Pruning from September to early March is recommended because pruning during the growing season attracts bark beetles, which transmit the oak wilt fungus.
3. Prune trees and shrubs to remove all dead and seriously cankered wood, as well as crossing and interfering branches. Opening up the center of woody plants helps promote faster drying, lets in more light, and reduces foliar and stem diseases.
4. Provide suggested winter protection for roses, evergreens, young thin-barked trees, and other sensitive plants.
5. Prune tree and bush fruits according to recommendations of Extension horticulturists.
6. Removal and burning (where possible), composting, or burying plant debris will help control disease next year.
7. Look over a variety of seed and nursery catalogs. Select resistant varieties (if otherwise horticulturally acceptable) and plant these where you've had problems in the past. Choosing disease-resistant hybrids, varieties, and species is usually the cheapest and best method of disease control.
8. Make maps of your flower and vegetable gardens; next year move related annuals to another area of the garden to keep down soilborne pathogens.
9. Divide up perennial flowers (where appropriate), remove rotted or other diseased parts, and replant in a new location.

Reports on Plant Diseases

To obtain copies of any of the Reports on Plant Diseases mentioned in this or other newsletters, send a check, made out to the University of Illinois, to Extension Plant Pathology, N-533 Turner Hall, 1102 South Goodwin Avenue, Urbana, IL 61801. There is a 50 cent charge for each Report.

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Entomology

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HOME, YARD & GARDEN PEST

Newsletter

No. 1 • March 27, 1991

FIRST ISSUE

This is the first of 20 issues of the Home, Yard and Garden Pest Newsletter. It will be prepared by Extension specialists in plant pathology, agricultural entomology, horticulture, and agricultural engineering. Timely, short paragraphs about pests of the home and its surroundings will make up the newsletter. When control measures are given, both chemical and non-chemical (when effective) suggestions will be given.

INSECTS

Dormant Oil Sprays

Aphids and mites that overwinter as eggs on ornamental plants as well as some species of scale insects can be controlled with dormant oil sprays in the spring. Dormant oil kills pests by covering and suffocating them. For these sprays to be effective, the pest must be exposed to the spray, not under bud scales or loose bark. Control is more effective if the pest is actively respiring, which is why these sprays are more effective in the spring than in the fall. At this time of year, the pests are coming out of the dormant fall and winter period and will be taking more breaths per minute.

Dormant oil, a highly refined petroleum oil, can be toxic to leaf tissue, so it should be applied while the tree or shrub is dormant, before bud break. Select a day when the temperature will stay above freezing for 24 hours after application. This helps the oil evaporate from the plant, reducing the amount that gets through the bark where it might damage the plant. If dormant oil sprays are applied while the leaves are emerging, the oil may burn the leaves causing the first leaves to be black or have black edges. Apple growers apply dormant oil when leaves are emerging, called the half-inch green stage, which may burn the leaves depending on the quality of the oil and the temperatures at application.

Evergreens can be sprayed with dormant oil, although additional precautions are needed. The evergreen should be dormant and the oil should be applied at the lowest rate, 2 percent, when temperatures stay above 40 to 45 degrees F. for 24 hours after application. If possible, select an oil such as a UFO (Ultra-Fine Spray Oil) that is also labeled for summer oil applications.

Two-spotted spider mites are not controlled with dormant oil sprays because they usually

overwinter on grasses, but European red mite is controlled. Honeylocust mite may or may not be controlled since this mite overwinters as an adult in bark crevices on trees, but runs around on the bark during warm spring days.

Scale insects that are controlled include cottony maple, obscure, lecanium, Fletcher, euonymous, Putnam, tulip tree, San Jose, and pine needle scale. Oystershell scale is not controlled because it overwinters as eggs under the female scale. Generally, scales that overwinter as adults or nymphs are controlled with dormant oil sprays.

New Insecticides and Label Changes

M-Pede is the new name for commercial uses of Safer Insecticidal Soap that has been purchased by Mycogen. Homeowner-sized containers sold in garden centers will apparently keep the name Safer Insecticidal Soap.

Discus 5 percent Granular Insecticide is the new name for Oftanol (isofenphos) for greenhouse and nursery use marketed by Olympic Chemical Company.

Mobay will be selling a new low-odor formulation of Di-Syston (disulfoton) in 1991.

Brandt Consolidated will be selling a line of spray oil emulsion insecticides under the name Saf-T-Side.

Sumithrin Greenhouse Spray is a pyrethroid insecticide for the control of whiteflies, aphids, spider mites, and mealybugs in greenhouse ornamentals by Olympic Chemical Company. Joust (oxythioquinox) will also be sold by Olympic Chemical Company for greenhouse and nursery markets. This insecticide is also sold as Morestan.

Grandslam 75 WP (methiocarb) has been registered by Olympic Chemical Company. This insecticide and molluscicide is also sold as Mesurrol.

Avert Crack and Crevice Bait PT 310 (abamectin) is being sold by Whitmire as a cockroach bait.

Increase in Cluster Flies and Box-Elder Bugs

With rising temperatures and sunny spring days, insects that have been overwintering in the wall voids of buildings, such as cluster flies and box-elder bugs, become more active and are seen more often indoors. It is too cold outside

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for them to leave the building for the summer yet, so they enter the living area, becoming a nuisance.

Vacuuming these insects as they appear is the most effective control. Insecticide sprays are usually not very effective. Once the weather is warm enough, these insects will leave the building for the summer. Cluster flies will lay eggs in the soil so that the hatching larvae can attack earthworms. The box-elder bugs will fly to box elder trees to lay eggs with the resulting nymphs feeding on the box elder seeds and leaves.

Insect Identification

Insect pests can be identified by sending them to Extension entomology. The insect should be sent in a crushproof container, like a pill bottle. Insects that are sent unprotected in an envelope are commonly smashed beyond recognition by the post office stamping machine. Even envelopes that say "Please Hand Stamp" usually contain crushed insects. Please do not send the insects in tissue paper or cellophane tape.

Include information on the date of collection, the name of the host plant or other location where it was found, what town it was found in or near, and the amount and type of damage that this insect appears to be causing. Include your name, address, and telephone number.

Most specimens are identified by Extension entomologists that will phone or write you about the specimen within a couple of days to a week. Other specimens are sent to insect identification specialists at the Center for Biodiversity, Illinois Natural History Survey where responses may be very quick or take as long as two weeks due to extensive collecting and research trips that these scientists take during the summer. If the specialist is unavailable for several weeks, the specimen must be sent to the USDA lab at Beltsville, Maryland for identification. In that case, you should be contacted about the delay.

Insect specimens may be sent to: Office of Agricultural Entomology, 172 Natural Resources Building, 607 E. Peabody Drive, Champaign, IL 61820. If you have a plant disease specimen, it can be sent to the Plant Clinic, 1401 W. St. Marys Rd., Urbana, IL 61801.

PLANT DISEASES

Winter Injury

Many tree and shrub samples thought to have winter injury have arrived at the Plant Clinic over the past few weeks. Although trees and

shrubs are dormant in the winter months, moisture loss does occur through the bark as well as through leaves of evergreens. Foliage and buds may become scorched if exposed to the winter sun and warm drying winds. The condition is most apparent on plants on the south and southwest sides of buildings or on plants growing in exposed sites. Mechanical injury from excessive loads of ice or snow and strong winds is also very common and may not be noticed until later this spring.

Prune-out dead or injured branches, remove debris, and keep plants well watered. A spring application of fertilizer based on a soil test will help plants regain their vigor.

Garden Cleanup

There are only two principle sources of disease-causing organisms (fungi, bacteria, nematodes) and viruses—soil and plants. If not already done, an excellent method of disease control in the home, industrial park, cemetery, or other landscape is to do a thorough job of sanitation *now*. Collect and burn, compost, or bury old plant debris. Prune trees and shrubs to remove cankered or otherwise diseased and dead twigs and branches. Remove rubbing, crossing, and interfering branches to increase air movement and sunlight. Open center pruning of fruit and other trees and shrubs promotes more rapid drying of foliage and stems, reducing infections by fungi and bacteria that require free moisture for infection to occur.

1991 Illinois Pest Control Handbook

Chemical control suggestions for insects, mites, weeds, and diseases for home, yard, and garden plants, vegetables, woody and nonwoody ornamentals, and turfgrasses are now available in a 522-page book at your county Cooperative Extension office. For a copy of this valuable handbook make your check payable to the University of Illinois for \$14.00 and mail it to the Office of Agricultural Entomology, 172 Natural Resources Building, 607 E. Peabody Drive, Champaign, IL 61820.

Flowers and Vegetables: Seed Decay and Damping-Off of Transplants

All flower and vegetable seeds will profit from treatment with a captan seed-protectant fungicide. The treatment will help protect the seed against infection by seed- and soilborne-fungi until the young seedlings are up and "on their own." Dust the seed lightly with the seed-protectant fungicide. If treating in a seed packet, tear open an upper corner of the packet and add an amount of fungicide that fits on the

1/4-inch tip of a pocket knife. Close the corner of the packet and shake vigorously for a minute or two to thoroughly coat the seed. For larger amounts of seed such as peas, beans, and sweet corn, fill a Mason jar about half full of seed, add a teaspoon of captan, close the jar, and roll it on the floor for several minutes until the seed is thoroughly coated. Then sift out the excess fungicide. Follow suggestions on the seed packet or box for the proper time (soil temperature), depth, and spacing of seed. Seed protectant fungicides provide maximum protection in cool and wet or very dry soils.

Peach, Plum, and Cherry Diseases

The control for peach leaf curl and plum pockets is to apply a DORMANT spray BEFORE the buds swell, not later. In many areas of Illinois it is already too late. Leaf curl will appear in several weeks as severely puckered, distorted, thickened, and curled leaves that lose their normal green color and turn red, yellow, and purple tints. Such leaves soon turn brown, wither, and drop.



Peach leaf curl

Leaf curl is a serious, tree-weakening disease of unsprayed trees. Infected plum fruits become much enlarged, hollow, and "bladderlike." Such fruits are reddish at first and later have a velvety gray appearance before turning dark brown or black and usually dropping prematurely. Almost any approved fungicide, applied as a strictly dormant spray is effective, such as captan, ferbam, lime-sulfur, chlorothalonil (Bravo) and Bordeaux mixture. The spray may be applied any time after leaf drop but before buds begin to swell in early spring. Thorough coverage is essential. Cooperative Extension Circular No. 1145, *Home Fruit Pest*

Control, gives suggested spray programs for all kinds of fruits. Copies are available at your county Cooperative Extension office.

Raspberry and Blackberry Diseases

Anthracnose is the most important disease of brambles, especially black raspberries. Look for sunken, light-gray, crusty areas on old canes. Many of the canes may be cracked and winter-killed. In several weeks, purple spots will appear on the new canes.

To control anthracnose in brambles, remove and destroy last year's fruiting canes (burn, if possible) and prune out all weak, short, spindly, and injured canes. A delayed dormant spray of lime-sulfur is suggested when new leaflets are 3/8-inch long. It may be too late now for this spray in southern Illinois. Additional sprays of ferbam or a multi-purpose fruit spray are needed when the new canes are 6 to 8 inches tall, just before bloom, and again just after blooming. These sprays also control spur blight, cane blight, leaf spot, and fruit rots. Details are given in Cooperative Extension Circular No. 1145, *Home Fruit Pest Control*.

Sycamore, Oak, Maple, Ash, Hickory, and Horsechestnut Diseases

Anthracnose is a major cause of leaf and twig blight following cool (temperatures below 60 degrees F.) and wet weather as the buds break open and the leaves expand. Look for buds and young expanding leaves to turn brown, die, and drop early. Older leaves develop small-to-large, irregular brown areas along and between the veins. These leaves also drop early leaving tufts of leaves only at the branch tips. Twigs may die back from girdling, sunken cankers.

To control anthracnose, prune out and destroy cankered twigs and small branches. Fertilize weakened trees to increase their vigor. Sprays are needed just before the buds break open, at budbreak, and when the leaves have expanded. Suggested fungicides include Daconil, Benlate, a copper compound, mancozeb, maneb, dodine, Duosan, Zyban, and Topsin M. Thorough coverage is required. Check label directions.

Revised/New Reports on Plant Diseases (RPDs)

- 402 Turfgrass Disease Control (5/90)
- 404 Snow Molds of Turfgrasses (5/90)
- 409 Leaf Smuts of Turfgrasses (7/90)
- 604 Cytospora Canker of Spruce (7/90)
- 607 Bacterial Diseases of Geraniums (4/90)
- 614 Common Viruses of Orchids (5/90)

- 616 Bacterial Diseases of Anthurium, Dieffenbachia, Philodendron, and Syngonium (5/90)
- 621 Anthracnose Diseases of Shade Trees (7/90)
- 626 Rose Cane Cankers (5/90)
- 634 Tulip Breaking or Mosaic (9/90)
- 642 Wood Rot and Decays (11/90)
- 660 Elm Yellows or Phloem Necrosis and Its Control (New 5/90)
- 661 Cytospora Canker of Poplars and Willows (New 5/90)
- 663 Oak Leaf Blister (New 9/90)
- 664 Phytophthora Root Rot or Wilt of Rhododendrons and Azaleas in the Midwest (New 1990)
- 815 Sooty Blotch and Flyspeck of Apple (1/91)
- 926 Mosaic Diseases of Cucurbits (2/91)
- 928 Scab of Cucurbits (9/90)
- 929 Fusarium Wilt or "Yellows" of Tomato (6/90)
- 931 Onion Leaf Blights (9/90)
- 932 Onion Pink Root (9/90)
- 933 Onion Smut (9/90)
- 934 Asparagus Rust (6/90)
- 935 Early Blight of Potato (9/90)
- 936 Late Blight of Potato (7/90)
- 937 Bacterial Ring Rot of Potato (6/90)
- 938 Leaf Blights or Spots of Carrots (3/90)
- 940 Anthracnose and Alternaria Fruit Rots of Pepper (2/91)
- 942 Gray-mold Rot or Botrytis Blight of Vegetables (6/90)
- 943 Bacterial Soft Rot of Vegetables, Fruits, and Ornamentals (7/90)
- 960 White Rusts of Vegetables (9/90)
- 1105 Mycotoxins and Mycotoxicoses (6/90)

Copies of these RPDs are 50 cents each; five copies or more are 25 cents each. Checks should be made payable to the University of Illinois and mailed to Extension Plant Pathology, N-533 Turner Hall, 1102 S. Goodwin Ave., Urbana, IL 61801. If you would like to have a copy of the complete listing of all 230 RPDs send a postcard or note to the same address. There is no charge for the list.

Home, Yard & Garden Pest Newsletter is prepared by the following Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey: *Entomology*, Roscoe Randell and Philip Nixon. *Horticulture*, Thomas Fermanian, Floyd Giles, James Schmidt, Tom Voigt, and David Williams. *Plant Pathology*, Nancy Pataky and Malcolm Shurtleff. *Agricultural Engineering*, Loren Bode and Bob Wolf.

Information for this newsletter is gathered by these people with the help of staff members, county Extension advisers, and others in cooperation with the USDA Animal and Plant Health Inspection service.



Roscoe Randell
Extension Specialist
Entomology



HOME, YARD & GARDEN PEST

Newsletter

No. 2 • April 10, 1991

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Eastern Tent Caterpillar

White silk tents in twig crotches of crabapple, hawthorne, mountain ash, flowering cherry, and fruit trees are the homes of eastern tent caterpillar larvae. These insects have hatched in southern Illinois and will be hatching in central Illinois during the next two weeks, with hatch occurring in northern Illinois in late April.

If not controlled, the caterpillars commonly eat all the leaves off an inhabited tree by late spring. Because the caterpillars stay in the silk tent at night and on rainy days, removing the tents at that time will also remove the caterpillars. Sprays of *Bacillus thuringiensis kurstaki*, sold as Dipel, Thuricide, and Caterpillar Attack, are also effective and are not toxic to honey bees and other insects, pets, or people.

Sapsucker Damage

While migrating north for the summer, the yellow-bellied sapsucker, a woodpecker, damages trees in early spring. Previously damaged trees should be protected at this time to reduce further damage.

Most woodpeckers rely on insects and tree sap as primary sources of food. Many woodpeckers feed almost entirely on insects, finding most of them beneath the bark on dead tree limbs and in other places where their feeding is considered beneficial. The yellow-bellied sapsucker, however, relies on tree sap for more than half of its food, with the balance of its diet consisting of insects, berries, and fruits.

Sapsuckers overwinter in Central America and southern North America and spend the summer in Canada and the northern United States. These birds migrate through Illinois in April and May on their way north. During September and October, they again pass through Illinois, migrating south for the winter.

Pines, spruces, birches, and fruit trees are most commonly attacked; individual trees may

be attacked year after year. The damage consists of evenly spaced horizontal or vertical rows of holes in tree trunks and branches. Rarely does the woodpecker kill a tree in Illinois; but damage may weaken the tree, making it more susceptible to secondary diseases and insect problems.

Control: To reduce damage from these birds, hang objects that reflect light or make noise in the trees, such as pie tins and strips of aluminum foil.

Previously damaged areas of the tree may be wrapped with burlap or other protective material during April, May, September, and October to prevent further damage. However, do not leave these wraps on the tree during the summer because the moisture that accumulates under them may encourage disease problems.

Winged Termites

Winged termites are produced by termite colonies in the spring and are being found throughout Illinois. They are black, with clear wings that are much longer than the body. Including wings, they are about 1/2-inch long. Winged ants appear similar except that they may be black, brown, red, or yellow and their bodies are almost as long as their wings. Winged ants have hourglass-shaped waists and elbowed antennae, whereas termites have thickened waists and curved antennae.

The presence of winged termites, usually more than 100, in a building indicates that a termite colony is close enough to attack the building. Thus a termite inspection is recommended.

Control: Proper termite control is rarely a do-it-yourself job; contact professional pest control operators.

Holes in Lawns Again

In one of last year's newsletters, there was a discussion of mysterious holes in lawns. Some causes included the activity of earthworms, cicada killer wasps, periodical cicadas, green June beetles, and crayfish. We do not expect any periodical cicada activity in Illinois in 1991, in fact, very little if any activity before the spring of 1997 in the state. The other possibilities are as follow:

- Earthworm activity is usually observed in the spring and fall. Night crawlers emerge to

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mate and pull decaying organic matter into the soil. The holes will be about 1/2-inch in diameter, with soil piled around the hole.

- Cicada killer wasps dig holes during the summer to bury annual cicadas that have been paralyzed by their sting. It is too early in 1991 for this activity to be observed.
- Green June beetles are large, 3/4-inch long, velvety green beetles. They emerge from the soil in July. Presently, the immature form resembles any other white grub (except they have the habit of crawling on their back). They live in burrows in soil with a great deal of surface-decaying organic matter. The grubs will emerge to the surface at night and crawl in the turfgrass. This burrowing activity can produce mounds of soil 2 to 4 inches in diameter. Vertical burrows beneath the mounds can be 6 to 12 inches deep. Green June beetle larvae feed primarily on decaying organic matter and can dry out soil areas by their burrowing.
- Crayfish are sometimes a problem in wet areas. An exit hole with mud piled about it will be obvious.

These are some of the possible causes of holes in lawns this spring, but the most common cause is activity of the green June beetle.

Clover Mites

Clover mites are tiny, dark red mites that feed on grass. In the early spring and late fall, they commonly enter buildings on the south and west sides where they hide in cracks and crevices. They do not bite or cause any damage indoors, but they can be a nuisance.

Control: Vacuum surfaces indoors and spray cracks and crevices around windows with aerosol pyrethroids, sold as sprays for flying and crawling insects. Spraying the outside foundation and adjacent soil with dicofol, sold as Kelthane, will also reduce the problem. Yearly problems with clover mites can be reduced by creating a 12- to 18-inch wide flower bed of tilled, bare soil along the south and west foundations of the building to trap the mites before they reach the building.

TURF

Annual Grassy Weeds in Turf

Many recently introduced turfgrasses are vastly superior to older types, especially in their

tolerance to wide ranges of cultural and environmental conditions. Unfortunately, even superior turfgrass cultivars have toleration limits. In most cases, when cultural and/or environmental conditions surpass minimum turfgrass tolerance levels, problems arise. For example, the presence of annual grassy weeds such as crabgrass, goosegrass, barnyardgrass, fall panicum, and yellow foxtail indicate problem growing conditions that allow these weeds to be more competitive than the desirable turf.

Management practices that encourage annual grassy weed growth at the expense of turfgrasses include: (1) fertilizing according to soil test recommendations, making sure adequate nutrients are available during periods of active turf growth; (2) watering deeply and infrequently, allowing the soil surface to dry between watering; (3) mowing at the proper height (2 to 2-1/2 inches for most cool-season turfgrasses); and (4) core cultivating, dethatching, or power raking, in areas where these weeds are problems during the fall when the turf is actively growing and weed seeds are less likely to germinate. Proper turf management is primary to a weed control program.

In some cases, turf is grown in environments that favor weed growth and development. Many annual grassy weeds are more tolerant of wet or compacted soils than are turfgrasses. Altering the growing environment to favor turfgrass can shift the competitive edge away from weeds.

The bottom line is that turfgrass breeding, selection, and evaluation has greatly improved turfgrasses. However, even new and improved turf selections are incapable of competing with weeds when mismanaged or planted into unfavorable environments.

Control: Maintaining a dense, vigorous turf is the best weed control. Occasionally, herbicide applications are mandated to reduce weed populations to tolerable levels. When annual grassy weeds become a problem, preventive pre-emergence herbicides are often used for control.

Several preemergence herbicides are recommended by the University of Illinois Cooperative Extension Service in the *1991 Illinois Pest Control Handbook*. **When using pesticides, follow the label directions for the safest, most efficient pest control.**

Several general recommendations can be made for using these products:

- For annual grass control, preemergence herbicides must be applied prior to germination. The soil temperatures necessary for weed seed germination vary by species. For

example, barnyardgrass germinates at soil temperatures between 72 and 90 degrees F. Crabgrass germinates when soil temperatures are greater than 55 to 60 degrees F. for 7 to 10 consecutive days and continue germinating in soil temperatures to 95 degrees F. The optimum soil temperature for fall panicum germination is 80 degrees F. Goosegrass begins germinating when soil temperatures are above 65 degrees F. for several weeks, and yellow foxtail germinates at soil temperatures of 68 to 92 degrees F. Monitor soil temperature and apply a preemergence herbicide prior to reaching the weed germination temperature.

- Conduct any cultivation practices, such as core aeration or dethatching prior to herbicide application.
- Water following application according to herbicide label directions.
- To lengthen the period of weed control, apply herbicide again at a later date. Follow label directions for rates and timing.
- Consult individual preemergence herbicide labels for the specific waiting period between herbicide application and overseeding or reestablishment. Spring seeding can produce stands of quality turf, provided weeds are controlled and adequate moisture is available for summer survival. Only one preemergence herbicide, siduron (Tupersan), is labelled for application to newly seeded areas for annual grass control. All other labelled preemergence herbicides have waiting periods between applications and seeding. Avoid applying a preemergence herbicide immediately before installing sod.

PLANT DISEASES

Recall of Benlate

DuPont, the manufacturer of the fungicide Benlate, has issued a "stop sale and recall" of all DF formulations of Benlate, because some lots have been found to contain small amounts of the herbicide atrazine. Benlate is used to control a number of fungal diseases on many fruits, vegetables, and ornamental plants. DuPont is recalling all lots of Benlate 50 DF, Benlate 1991 DF, and Tersan 1991 DF, even those purchased prior to 1991, to avoid any possibility of the contaminated product being used. Products can be returned to the point of

sale for full credit. The recall does not affect the WP formulations of Benlate. At this time it is not known when the fungicide will be available again. DuPont has established a special customer service group to answer questions about the recall. The phone number is (800)441-7515.

Depending on the type of plant in question, there may be one or more alternative fungicides that can be used in place of Benlate DF. Bravo and Daconil (chlorothalonil) are broad spectrum fungicides registered for use on some vegetable crops, turfgrasses, and ornamentals. These products are usually more difficult for the home gardener to find. When using fungicides it is important that the specific crop and disease to be controlled are listed on the product label. Not all fungicides are effective against all plant pathogens. It is also important to carefully read and follow the label directions, especially the recommended rate and number of applications, and the interval between the last application and harvest (the days to harvest interval).

Leaf Spot Blights and Anthracnose Diseases of Trees and Shrubs

Warm weather has speeded up budbreak and leaf expansion in the last 10 days. Controlling these foliar diseases generally requires three sprays: (1) as buds are expanding and opening, (2) 7 to 10 days later, and (3) 7 to 10 days after the second spray. Suggested fungicides include maneb, mancozeb, Topsin M, triforine (Funginex), Duosan, Zyban, dodine, captan, Daconil, and Rubigan. Check label directions.

Pachysandra: Leaf and Stem Blight

This fungal disease can kill large patches of this popular ground cover especially in beds that are overcrowded, have a heavy mulch, and are mechanically bruised or under stress. Look for chocolate brown, often zoned blotches on the leaves and dark brown to black expanding cankers anywhere on the stem above or below the soil line. Infected stems wither causing the plants to die out in patches.

Control: Select only disease-free plants.

Plant in a spot that is relatively free of drying winter winds. In dry weather, carefully remove all severely infected plants and prune out all diseased parts of remaining plants. Burn or haul away all dead and infected plant material. Control scale insects and other pests by timely applications of insecticides suggested by University of Illinois Extension entomologists. Periodically thin out pachysandra beds to increase light and promote better air circulation.

Protective fungicides include Daconil, maneb, mancozeb, Duosan and Zyban. Five spray applications are needed at about 10- to 14-day intervals starting now when new growth begins. For more information about pachysandra leaf and stem blight write for a copy of Report on Plant Diseases No. 649.

Pines, Douglas Fir, and Spruces: Sphaeropsis Blight or Diplodia Tipblight

This is a major disfiguring disease of 2- and 3-needle pines and to a lesser degree, various spruces and Douglas fir. It mainly affects trees growing under stress. The most noticeable symptom is a browning, stunting, and twisting of the new shoots and needle growth. Usually the lower branches of a tree are infected first. Young candles that grow from infected buds are often short, bent, and soon die. Infected twigs exude resin, causing stunted, dead needles to stick to the twigs. Dead tissues contain minute black fungal fruiting bodies (pycnidia) in the bark of woody stems, fascicle sheaths, seed cones, and the outer bud scales.

Control: Fungicide protection is needed from bud swell to when the needles are half grown. Three or four sprays are needed 10 to 14 days apart, starting just before budbreak. Effective fungicides include Daconil, mancozeb, and a copper fungicide. Follow label directions. For more information about Sphaeropsis blight or Diplodia tipblight write for Report on Plant Diseases No. 625.

Rhododendrons and Azaleas: Phytophthora Root Rot, Wilt, and Dieback

There are several species of the soilborne fungus *Phytophthora* that cause this disease. Symptoms include a dull yellowing and dwarfing of leaves and stunted shoot growth. Infected leaves usually roll downward and inward and eventually wilt. Shoot tips, even entire young and mature stems, may wilt and die back. Infected roots are reddish brown and brittle.

Control measures include purchasing only disease-free plants from nurseries where strict sanitation and indexing procedures for propagation have been followed. The plants should have an abundance of white, healthy roots and good foliage color—free of leaf lesions. Plant in sites protected from wind and direct afternoon sun. Avoid southern exposures. The soil should be light, porous, well-drained, and acid (pH 4.5 to 5.5) with an abundance of organic matter to maintain a relatively constant supply of mois-

ture to the roots. For more information on symptoms, disease cycle, and control measures, write for a copy of Report on Plant Diseases No. 664.

Plant Clinic

The University of Illinois Plant Clinic opens Wednesday, May 1, 1991. Send samples to: Plant Clinic, 1401 West Saint Mary's Road, Urbana, Illinois 61801. The Clinic will not be fully staffed, however, until June 1. Please call (217)333-0519 to make an appointment if you plan to visit the Clinic in May.

Please include a check or money order made payable to the University of Illinois. The fees are as follows:

Laboratory exam and culturing	\$5.00
Soybean Cyst Nematode Analysis	\$10.00
ELISA Viral tests/Fungal test kits	\$10.00
Pinewood Nematode Analysis	\$10.00
All other nematodes	\$20.00

A completed specimen data form should accompany each sample. These forms are available from your county cooperative Extension office or the Plant Clinic. List as much information as possible on the background of the problem, your care of the plant(s), control measures attempted, symptoms, etc. Remember, the diagnosis can only be as accurate as the information and sample provided. We are more likely to spend time with a sample that has accompanying information. Samples are frequently examined by several specialists from different departments. If you have a specific concern, please state this on the data form so your sample can be processed more quickly. Questions on sample submission can be handled by your county Extension adviser.

To obtain copies of Reports on Plant Diseases (RPDs), send a check made out to the University of Illinois, to Extension Plant Pathology, N-533 Turner Hall, 1102 South Goodwin Avenue, Urbana, Illinois 61801. There is a 50 cent charge for each Report.

Home, Yard & Garden Pest Newsletter is prepared by the following Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey: *Entomology*, Roscoe Randell and Philip Nixon. *Horticulture*, James Schmidt, and Tom Voigt. *Plant Pathology*, Nancy Pataky, Malcolm Shurtleff, and Darin Eastburn. *Agricultural Engineering*, Loren Bode, and Bob Wolf.

Information for this newsletter is gathered by these people with the help of staff members, county Extension advisers, and others in cooperation with the USDA Animal and Plant Health Inspection service.

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HOME, YARD & GARDEN PEST

Newsletter

No. 3 • April 17, 1991

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Black Vine Weevil

The black vine weevil will feed on more than 100 different plants, including flowers, weeds, trees, and woody ornamentals. However, the injury has been most severe on *Taxus* (yew), the roots of which are destroyed by the feeding of the larvae. *Taxus capitata* seems to be particularly susceptible.

Heavily infested plants turn yellow and eventually die if the injury continues. Damage has also been observed on rhododendrons and azaleas but has consisted primarily of foliage injury caused by the feeding of the adult weevils. Injury to *Taxus* has appeared throughout Illinois. The importance of this pest as an economic insect has increased with the rise in popularity of various *Taxus* species for ornamental purposes and the corresponding increase in the size and number of *Taxus* plantings in nurseries. Occasionally, hundreds of plants have been killed with dramatic suddenness after growing to where they are salable for landscaping purposes.

Only one generation of black vine weevil occurs outdoors annually. The adults appear during June and early July. This year, insect activity is 14 to 20 days ahead of schedule. They feed on the foliage at night but hide during the day, primarily in debris and loose soil under plants. Egg-laying occurs during July and August on the soil under the plants that adults feed on. As the eggs hatch, the larvae burrow into the soil and feed on the roots. They overwinter in the soil as well-grown larvae and change to pupae in late May or early June.

The beetles of this genus are unusual in that no male has been observed. Eggs are deposited without fertilization and only produce females. The beetles cannot fly, so infestations spread slowly from one area to another, although they may spread rather rapidly in a specific area. Adult weevils feed on the foliage but rarely eat

enough leaves to create a problem. The typical crescent-shaped feeding wound on the leaf margin is useful in detecting infestation. Plant damage and destruction is caused by larvae consuming smaller roots and strip bark from larger roots.

Control: Black vine weevil was controlled in the 1960s by drenching infested plants with a residual insecticide like chlordane. However, the weevils became resistant to this insecticide and now chlordane is not available for plant use. When adult feeding first appears on the foliage, drench with either Orthene or Turcam. Allow spray to wet the soil surface under shrubs to control weevil grubs hatching from eggs. Repeat once or twice at 2- to 3-week intervals until there is no fresh, adult feeding damage.

Aphids on Pine Trees

Rows of black, shiny eggs on pine needles indicate overwintering aphids. These eggs are hatching or soon will be. The soft-bodied, slow-moving aphids will multiply and suck sap from the needles. Unless aphids are numerous and honeydew excreted by the feeding aphids is present, no control is needed.

These aphids can be a pest of Christmas trees which are cut and taken inside. If trees are infested with numerous aphids in late summer or early fall, a spray application containing malathion will control them. Sprays containing Cygon applied now or in August will control both these aphids and Zimmerman pine moth on Scotch and Austrian pines.

Larder Beetles

Larder beetles are 1/4-inch long, black beetles with grayish to yellowish bands in the center of the body. Their larvae feed on the meat of dead animals in nature. In the spring, the adult beetles are active and fly to lights at night, and individuals are common indoors.

Finding at least 10 beetles per day indoors usually indicates that the larvae are feeding on dead mice or birds in the walls and chimney. Other indoor food sources include dry or semi-moist pet food. Remove beetles as they are seen; insecticide treatments are rarely needed.

Miticides for Use on Ornamentals in 1991

Spruce spider mites can damage evergreens such as junipers, arborvitae, and spruce during

the spring months. Miticides available to professional applicators include Kelthane, Talstar, Omite, Cygon, Morestan, Pentac, Vendex, and Vydate. Kelthane, Omite, Morestan, Pentac, and Vendex may be applied to home plantings or commercial areas (nurseries). Vydate is both an insecticide and miticide labeled for use only on commercial plantings (nurseries).

Cygon is a systemic insecticide that is also labeled as a miticide for only a few ornamental crops. Be sure to READ THE LABEL to find out which trees and shrubs can be treated.

Pine Sawfly

European pine sawfly will be hatching over the next few weeks in Illinois. Larvae will be present when saucer magnolia is dropping its flower petals, when serviceberry is blooming, and when redbud is starting to bloom, according to Don Orton in his book, *Coincide, Timing Pest Management with Ornamental Plant Development* (available from the Illinois Arborist Association, Morton Arboretum, Lisle, IL 60532).

Pine sawfly larvae are dark green and feed in groups of about 30. The larvae lie along the needles, and are difficult to see. If disturbed, they will raise their front and rear ends in unison. They feed on second and third year needles, but not on needles produced by new candle growth. Finding and treating the larvae as early as possible is important to avoid severe damage.

Control can be accomplished by pruning infested shoots if the sawfly numbers are small and found shortly after they hatch. Sprays of carbaryl (Sevin), chlorpyrifos (Dursban), diazinon, and cyfluthrin (Tempo) should be effective.

PLANT DISEASES

Decline and Dieback of Trees and Shrubs

A slowing down of growth and vigor coupled with progressive death of twigs and often branches is a major problem, especially of urban trees and shrubs or others growing under stressful conditions. Symptoms may continue even when corrective practices (proper watering, fertilization, and pruning) are carried out. Decline and dieback may be caused by 19 or more factors and are usually progressive over several years or more. All types of trees and shrubs of any age may be infected by this disease complex, but it usually infects plants that have reached some size and maturity.

For details on symptoms, causes, stress factors, identification and control, read Report on Plant Diseases No. 641. The key to control is early detection and prevention.

English Ivy: Leaf Spot Diseases

This common ground cover is attacked by several leaf spot diseases. The most common is bacterial leaf spot and stem canker. It appears as small, round, dark green, water-soaked (oily) spots on leaves that enlarge into roughly circular to angular lesions with greenish brown, water-soaked margins and reddish brown to black centers. With alternating wet and dry periods, the centers later become dry and cracked. Under warm, wet conditions black girdling cankers form on the stems and petioles. When stem cankers develop, the plant remains dwarfed with yellowish green foliage. The causal bacterium is most often spread by splashing water and people working among wet plants. Fungal leaf spots appear as dry, brown to reddish brown, or grayish white, round to irregular spots that later become sprinkled with dark fungus fruiting bodies (acervuli or sporadocchia). Fungal leaf spots may cause premature defoliation, stem dieback, or even death of plants in scattered patches.

Control measures include (1) selecting and planting only vigorous, disease-free plants, (2) removing and burning or otherwise destroying diseased plant parts, (3) removing dead leaves, stems, and other accumulated dead plant debris now, (4) thinning the stand periodically to prevent dense growth, and (5) keeping water off the foliage and spacing plants well. Water early in the day when temperatures are rising so that drying occurs before evening, and avoid splashing water or spraying the plants. Fixed copper fungicides are effective where leaf spots have been severe in the past. Spray several times, 7 to 10 days apart during rainy spring and early summer weather, when new growth is beginning.

Cabbage Diseases

The early season crucifer crops (broccoli, cabbage, and cauliflower) may begin to show signs of common diseases. If transplanting, it is important to check the plants for disease before planting, as many problems begin on infected transplants. *Black rot* is a bacterial disease that can infect crucifers at any stage. If cotyledons are infected they turn water-soaked and black, and eventually shrivel and drop.

On true leaves, infection often appears as yellow, V-shaped lesions at the leaf margins. As the leaves enlarge, the tissue in the center of the lesions dies and turns brown to black, but

the margins of the lesions usually remain yellow. In some cases bacterium can enter the vascular system and spread throughout the plant, causing damage to heads or florets.

The bacterium can overwinter on infected plant debris, so it is important to remove or destroy any infected plant material at the end of the season, and, if possible, practice a 2- to 3-year rotation schedule. If traces of black rot are found early, spraying plants with fixed copper compounds may help slow the spread of the disease, but it will not control infections that are already established. Avoid working around plants that are wet with rain or dew, because the bacterium that causes the disease can easily be spread in water. The best method for control on cabbage is to plant varieties that are resistant to black rot, including Bravo, Green Cap, Olympic, and Solid Blue No. 770. These varieties are also resistant to *Fusarium yellows*. For additional information, read Report on Plant Diseases No. 924, *Black Rot of Cabbage and Other Crucifers*.

Crucifer transplants should be carefully scrutinized for swollen or distorted roots which may indicate a disease called *clubroot*. Once established in soil, the fungus that causes *clubroot* can survive for more than 10 years, even without cruciferous plants, so all precautions should be taken to prevent the introduction of this pathogen. Once established, it is very difficult to control, but using lime to raise the soil pH to 7.2 may help slow development of the disease. For more information, read Report on Plant Diseases No. 923, *Clubroot of Cabbage and Other Crucifers*.

Blackleg is another fungal disease that can infect most crucifers at any time during the season. All parts of the plant are susceptible, but leaf and stem lesions are the most conspicuous. Early infection will often cause seedling death. Stem infections begin as elongated, light brown, sunken lesions at or near the soil line, which gradually spread both up and down the stem, and may eventually girdle the plant, causing the leaves to wilt. Infected areas turn brown to black and small, black, spore-producing structures (pycnidia) form on the dead tissue. The fungus can also attack the leaves, starting as small circular, brown to gray spots that enlarge and become well-defined. With time, numerous black pycnidia develop in the center of the spots. Blackleg may also be carried on transplants. The pathogen can survive on debris in the soil for several years.

Control measures include using disease-free transplants, removing or destroying infected material, practicing 2- to 3-year crop rotations, and planting in well-drained soils. For more

information, read Report on Plant Diseases No. 955, *Blackleg of Cabbage and Other Crucifers*.

Apple, Crabapple, Pear, Mountain-ash, Firethorn: Scab

Dull, smoky spots that change to velvety, olive-green lesions will soon appear on leaves. These spots later turn black and sooty, and are often scaly. Spots also occur on fruit, which may become deformed, cracked, and russeted. Many infected leaves and fruits will drop prematurely.

Control: Resistant varieties of apples and crabapples are available. Foliage and fruit need to be protected with fungicide sprays applied at 7- to 10-day intervals starting when the buds first show green leaf tissue. For most of Illinois, this means that at least two sprays should already have been applied. Check Extension Circular 1145 for suggested spray programs. Effective fungicides to control scab on crabapples include triforine (Funginex), Zyban, Duosan, and Rubigan. For more details on apple scab and its control, read Report on Plant Diseases No. 803, *Apple and Crabapple Scab*.

Junipers: Rust Galls

The brown, round to kidney-shaped cedar-apple and cedar-hawthorn rust galls will produce conspicuous, orange to brown, jellylike masses in the next 5 to 6 weeks. The masses contain billions of microscopic spores, which blow and infect nearby apple, crabapple, hawthorn, mountain-ash, amelanchier, flowering quince, quince, and related plants. Juniper species, cultivars, and varieties differ greatly in their resistance and susceptibility to these rusts.

Control: Hand pick the galls NOW before the spores are released. Starting in early July, spray susceptible junipers four times, 10 to 20 days apart with maneb, mancozeb, Duosan, Zyban, or Bayleton. Follow the manufacturer's directions on the container label.

Apple, Crabapple, Hawthorn, Mountain-ash, Amelanchier, Flowering Quince, Quince: Rusts

Cedar-rust fungi have been or soon will be active during rains. Yellow to orange, or orange-red spots (eventually speckled with black) will appear on the leaf surface with creamy white to orange "cluster cups" underleaf. Heavily spotted leaves will turn yellow-orange and drop early.

Spray 4 or 5 times, 7 to 10 days apart, beginning when the buds open with ferbam (Carbamate), thiram, Nova, Bayleton, or Rubigan. The last 3 fungicides only require 1 or 2 applications spaced 3 weeks apart. Maneb or mancozeb can be used on all but apples.

Pines: Dothistroma Needle Blight

This disease is common on 2- and 3-needle pines causing brown to reddish brown bands. Minute, black, football-shaped fungus fruiting bodies are later formed in these bands. Infection usually begins on older and lower branches and works upward in later years.

Control: Sanitation is important. Spray twice with a copper-containing fungicide. The first spray should be applied when the new needles are just emerging, and the second spray 6 to 8 weeks later when the new needles are fully expanded. For more details, read Report on Plant Diseases No. 624, *Needle Blights and Needle Casts of Pines*.

Pointers for Buyers of New Homes with Trees:

- Be sure that root flares are evident at the tree base and show an outward spread at the soil line. If not, the tree may be planted too deep.
- Dead twigs and/or branches may indicate root injuries, cankers, wood decay, or other infections.
- Pale and thinning foliage or small leaves that may be discolored could mean root rot, Verticillium wilt, gas injury, nutrient deficiency, or other problems.
- Multiple trunk scars could indicate careless construction or "aggressive lawnmowers." Was the house built as carelessly? Were the tree wounds properly shaped and cared for?
- If the house is built close to a tree, there may be root damage. In less than 5 years you may have a severely crippled tree.
- Plaster, bricks, concrete, lime, scraps of wood, and other trash in the soil breed termites and wood decay, and make it difficult to establish and maintain foundation plantings; trash is also an indication of a sloppy contractor.
- Rapid twig dieback indicates recent root injuries.
- Look for new, large, multiple pruning scars on the trunk or large branches. Why were they cut? Are you in for future trouble?
- Any constriction around the trunk (from a wire, chain, fence, or girdling tree roots) strangles the tree, leading to reduced growth, dieback, or even death.
- Loose bark at the base of a tree often indicates mower, herbicide, or other damage; wood decay probably has already occurred.
- New pavement or other construction over the root zone (which extends far beyond the outer drop line) cuts off air and water from the roots, killing them. Construction damage

is also an invitation for infection by the Verticillium wilt fungi and root rots.

- Standing water in grass near trees indicates poor drainage. Soil water level changes with construction sometimes causing root rot.

Program for Tree Survival

The worst problems with urban shade trees is People-Pressure-Disease (PPD). Arborists and urban foresters recommend the following:

- Do not disturb the root zone under the branches.
- Maintain proper moisture balance. Water thoroughly (the soil should be moist 12 inches deep) during summer and fall.
- Maintain oxygen in the soil: avoid soil compaction, poor drainage, overwatering, etc.
- Plant disease-free trees properly. Allow plenty of room for the roots to spread out naturally.
- Adjust support systems on newly planted trees and remove them as soon as possible.
- Provide trunk protection in high-use areas and on young thin-barked trees during the winter.
- Prune properly.
- Fertilize on the basis of a soil test.
- Mulch properly with an organic mulch (leaves, bark chips, or shredded bark, etc.).

For more information on PPDs that cause decline and dieback of trees and shrubs, write for a copy of Report on Plant Diseases No. 641, *Decline and Dieback of Trees and Shrubs*.

Copies of Reports on Plant Diseases mentioned in this and other letters are 50 cents each; five copies or more are 25 cents each. Checks should be made payable to the University of Illinois and mailed to Extension Plant Pathology, N-533 Turner Hall, 1102 South Goodwin Avenue, Urbana, IL 61801. If you would like to have a copy of the complete listing of all 230 Reports on Plant Diseases send a postcard or note to the same address. There is no charge for the list.

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HOME, YARD & GARDEN PEST

Newsletter

No. 4 • April 24, 1991

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INSECTS

Oystershell Scale

Reports of oystershell infestations have been frequent this spring. The overwintering eggs should hatch by early May in the southern third of the state and by mid-May in the central section. This insect is often found infesting lilac, maple, birch, cotoneaster, and other trees and shrubs. Applications of dormant oil have provided less than satisfactory control. The suggested insecticides for control include malathion, diazinon, Dursban, and Orthene. Follow the label directions as to rate and mixing. Spray the trunk and limbs thoroughly when crawlers have hatched and are present on the new shoot growth.

Iris Borer

The iris borer can be a serious problem in home plantings. The insect not only hollows out the rhizomes, but also spreads the bacterium *Erwinia carotova*, which causes a foul-smelling soft rot. The adult is a moth with dark purplish forewings and yellow-brown hind wings. The insect overwinters as an egg on old iris leaves and debris, particularly at the base of old iris stalks. In the spring, when the iris leaves are 5 to 6 inches high, the eggs hatch and young caterpillars enter the leaves a few inches above the ground, making pinpoint holes as they enter. After feeding on the soft tissues between the leaf surfaces, the larvae enter the rhizome, leaving a water-soaked appearance. There is only one generation per year.

The iris borer can be partially controlled by removing any old leaves and debris in the fall or early spring. Apply Cygon 2E (4 teaspoons per gallon of water) when irises begin to bloom, but not on the blooms themselves. Make only one application. Adding a small amount of liquid detergent to the spray mixture will help improve coverage.

Russian Honeysuckle Aphid

During spring cleanup, many homeowners are observing the past year's damage to their honeysuckle. The stunted and twisted growth sometimes referred to as "witches-brooming" can be easily observed on susceptible plants. Damage from the Russian honeysuckle aphid was first observed in Illinois in 1979 and has rapidly spread over the Midwest since then. This insect can be controlled with monthly sprays of acephate (Orthene) or dimethoate (Cygon), starting in late May or early June when leaf-folding is first observed, and continuing until early August. Although these sprays reduce the damage so that severe witches-brooming does not occur, bushes usually need to be sprayed every year.

New plantings of large bush-type honeysuckle in the northern half of Illinois should utilize varieties that are resistant to this aphid. Some resistant varieties are:

- *Lonicera x notha*
- *L. x muendeniensiensis*
- *L. x amoena* "Alba"
- *L. x xylosteoides*
- *L. tatarica* "Arnold Red"

Arnold Red honeysuckle is quite common in the nursery trade.

Malathion Label Changes

Many pesticide manufacturers are in the process of reregistering product labels with or without some of the uses of previous labels. A revised label for Malathion, a commonly used insecticide for the past 30 or more years, is in the process of being approved by the EPA. The basic manufacturer, American Cyanamid, will probably drop many of the past uses of malathion for controlling insects on some fruits and vegetables. Uses to be dropped include those on tree fruit, most brambles, cole crops, melons, squash, and pumpkins.

More information on the final outcome of reregistration of malathion will appear later.

Woodroaches

Woodroaches are now active and coming into homes. These native cockroaches live in mulches and in damp areas with decaying plant material (such as under fallen logs). They mate in the spring and are attracted to lights. Adult males are about an inch long; they are dark brown with cream edging on the front part of

the body. They have wings and can fly very well. Females are similar in appearance, but do not have cream markings or wings.

Once in the home, they will be attracted to lights and eventually to water; in the morning they can be found in the sink or beneath potted plants. They will not reproduce indoors, preferring the outdoors with its damp areas and changing seasons. Overall treatments are rarely needed; eliminate individuals as they are seen. Reducing outdoor lighting and keeping doors and windows shut as much as possible in the spring are good preventive measures.

PLANT DISEASES

Substitutes for Benlate 50 DF, Benlate 1991 DF, and Tersan 1991 DF

1. The wettable powder (WP) formulations of Benlate and Tersan 1991 may be used; they are not contaminated with atrazine.

2. Cleary's 3336 (liquid and WP formulations available) can be used for all ornamentals because its label is very similar to the Benlate label.

3. Duosan and Zyban (Sierra Chemical) contain the systemic ingredient in Cleary's 3336 plus a protective contact fungicide (mancozeb) to give broad-spectrum control. These products are labeled for numerous diseases on 54 plants.

House Plant Problems

There are relatively few infectious diseases of indoor plants that are bottom-watered. Most problems develop from an excess or deficiency of light, water, or fertilizer as well as from leaving plants for too long a period of time in a small container, or in a container without drainage holes. Injury from excess salts appears as a marginal dieback of the leaves and a whitish crusting on the pot rim or soil surface. For control, flush out the salts with water, using six or seven times the soil volume. Repotting with a fresh soil mix is probably a better idea. Fertilize house plants lightly and only when they are actively growing.

Root and crown rots can develop on all types of indoor plants. When they do, the roots, crowns, and bases of cuttings decay and become discolored. Control measures are largely cultural: (1) plant at the proper depth in a light well-drained, pasteurized soil mix; (2) use only containers that exhibit proper drainage; (3) keep plants vigorous by providing the recommended amount of light, water, and fertilizer; and

(4) avoid overwatering. If crown and root rots start to develop, apply a fungicide such as Banrot or Terraclor Super-X, or a mixture of Truban plus Benlate 50 WP. Full information on controlling damping-off and root and crown rots is given in Report on Plant Diseases No. 615, *Damping-off and Root Rots of House Plants and Garden Flowers*.

Plums, Cherries, Mayday Trees: Black Knot

Velvety, olive-green swellings on the twigs, branches, and even the trunk will later elongate to about a foot and become rough, coal black, and hard. Affected parts exhibit dieback. If uncontrolled, black knot will weaken and kill the



Plum black knot

tree. If not already done, prune out and burn all diseased wood now. Make cuts 4 to 6 inches behind any signs of the disease. All prunings should be destroyed so that they will not serve as a further source of infection. See University of Illinois Cooperative Extension Service Circular No. 1145 for a plum spray schedule to control black knot, brown rot, and other diseases. For more information, read Report on Plant Diseases No. 809, *Black Knot of Plums and Cherries*.

Peony: Botrytis Blight

Emerging shoots may be dark brown and rotted. Older shoots can wither, collapse, and die from a dark decay both at and below the soil line. The buds turn dark brown, dry up, and fail to open, or the blooms may be spotted brown, watery, and matted. Large, irregular, dark brown blotches may develop on the leaves. Affected parts are covered with a dense, grayish brown mold in damp weather. For control, remove all of the old tops (if you didn't already do so in the fall) and burn or compost the debris. Make cuts about an inch below the soil line. Spray the soil surface as the new shoots emerge. Thoroughly spray the developing shoots at 10-day intervals until just before the blooms open, using Benlate, mancozeb, zineb, Topsin-M, Duosan, or Zyban. Add a commercial

spreader-sticker (surfactant) to each spray to ensure wetting the foliage. Additional sprays at 2-week intervals after bloom may be needed if the weather is cool and wet. These sprays will also control leaf blotch, bud blast, and shoot blight. In the fall, remove all of the tops, making cuts about an inch below the soil surface and burn or compost the debris. Also, spray the soil surface in late fall. For additional information read Report on Plant Diseases No. 623, *Botrytis Blight or Gray Mold of Ornamental Plants*.

Strawberry Leaf Diseases

To keep plants vigorous and fruitful, it is important that the foliage be protected with a fungicide film. There are three common leaf diseases that weaken runner plants and reduce yields. All three diseases can occur on the same leaf. *Leaf scorch* develops as small, angular, or irregular dark purple spots on the leaves. *Leaf spot* resembles leaf scorch at first, but as the lesions enlarge and age, they develop whitish centers. The leaf spot fungus also produces "black-seed" on the fruit.

Both leaf scorch and leaf spot develop early in the growing season. Similar spots or streaks may develop on the petioles, stolons, and fruit caps. Leaf blight appears as large, roundish to elongate, reddish purple to dark brown spots. It appears more commonly later as V-shaped blotches on the leaves; the blotches have reddish or purple margins. Similar spots occur on the sepals or fruit caps. Older leaves are blighted and may later die in large numbers. Leaf blight is most common and damaging after the fruit harvest is complete.

Grow strawberry plants in full sun in well-drained soil. Avoid spring applications of fertilizer and matted, crowded beds. Strawberry varieties differ considerably in resistance to leaf scorch and leaf spot, and to a lesser extent in resistance to leaf blight. Protect strawberry foliage from the time the first leaves begin to unfold in the spring through the harvest period with captan or a mixture of captan and Benlate 50% WP. After harvest, renovate strawberry beds and apply one or more fungicide sprays at 10- to 14-day intervals to keep foliar diseases in check. Apply captan, captan plus Benlate WP, Dyrene, or a multipurpose fruit spray. For further information on strawberry leaf diseases, write for a copy of Report on Plant Diseases No. 702, *Strawberry Leaf Diseases*. This leaflet gives the disease resistance of 22 strawberry cultivars to leaf spot, leaf scorch, red stele, Verticillium wilt, and powdery mildew.

Strawberry: Gray Mold

This is the most serious disease of strawberries, especially during prolonged rainy and cloudy periods. One or several blossoms in a cluster may turn brown and die. Light gray masses of dusty *Botrytis* spores soon appear. Infections are most common in well-protected areas of the plant where humidity is high and air movement



Gray mold on strawberries

is poor. Berries resting on soil or touching another decayed berry or a dead leaf become soft and light brown with rapidly enlarging lesions. The berry soon dries out, becomes a dark brown "mummy," and is covered with the typical gray, dusty powder. Berries become more susceptible to infection as they ripen.

Control measures are the same as for leaf diseases. Avoid heavy applications of nitrogen fertilizer in the spring. Mulch plants and row middles with clean straw, hay, or other dry organic matter, or apply black polyethylene sheeting to keep berries from contacting the soil. Control weeds by applications of herbicides suggested by your Cooperative Extension adviser and the Extension pomologist. Pick fruit frequently and carefully early in the day after the plants are dry. Cull out all diseased berries — don't leave them in the field. Fungicide sprays are needed to protect the blossoms and ripening fruit. Suggested fungicides include captan, thiram, Ronilan, Dyrene, or captan plus Benlate 50% WP. Repeat sprays at 7- to 10-day intervals through the fruit-ripening period. Follow the manufacturer's directions when applying any pesticide. For more information, obtain a copy of Report on Plant Diseases No. 704, *Gray Mold of Strawberries*.

Turfgrass Diseases Now Active

"Helminthosporium" Leaf Spot - This disease can be seen on susceptible turfgrasses throughout the state. "Helminthosporium" appears on leaves and leaf sheaths as purplish black to reddish brown spots that become round or oval. The lesions enlarge and develop light-colored centers. Older leaves or entire plants may later turn yellow, then brown, and die (melting-out)

from June through August. Many bluegrasses are resistant to this disease. (For further information on the disease resistance of Kentucky bluegrass cultivars, see next week's newsletter.) Other Kentucky bluegrasses that are resistant to leaf spot include: Admiral, America, Aspen, Aquila, Banff, Birka, Bono, Bristol, Cello, Challenger, Charlotte, Columbia, Eclipse, Escort, Farblue, Galaxy, Holiday, Kimono, Merion, Merit, Midnight, Mona, Mosa, Nassau, Pennstar, Ram II, Shasta, Somerset, Touchdown, Trenton, and Windsor. Five applications of a fungicide may be needed if the rest of April and May is cool and wet. Suggested fungicides include Banner, Bromosan-F, Chipco 26019, Duosan, Dyrene, Fore or Formec, PCNB (Terraclor 75 percent WP), Turficide 10 G and 21 percent EC, maneb, and mancozeb. For more information, read Report on Plant Diseases No. 405, "*Helminthosporium*" Leaf, Crown, and Root Diseases of Turfgrasses.

Powdery Mildew - Kentucky bluegrass that grows in the shade is commonly infected with this disease, which appears as a flourlike dust on the leaves. Later, the leaves turn yellow and die, and the turf thins out. Suitable fungicides include Banner, Bayleton and Rubigan. Sprays should go on at 10- to 20-day intervals. A better means of control is to overseed Kentucky bluegrass in shady areas with a red fescue, which is much better adapted to moderate shade. If the shade is dense, consider growing a shade-tolerant ground cover such as *Pachysandra*, *Vinca minor*, or English ivy. For additional information, read Report on Plant Diseases No. 406, *Powdery Mildew of Turfgrasses*.

Leaf Smuts - Patches of diseased plants are stunted and yellow with long or short, dull gray stripes in the leaves. These leaves soon rupture and release black powdery masses of smut spores. Diseased leaves soon shred, twist, and die. During summer droughts, infected plants die and the turf becomes brown, thin, and resembles melting-out, drought, or a thick thatch.

Control: Probably the most practical control is to let the patches of smutted plants die during the summer (do not water) and then overseed in August or early September with a blend of resistant Kentucky bluegrasses. Another alternative is to apply a soil drench of a systemic fungicide such as Banner, Rubigan, Fungo, or Tersan 1991 WP plus PCNB (Terraclor 75% WP). Two applications, spaced two to three weeks apart, are needed in autumn (October or November) just before the grass becomes dormant. The fungicide(s) must be drenched into the soil immediately after application with at least an inch of water (600 gallons of water per 1,000

square feet of turf). Carefully follow the manufacturer's directions on the container(s). For more details, read Report on Plant Diseases No. 409, *Leaf Smuts of Turfgrasses*.

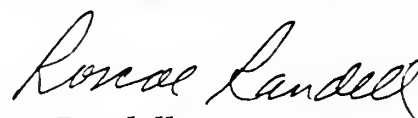
Yellow Patch - This disease is active during very moist weather when temperatures are cool (40° to 60°F). Yellow patch can infect all northern turfgrasses, but is most common in Kentucky bluegrass or perennial ryegrass with a thatch layer an inch or more thick. Look for sunken, light green to yellow green, yellow, tan, straw, or bronze-colored rings and crescent-shaped patches from a few inches to 2 feet or even more in diameter, often with green grass in the centers of the circles. No very effective cultural or chemical control practices have been found. Applications of a nitrogen fertilizer, especially a slow-release form of N fertilizer may be helpful, but reduce the use of nitrogen in the spring. Thatch, of course, should be removed if over 1/2 inch thick. Dethatching machines can be rented at many garden supply and equipment rental stores. For more information, read Report on Plant Diseases No. 411, *Rhizoctonia Diseases of Turfgrasses*.

Reports on Plant Diseases

Copies of any Report on Plant Diseases mentioned in this or other newsletters are 50 cents each; five copies or more are 25 cents each. Checks should be made payable to the University of Illinois and mailed to Extension Plant Pathology, N-533 Turner Hall, 1102 South Goodwin Ave., Urbana, IL 61801. If you would like to have a copy of the complete listing of all 230 Reports on Plant Diseases, send a postcard or note to the same address. There is no charge for the list.

Home, Yard & Garden Pest Newsletter is prepared by the following Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey: *Entomology*, Roscoe Randell and Philip Nixon. *Horticulture*, Thomas Fermanian, Floyd Giles, Daniel Meador, James Schmidt, Tom Voigt, and David Williams. *Plant Pathology*, Nancy Pataky, Malcolm Shurtleff, and Darin Eastburn. *Agricultural Engineering*, Loren Bode and Bob Wolf.

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HOME, YARD & GARDEN PEST

Newsletter

No. 5 • May 1, 1991

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Lawn Grub Review

We in Illinois are fortunate not to have some of the white grub species present in lawns in other areas of the United States, especially the Northeast. Grubs such as asiatic garden beetle, european chafer, oriental beetle, and northern masked chafer are not insect pests of turfgrass in Illinois. We do occasionally encounter damage by the black turfgrass ataeinus grub on golf courses in the northern third of the state.

Japanese beetle grubs have damaged turf in Lake and Cook Counties, while the metallic green adult beetles with coppery brown wing covers can be observed in many locations along the east side of state, from the state's northern boundary to Clark County. Japanese beetle adults emerge from the soil in late June and early July to feed on flowers, shrubs, and some trees such as linden. Japanese beetle larvae or grubs, if a problem, will feed on grass roots in August and successive fall months. This feeding period coincides closely with the feeding damage caused by annual white grubs. The Japanese beetle grub can be identified by the V pattern of bristles on the underside of the tip of the abdomen; there is simply a uniform pattern of bristles on the underside of the annual white grub.

Occasionally, true white grubs can be found damaging patches of turf in June. The timing of this damage does not fit that of the annual white grub or the Japanese beetle grub. The raster pattern for true white grub will be two parallel rows of bristles on the underside of the last abdominal segment. If grub damage is observed in June and grubs are present, the control alternatives are the same as for annual white grubs in August and later in the fall.

Green June beetles can be mistaken for Japanese beetles because of the green color of the adults. From mid-June through August, you may notice large, bright, iridescent green beetles

flying with a loud buzzing noise over lawns and around trees. These beetles are the adult green June beetles. The adults are 3/4 to 1 inch long, with a velvety green and yellow-margined upper surface and shiny metallic green below. Adults also have a distinct, small flat horn on the head. The adults often congregate around seeping tree wounds or ripening tree fruit.

Mated females dig into the turf to lay a cluster of 10 to 30 eggs in a compacted ball of soil, about the size of a walnut. The eggs absorb soil moisture and hatch in 2 to 3 weeks. The young grubs dig to the soil surface, where they feed on organic material, especially decaying thatch. The grubs are often active at night, feeding on decaying matter, especially after warm rains. The grubs have an unusual habit of crawling on their back rather than using their legs like other grubs. When the grubs reach 1 inch or larger, they dig temporary burrows up to 8 inches deep, and often cast out soil onto the turf surface. By late summer, the grubs are large enough to cause concern from their burrowing and nocturnal migrations.

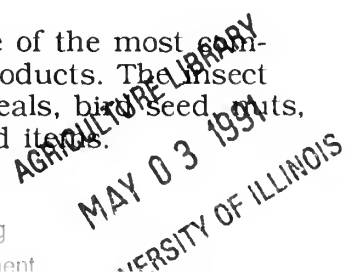
These grubs rarely eat enough turf roots to cause severe damage. However, their burrowing and mound building greatly reduce the aesthetics of the turf. The grubs also cause concern through their nocturnal wanderings. After a rain, they may end up on sidewalks, in the garage, or in ground-level swimming pools.

Control: These grubs are generally easy to control if they are feeding on thatch material. Chemical controls are most effective if applied after a rainfall or after a good irrigation followed by a warm night. The grubs can be detected by the mounds they burrow in late August through September. Spring controls are more difficult to time because of erratic migrations and feeding behavior. An application of Sevin will control them. The adult females are attracted to soils with high organic matter and to natural manures or fertilizers when females are laying eggs.

The major white grub species in Illinois is the southern masked chafer, which will be discussed in a future newsletter.

Indianmeal Moth

The indianmeal moth is one of the most common pests of stored food products. The insect will feed on flour, meal, cereals, bird seed, nuts, and many other similar food items.



The adult moth is approximately 3/8 inch in length, with a wing span of about 3/4 inch. The outer two-thirds of the front wings are copper colored, while the inner one-third appears gray. The larvae are dirty white and about 1/2 inch in length. The insect can complete its entire life cycle in 1 to 2 months.

The adult moths are common around lights and may rest on the ceilings or walls of the kitchen and adjoining rooms. The larvae spin a silken web over the surface of the infested material, and the mature larvae generally leave their food source in order to pupate. The larvae are frequently seen around cupboards, walls, or ceilings.

Control of the indianmeal moth can be achieved by discarding any infested packages. If food is to be stored for long periods, it should be transferred to airtight glass, metal, or plastic containers. Some products can be stored in the refrigerator, and nonhuman food (for example, bird seed) can be frozen for 3 to 4 days in order to kill the moth eggs and larvae. Remember to clean and vacuum food cabinets and shelves thoroughly and to clean up any spillage as soon as possible.

Deer Tick

Adult deer ticks are being found on people in northern Illinois this spring. They are about 1/8 inch in diameter and usually reddish in color. Both this stage and the nymph stage can transmit Lyme disease to humans. Nymphs will start appearing in May and will be present most of the summer. They are much smaller than the adults, being the size of a pinhead. As with all ticks, deer ticks are most likely to attach to the skin on the lower body. The nymph tends to attach in the groin area.

Deer ticks are most likely to be picked up in the northwestern and northcentral portions of Illinois, although occasional ticks have been found in other parts of the state, particularly in the northern half. There is some evidence to suggest that other species of ticks can occasionally transmit Lyme disease, although this is very rare. To be on the safe side, precautions should be taken against ticks whenever one is out in natural areas, particularly wooded areas.

Protect yourself from deer ticks and other ticks by wearing long pants and tucking your pantlegs into your socks so that the ticks cannot reach your skin easily. Wear light-colored clothing so that the ticks can be seen more easily. Apply an insect repellent containing DEET to your skin, particularly your lower legs and ankles. Clothing can be sprayed with Permethrin, an insecticide that will kill any ticks that get on the clothing.

Every few hours, check yourself for ticks, particularly at the end of the day. Ticks need to be attached for at least 24 hours to transmit Lyme disease. If ticks are found, grasp the head where it enters the skin with tweezers and pull it out slowly and steadily. Apply an antiseptic to the bite. If tweezers are not available, pull the tick out with your fingers. Protect the skin of your fingers from any tick secretions by using a tissue. Other methods of removing ticks usually kill the tick, resulting in part of it remaining in the wound. You may wish to save the tick for identification by putting it in rubbing alcohol.

Millipedes

Millipedes are close relatives of insects. They are usually black or brown, wormlike, and hard shelled; they are slow moving with many short legs. Because they feed on moist, decaying, organic matter, they may be numerous in accumulations of dead leaves and bark mulches along house foundations. They commonly enter the house, usually dying within a few hours from lack of moisture; but their dead, coiled bodies all over the basement floor can be a nuisance.

Control millipedes by reducing the moisture and organic matter next to the house. Caulking cracks and crevices in the foundation will also help reduce their numbers indoors. If the basement is very damp, try to reduce the moisture through ventilation or a dehumidifier. Pesticides are not very effective against these pests.

PLANT DISEASES

Strawberry: Diseases

In *Home, Yard & Garden Newsletter* No. 4 we discussed leaf diseases and Botrytis blight or gray mold. Other diseases are now active.

Powdery Mildew. This disease can be seen now as a rolling upward of dull gray or purplish red leaflets that may be scorched at the margins. Buds, flowers, fruit, fruit stems, and underleaf surfaces may be covered with a thin, whitish gray mold.

Control: Strawberry cultivars differ in resistance (see Table 1). Damage by powdery mildew is usually not serious enough to warrant fungicide applications.

Red Stele. This root disease, caused by a soilborne, water-mold fungus, is serious whenever poorly drained soils are saturated with water in cool weather (conditions such as we had in April). Check now for wilting and dying plants with few new roots. The central core

Table 1. Disease Resistance of Strawberry Cultivars Commonly Grown in Illinois^a

Cultivar	Red stele	Verticillium wilt	Leaf spot	Leaf scorch	Powdery mildew
Allstar	VR	R	R	R	R
Canoga	I	I	R	R	-
Cardinal	S	S	R	R	R
Catskill	S	VR	S	R	R
Delite	R ^b	R	R	S-R	S
Earliglow	R ^b	T-R	S-R	R	I
Guardian	R ^b	T-R	S-R	R	S-R
Honeoye	S	S	R	R	-
Jewel	S	S	R	R	-
Lester	R	R	R	R	R
Midway	R ^b	S-I	S	S	I
Pocahontas	S	S	S-R	S-I	R
Raritan	S	S	S	S	I
Redchief	R ^b	R	S-R	R	S-R
Scott	R	9-R	S-R	R	R
Sparkle	S-R	S	S	S-I	R
Sunrise	R ^b	R	VS	R	R
Surecrop	R ^b	VR	S-R	S-R	-
Tennessee Beauty	S	R	R	S-R	S
Everbearing					
Tribute	VR	T-R	T	T	R
Tristar	R	R	T	T	R

^aVS = very susceptible; S = susceptible; I = intermediate; T = tolerant; R = resistant; VR = very resistant; - = unknown. Resistant characteristics of the cultivar usually preclude the need for other controls.

^bResistant to several races of the red stele fungus.

(stele) of roots in an infected plant will be brick red or brownish red instead of yellowish white as in a healthy plant. Later in the season, the red discoloration disappears as the rotted roots are replaced by new ones.

Control: The *only* practical control is to grow certified, disease-free plants of resistant cultivars (see Table 1). Additional information is given in Report on Plant Diseases No. 701, *Strawberry Red Stele Root Rot*.

Verticillium Wilt. This root disease is caused by a widespread, soilborne fungus that attacks about 300 cultivated plants. Older and outer leaves wilt, collapse, turn reddish yellow or dark brown, and often curl up along the midvein. Plants are often stunted, dry, and flattened and have small yellowish leaves. Brownish to bluish black streaks may form within decaying crowns and roots.

Control: As for other root diseases, it is important to plant in fertile, light, well-drained soil. Set out certified, disease-free plants of tolerant or resistant cultivars (see Table 1). For more information, read Report on Plant Dis-

eases No. 707, *Verticillium Wilt of Strawberry*.

Leaf Variegation or June Yellows. This disorder (of unknown cause) appears on young leaflets as irregularly mottled, streaked, golden or pale yellow-to-white and light green areas. Symptoms occur mostly in cool weather. All runners and daughter plants produced by diseased plants are also variegated. Seemingly healthy green plants may become variegated at any stage. As the disease progresses the symptoms increase in intensity. The leaves become more mottled each year until they are completely golden yellow-to-white and frequently puckered or otherwise distorted. Plants become dwarfed and unproductive. Affected plants never recover and usually die within 2 or 3 years.

Control: DO NOT propagate from variegated mother plants. If there are only a few variegated plants in a new or established planting, remove and destroy them when first detected. Purchase only certified, virus- and other disease-free plants from a reputable nursery. For more information read Report on Plant Diseases No. 706, *Leaf Variegation or June Yellows in Strawberries*.

Table 2. Modern Kentucky Bluegrass Cultivars Adapted to Illinois and Reported to Be Moderately to Highly Resistant (R)^a to One or More Diseases^b

Kentucky bluegrass cultivars	Helminthosporium diseases	Leaf smuts	Leaf and stem rust	Summer patch or necrotic ring spot	Dollar spot	Typhula blight	Septoria leaf spot	Red thread
A-20	R	R	R	R	R			R
A-34 (Bensun)	R	R	R	R				
Adelphi	R	R	R	R	R	R	R	R
Baron	R	R	R	R	R	R		R
Bonnieblue	R	R	R	R	R	R		R
Brunswick	R	R	R	R	R			
Cheri	R	R	R	R	R		R	
Enmundi	R		R	R	R			R
Enoble	R							
Fylking	R	R	R				R	
Geronimo	R			R			R	R
Glade		R	R	R		R		
Majestic	R	R	R	R	R		R	R
Monopoly	R	R		R		R		R
Nugget	R	R	R			R	R	R
Parade	R	R	R	R	R		R	
Plush	R	R	R		R			R
Rugby	R	R	R	R	R			
Sydsport	R	R	R		R		R	
Touchdown	R	R		R			R	R
Vantage		R		R	R			
Victa	R	R	R	R				R

^aA resistant (R) rating does not mean that a particular cultivar will be resistant in all locations every year. Due to the presence of physiological races or strains of the various fungi that cause these diseases, a cultivar may be susceptible in one locality and highly resistant in another. This is especially true of powdery mildew and is the reason we omitted this disease from our ratings.

^bA blank under a given disease does not necessarily indicate susceptibility. In some cases it means that no data are available on which to evaluate the relative susceptibility or resistance to a particular disease.

Kentucky Bluegrass Cultivars

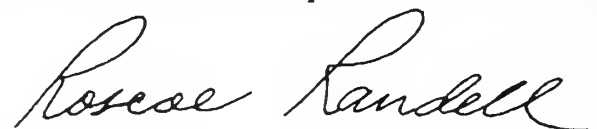
In last week's newsletter, we discussed various turfgrass diseases. Table 2 refers to these diseases and lists the relative resistance of suggested Kentucky bluegrass cultivars.

Reports on Plant Diseases

To obtain copies of Reports on Plant Diseases (RPDs), write to Extension Plant Pathology, N-533 Turner Hall, 1102 South Goodwin Avenue, Urbana, IL 61801. There is a \$.50 charge for each RPD, or \$.25 each in orders of 5 or more (any variety). Please make checks payable to the University of Illinois.

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HOME, YARD & GARDEN PEST

Newsletter

No. 6 • May 8, 1991

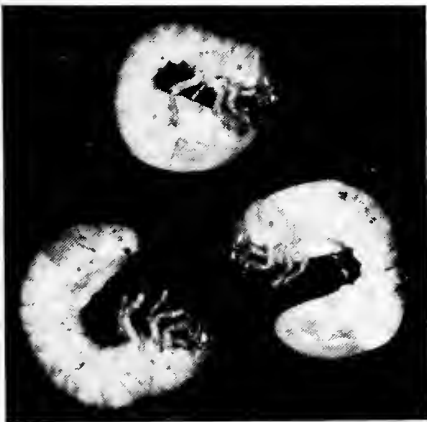
This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Annual White Grub: Biology and Management

In last week's newsletter, we discussed lawn grubs, but southern masked chafer, also called *annual white grub*, was not included. Most of the lawn grub problems in Illinois each year are caused by this species. Probably more than 90 percent of the grub damage in home lawns, golf course fairways, and other high-quality turf-grass areas is the result of annual white grubs feeding on the roots of the sod.

Annual white grubs are now full-sized, C-shaped, white worms with legs and brown heads. Anyone spading in grass areas can observe an occasional one in the soil. The full-grown grubs will move down 4 to 6 inches in the soil to pupate later this spring in formed cells. The pupa is a resting stage prior to transformation into an adult beetle. Tan, 1/2-inch beetles begin to appear in June and can be observed around lights, on window screens



Annual white grubs

or on sidewalks. The annual white grub adult does not feed, but only mates; the adult female lays eggs in turfgrass areas. Egglaying is at its peak during the first two weeks of July. Eggs are most commonly laid between 9:00 p.m. and

1:00 a.m., with the peak from 10:30 to 11:00. More eggs are deposited in warm soil areas, such as next to sidewalks, driveways, and streets. Open areas free of trees and shrubs are preferred, and moist soil is favored over dry soil in which to bury the eggs.

Egghatch occurs in July. The earliest damage from a new generation of annual white grubs is approximately 5 weeks after egglaying, usually August 15 to 20. In summary, in central Illinois annual white grubs hatch from eggs laid in early July and increase in size and number to cause the first damage in mid- to late August. The biological cycle of annual white grubs occurs about 2 weeks earlier in the southern third of the state and two weeks later in the northern third.

Annual white grub management is most successful when the biology of the grub is understood. There is no reason to treat a home lawn for annual white grubs in the spring. Adult egglaying can be easily observed in July; and grub feeding activity, if present, can be first observed in late August and September. Ten to twelve grubs per square foot will prune the roots of sod and cause it to wilt under heat and drought stress. Higher numbers can cause actual damage to plants.

Control: Insecticides containing milky disease (sold as Japademic, Doom, and Grub Attack), while effective on Japanese beetle grubs, do not control annual white grubs. Homeowners can purchase and apply diazinon. The granular formulation is preferred. Lawn care companies and other commercial applicators have several effective grub control materials available for their use. Triumph, Dylox, Proxol, Turcam, and diazinon are suggested. Regardless of who makes the application or which product is applied, the material needs to be drenched into the soil surface so that the upper inch of soil is wet. There will be more information on grub management and outlook in future newsletters.

Aphids on Pine

Various kinds of aphids found on different species of pine are being reported around the state. These insects rarely cause much damage to the tree; although the honeydew, a clear, syrupy solution that they produce, can be a problem. Control these insects with sprays of malathion, diazinon, or acephate (sold as Orthene).

MAY 10 1991

Spruce Galls

Galls on spruce are usually caused by close relatives of aphids called adelgids. The Cooley spruce gall is about 1 inch long and occurs on the ends of branches. The closely related eastern spruce gall is about the same length but forms farther back on the twig, resulting in the end of the twig sticking out of the end of the gall. Usually the end of the twig is killed by the gall, making the gall and twig look like a long-necked bottle. These galls form in late spring out of stem tissue; they are green at first, turning brown later in the summer. They look similar to the cones of the tree, except that there are needles sticking out of them.

When the galls turn brown during the summer, holes open up along the needles, allowing the adelgids inside to escape. These insects lay eggs on spruce, and Cooley spruce gall adelgids may also fly to Douglas fir to lay eggs. The eggs hatch into nymphs that overwinter on the twigs. The following spring, the nymphs mature into adults that lay eggs for a spring generation.

Nymphs that hatch on Douglas fir feed on the needles and develop into small, white cottony insects that never cause a gall to form. These insects can be controlled at any time during the summer with sprays of malathion, diazinon, acephate (sold as Orthene), or insecticidal soap.

Nymphs that hatch on spruce feed on the stems, causing the stem tissue to swell and form a gall that encloses the insect. Once this gall forms, the only control is pruning off the green galls before they turn brown and split, releasing the adelgids. These insects can be controlled on spruce in the spring when the new growth is elongating before the insects have caused the gall to form. They can also be controlled in late September when the nymphs are feeding prior to overwintering. Sprays of malathion, diazinon, acephate (sold as Orthene), and insecticidal soap should be effective at these times.

Oystershell Scale

Oystershell scale is an elongate, 1/8-inch long scale that is wider at one end, giving it an oystershell shape. These insects are common pests on lilac, ash, maple, willow, and a variety of other trees and shrubs. They can build up to numbers large enough to kill twigs and branches.

Scales that overwinter as nymphs or adults can usually be controlled with dormant oil sprays. Scales, such as oystershell scale, that overwinter as eggs are difficult to control with dormant oil. These scales can only be controlled with certainty with crawler sprays.

The scale crawler is the first-stage nymph that hatches from the eggs. Crawlers have legs, antennae, and eyes; they do not have the waxy covering that will protect later stages from insecticide sprays. After crawling around on the plant, the crawler settles down and molts into the next nymphal stage, producing a protective waxy covering and gradually losing its legs, eyes, and antennae over successive growth stages.

Scale crawlers are susceptible to sprays of malathion, diazinon, acephate (sold as Orthene), insecticidal soap, and other insecticides for about 10 to 14 days. These crawlers were reported from central Illinois by Nancy Pataky at the Plant Clinic on May 2, and should be appearing in northern Illinois within the next week or two.

According to Don Orton in *Coincide*, the crawlers are present when *Spirea x vanhouttei* is in full to late bloom. On May 2 in central Illinois, this spirea was just entering full bloom. This is approximately one month earlier than we normally see crawlers of this scale insect in central Illinois, and illustrates the value of using the stage of plant development, or phenology, as described in Orton's book, particularly in a year like this one in which plant and insect development is earlier than normal.

Honeylocust Plant Bug

Distorted foliage on honey locust is usually caused by honeylocust plant bug in the spring. These insects hatch from eggs shortly after honey locust bud break. They feed for about 6 weeks on the foliage and stems of the tree, laying eggs into the young stems of the honey locust in late May and June.

Fully grown honeylocust plant bugs are green and about 1/2 inch long. Nymphs are also green, but much smaller. Due to their small size, the nymphs are rarely controlled before considerable leaf damage has occurred. Greg Smith of Arborsmith reports that these nymphs first appeared in Champaign during the first week of May.

One or more nymphs per compound leaf is usually enough to cause damage. Sprays of acephate (sold as Orthene), cyfluthrin (sold as Tempo), and bifenthrin (sold as Talstar) are effective controls.

Pine Sawfly

Pine sawfly larvae in central Illinois are about 1 inch long. Control of this insect may still be needed in central and northern Illinois. Refer to *Home, Yard & Garden Newsletter* No. 3, April 17, 1991, for the biology and control of this insect.

Ants

Ants are frequently a problem indoors during the spring. Nests in the soil that are close to foundations are warmed by the heat of the building, causing ants in these nests to become active earlier than those in nests that are located away from buildings. The outside air temperature is usually too low for these ants to forage much outdoors, so they follow the source of heat indoors, becoming a nuisance.

The most common of the ants that come indoors is aptly named the pavement ant, *Tetramorium caespitum*. These ants commonly nest in the soil along foundations, and the workers come indoors. These workers are wingless, dark brown, and about 1/8 inch long.

Control can be obtained in a variety of ways. Long-term control is possible by caulking cracks and crevices in the foundation. Sprays of diazinon or chlorpyrifos (sold as Dursban) on the outside foundation and adjacent soil are also effective. Indoor sprays of propoxur (sold as aerosol ant and roach sprays) or chlorpyrifos (sold as aerosol crack and crevice sprays) along baseboards and into other cracks and crevices are also effective.

Recently, the development of slow acting baits that ants carry back to the colony have added another indoor control of ants. These include ant traps containing hydramethylnon (sold as Combat) and sulfluramid (sold as Raid Max Ant Bait). Liquid ant baits, such as Terro ant bait, are also effective in poisoning the nest. Terro containing arsenic was available for many years, and has recently been replaced with a formulation that contains boric acid as an insecticide.

TURF

Controlling Broadleaf Weeds in Turf

The yellow dandelion flowers currently seen in large numbers are often welcomed by children as harbingers of spring. To turf managers, however, actively growing dandelions and other broadleaf weeds signal the need for control.

Weed invasions can be minimized through proper turfgrass management. Consider use, site, and budget when selecting an appropriate turfgrass for your conditions. Follow correct selection by appropriate mowing, watering, fertilizing, and cultivating, which can produce a dense, healthy turf. Reduced weed populations result because weeds have difficulty becoming established in healthy, competitive turf.

In areas where broadleaf weeds are already a problem, initiate controls. Mechanical removal

of weeds by hand-pulling or hoeing can eliminate small numbers of weeds easily. Be sure to remove as much of the root system as possible to reduce regrowth of perennials.

Postemergence herbicides can also provide effective control now during active weed growth (see the *1991 Illinois Pest Control Handbook* for recommendations). Individual herbicides or combinations of these herbicides are available. **Be sure to read and follow the label directions for proper use of these chemicals.** If mishandled or misapplied, these herbicides may damage or kill many desirable ornamental or edible plants in the landscape. Follow these general recommendations when using post-emergence broadleaf products:

1. Apply these herbicides when environmental conditions are appropriate for control.
 - Watch wind speeds to avoid drift. Often, air is stiller in early morning than later in the day.
 - Apply these herbicides when air temperatures are between 65° and 85°F.
 - Adequate soil moisture is important to maintain growth and translocation of herbicide throughout the entire weed.
 - Do not apply when precipitation is expected within 24 hours.
2. Do not mow for several days prior to or following application. This allows maximum leaf surface for interception and absorption of the herbicides.
3. To reduce unnecessary pesticide use, when possible make spot applications rather than treatments of large areas.
4. Apply these herbicides to new turfgrass seedlings only after they have been mowed four times. Wait at least 30 days following application before seeding into areas treated with post-emergence broadleaf herbicides.
5. Many broadleaf weeds can also be treated effectively during active growth in autumn. Do not ignore treatment during fall when broadleaf weeds are a turf problem.

PLANT DISEASES

Pine Problems

Pine wilt disease, the most serious disease of pines in the Midwest, is caused by the pine-wood nematode. In Illinois the nematode is transmitted from pine to pine principally by the Carolina pine sawyer and southern pine engraver beetles after the beetles emerge from hibernation in dead or dying pines from NOW to early autumn. Nematode transmission occurs when

the long-horned beetles feed on first- and second-year twigs of pines. Although virtually all species of pines growing in the Midwest are known hosts of the nematode, Scotch pine is by far the most commonly infected species. The disease is much less common in Austrian and jack pines; infrequent in red, mugo, and loblolly pines; and extremely rare in white pines. The disease usually hits older pines growing under stress conditions.

The needles on entire pines turn light grayish to yellowish green, then a yellowish brown, and finally reddish brown or brown. Most trees decline and die within a few weeks or months. Pines infected late last year are now showing symptoms, usually with one or more dead branches (flags). Large, old Scotch pines die from the upper crown downward. Total death of such trees may take up to a year.

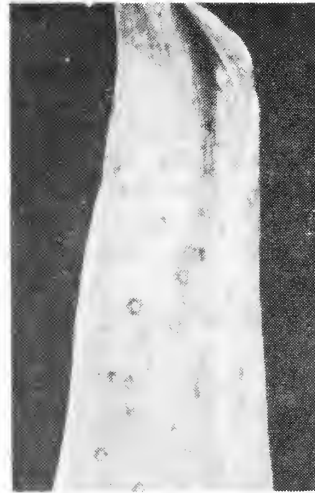
Control: Remove dead and dying trees to the ground line or deeper *as soon as possible*. Do NOT store the wood for firewood. Burn or bury the trees to prevent beetle emergence. There are no practical chemical controls. Suitable replacements of dead pines (with conifers where desired) include Norway or blue spruce, Douglas fir (southwest seed source), cedar, or hemlock. There are no known resistant cultivars within very susceptible species of pines. For more information obtain a copy of Report on Plant Diseases No. 1104, *Pine Wilt Disease*.

Cyclaneusma (Naemacyclus) needle cast is a disease of Scotch pine causing early dropping of needles. Light green spots appear on 2- and 3-year-old needles in September. The spots later enlarge, and the needles, which turn yellow, develop dark brown horizontal bands. From October to May the yellow needles drop off and cream-colored, waxy fruiting bodies form on the fallen needles. The fruiting bodies swell and split open in wet weather. Scotch pines of all ages are susceptible to infection. Most trees become infected between mid-April and late June.

Control: Apply a registered, preventive fungicide (such as a fixed copper, mancozeb, maneb, or Daconil) every 2 to 3 weeks between mid-April and late June. Start *before* Scotch pine buds open. This program gives only about 50 percent control. For complete control, continue the spray schedule into late fall (not practical even for Christmas tree growers). Northern European seed sources are more resistant than the Mediterranean sources. Avoid planting next to old Scotch pines.

Tulips: Fire or Botrytis Blight

This very common and serious disease attacks all parts of the tulip plant. Emerging plants are stunted and have twisted and blighted leaves.



Tulip fire

Minute yellowish brown spots with a dark, water-soaked border form on the later emerging leaves and stems. These lesions enlarge rapidly in wet weather, turn whitish gray, and may involve part or all of a leaf. Flower buds are spotted and may fail to open. Whitish or tan spots form on flower petals, which may enlarge rapidly in damp weather to completely blight flowers. All infected parts are covered with a dense, fuzzy gray mold in damp weather.

Control: Purchase only the largest, blemish- and disease-free bulbs available. Plant tulips in the same location only once in 3 years or more. The site should be sunny with good air and soil drainage. Avoid a wet mulch and overwatering. Fertilize based on a soil test. Dig bulbs carefully in dry weather no later than 3 weeks after the petals have fallen. Discard all spotted, damaged, or moldy bulbs. Dry and clean the bulbs promptly and store in thin layers in a dry, well-ventilated location. Collect and destroy all leaves, stems, and blossoms as soon as blooming is over. Carefully remove and destroy all infected plants and plant parts when first noticed. Fungicide sprays are effective starting when the leaves emerge from the soil. Several sprays are needed at 5- to 10-day intervals and should continue to early bloom. Suggested fungicides include Botran, Daconil, Benlate, mancozeb, Ormalin, and Chipco 26019. Botran and Benlate help control when applied as a soil drench at planting time and again just before emergence. For much more information, read Report on Plant Diseases No. 609, *Tulip Fire or Botrytis Blight*.

Greenhouse Plants: Rhizoctonia Stem and Crown (Foot) Rot

Specimens of various greenhouse plants have been received at the Plant Clinic with sunken, well-defined, reddish brown to dark brown lesions at or close to the soil line. Under moist conditions, the weblike brown hyphae of the fungus can be seen coming from the lesions. *Rhizoctonia* is also a common cause of damping-off of seedlings and, under favorable conditions, may produce a root rot of mature plants. Infection is favored by an intermediate moisture range and warm to hot temperatures. The fungus is found in all natural soils, where it can

survive indefinitely as small, round to egg-shaped, brown to black sclerotia.

Control: Purchase ONLY top-quality seed and treat the seed with Captan plus Apron. Buy disease-free, vigorous plants from a reputable nursery. The plants should be grown in a light, well-drained, pasteurized soil mix. Fungicides applied as a soil drench are effective in controlling damping-off and crown and root rot. *Rhizoctonia*-effective fungicides include PCNB, 75% WP (Terraclor, Fungi-clor, PCNB), Chipco 26019, Benlate 50% WP, Topsin-M, Banrot, and SA-Terraclor Super-X. Treatment is only effective as a preventive measure or at an early stage of infection. For additional information on control of *Rhizoctonia* and other soilborne diseases, read Report on Plant Diseases No. 615, *Damping-off and Root Rots of House Plants and Garden Flowers*.

Many Trees, Shrubs, Flowers, Vegetables: Verticillium Wilt

This serious disease affects more than 300 host plants, including many weeds. The two soilborne fungi are active NOW, invading plants through wounds above or below ground. Once introduced into soil, the fungi can survive for 5 years or more. Symptoms include the wilting, yellowing, and death of leaves and the death of branches or entire plants. Chronic symptoms may follow, including stunted, chlorotic, and deformed foliage; leaf scorch; slow growth; abnormally heavy seed crops; and the dieback of shoots and branches. The vascular tissue is discolored, usually light-to-dark green, a shade of brown, or black. Resistant varieties are available for a few plants, such as strawberry (see Report on Plant Diseases No. 707, *Verticillium Wilt of Strawberry*) and tomato. Fertilizing to promote vigorous growth and watering thoroughly will often aid affected trees and shrubs. Soil treatment with steam or a preplant soil fumigant (containing chloropicrin) is necessary for bench crops in the greenhouse and nursery. Do NOT grow susceptible crops on land where crops susceptible to *Verticillium* wilt have been grown previously. A rotation of 5 years or more for vegetables and flowers may help to reduce the amount of inoculum. For more information, including lists of susceptible and nonhost crops, plus additional control measures, read Report on Plant Diseases No. 1010, *Verticillium Wilt Disease*.

Tomato: Leaf Blights

Early blight appears as light to dark brown, round to angular spots with concentric rings. Similar spots may form on the shoot and flower

stems. *Septoria leaf spot* or blight is common following cool, moist weather. Look for numerous small, round spots with dark margins and tan to white centers. These spots will later be sprinkled with black dots (pycnidia of the *Septoria* fungus). Spots also form on the petioles, blossoms, shoots, and flower stems.

Both of these common leaf blights cause the leaves to yellow, wither, and drop early in large numbers, usually starting at the base of the plant. Fruit size and quality may be greatly reduced. These diseases usually become evident about the time the first blossoms form.

Control: Spray weekly with chlorothalonil (Bravo), Dyrene, or mancozeb, starting a week or two after transplanting. Staking or caging plants and providing good air circulation and all-day sun will help reduce these and other foliar diseases as well as a variety of fruit rots. Varieties with some resistance to early blight include Floramerica, Jetstar, Manalucie, Roma VF, and Supersonic. For more information, read the newly revised Report on Plant Diseases No. 900, *Controlling Diseases in the Home Vegetable Garden*.

Plant Clinic: Collecting and Submitting Samples for Diagnosis

Accurate diagnosis depends on two factors: (1) the rapid receipt of a fresh, representative plant sample with the observed symptoms, and (2) the completion of a specimen data form for each sample. Dead plant material or decomposed plant tissue is of little or no value in diagnosis; these samples will not be diagnosed. Samples that arrive without a completed specimen data form will be handled as time is available; samples without accompanying identification will be discarded.

Collecting Samples

1. Disease types:

Leaf: Collect early and late stages of infection.

Fleshy plant parts: Samples with a rot disease should not be sent in an advanced stage of decay. Collect fresh specimens with early symptom development.

Cankers: Select cankers that were produced recently. Submit the entire cankered portion if possible, preferably with healthy wood above and below the canker.

Wilt or general decline: If feasible, send the entire plant, with roots intact; submit several plants, ranging from healthy to severely infected. So that diseased roots will remain intact, dig—do not pull—plants from the soil. If

you cannot send the entire plant, select samples from areas of active symptom development. Include the intact root system if root rot is suspected.

Turf: Submit several 4-inch plugs of grass that are cut as deeply as the roots will hold soil. Plugs should show a gradation from healthy to severely diseased grass.

2. If air pollution injury is suspected, the pollutant or possible local sources of pollutant should be noted on the specimen data form.
3. Diseases caused by nematodes require special attention. See Report on Plant Diseases No. 1100 for detailed instructions on handling and shipping nematode-infested material.
4. For fertility-induced problems, send soil samples taken according to prescribed procedures to a private laboratory for analysis to determine possible nutrient deficiencies or excesses. Except in nematode-caused diseases, soil samples are of little value in diagnosing parasitic diseases.

Submitting Samples

1. Disease types:

Leaf: Press the dry leaves between heavy paper or cardboard.

Fleshy plant parts: Wrap individually in newspaper or paper toweling; pack in a crush-proof box. Do NOT add moisture to the samples.

Cankers: Wrap loosely in paper and ship in a crush-proof mailing tube or box.

Wilt or general decline: If the whole plant is submitted, wrap the root ball tightly in plastic; send the entire plant in a crush-proof container. To send excised diseased areas, follow the instructions for mailing cankers.

Turf: Plugs should be collected and sent quickly. If mailing the samples, pack plugs tightly with newspaper in a crush-proof box or plastic bag. Do NOT add moisture to the sample.

2. Nematode-infested samples should be shipped as directed in Report on Plant Diseases No. 1100.
3. If different plant species or samples are sent in the same mailing container, label each sample separately and keep the labels away from moisture. Include a specimen data form for each sample.
4. Enclose the completed specimen data form

with the sample. Keep one copy for your files.

5. Mark the container:

Plant Sample—Perishable

6. If samples are mailed, mail them early in the week whenever possible. Early mailing will help reduce the likelihood of samples decomposing in the post office over the weekend. Keep the samples cold until they are mailed.

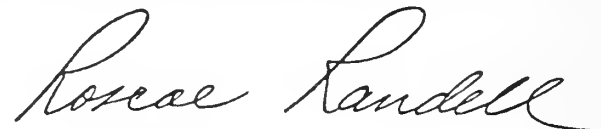
NOTE: Diagnosis and recommended controls by the University of Illinois Plant Clinic are based solely on the material and information submitted. The less representative the sample and the less complete the information provided, the greater the chance for misdiagnosis.

Reports on Plant Diseases

Copies of any Report on Plant Diseases mentioned in this or other letters are 50 cents each; five copies or more are 25 cents each. Checks should be made payable to the University of Illinois and mailed to Extension Plant Pathology, N-533 Turner Hall, 1102 South Goodwin Ave., Urbana, IL 61801. If you would like to have a copy of the complete listing of all 230 Report on Plant Diseases, send a postcard or note to the same address. There is no charge for the list.

Home, Yard & Garden Pest Newsletter is prepared by the following Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey: *Entomology*, Roscoe Randell and Philip Nixon. *Horticulture*, Thomas Fermanian, Floyd Giles, Daniel Meador, James Schmidt, Tom Voigt, and David Williams. *Plant Pathology*, Nancy Pataky, Malcolm Shurtleff, and Darin Eastburn. *Agricultural Engineering*, Loren Bode and Bob Wolf.

Information for this newsletter is gathered by these people with the help of staff members, county Extension advisers, and others in cooperation with the USDA Animal and Plant Health Inspection service.



Roscoe Randell
Extension Specialist
Entomology



HOME, YARD & GARDEN PEST

Newsletter

No. 7 • May 15, 1991

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Bronze Birch Borer

Bronze birch borer feeds underneath the bark of most kinds of white-barked birches, eventually killing the tree. Because this insect tends to



Bronze Birch Borer

attack the top of the tree first, the early sign of damage is small dead branches in the top of the tree. Control in a normal year involves the use of insecticides at the end of May in central Illinois. According to Don Orton's book, *Coincide*, applications should

start when *Spirea x vanhouttei* finishes bloom or when *Viburnum opulus* is blooming. This corresponds to our estimates that this year spring appears to be about a week earlier than normal. Thus application of insecticides should begin immediately in southern and central Illinois, and probably about 2 weeks from now in northern Illinois.

Control of this insect with insecticide involves a variety of options. Dimethoate (sold as Cygon 2E) can be applied once as a concentrate in a 4 to 6 inch band on the white bark of the trunk of the tree. An alternative is two sprays of diluted dimethoate spaced 3 weeks apart on the trunk and branches. A third option is three sprays of diluted chlorpyrifos (sold as Dursban) at 2 week intervals on the trunk and branches. If you use chlorpyrifos in northern Illinois, begin your sprays immediately.

Use of Cygon 2E as a concentrate for bronze birch borer control confuses many people. This insecticide works in this way because it is systemic; that is, it penetrates the bark and is carried upward throughout the tree in the vascular

tissue. White-barked birches have very thin bark that is easily penetrated by the Cygon. It is effective against bronze birch borer because the borer feeds in the cambium, the tissue just under the bark where most of the Cygon is transported up the tree. This insecticide does not work systemically for most other trees because their bark is too thick for Cygon to penetrate it. Nor does it work against most other borers because they feed deeper in the wood where the transport of fluids, including systemic insecticides, is much less; thus a killing dose is not encountered by the borer.

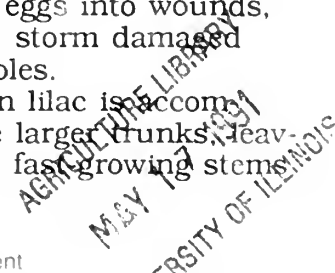
Cultural control of this borer includes giving the tree better growing conditions. Birches are shallow-rooted trees and do not cope well with very warm soil temperatures. Since birches do not have wide spreading branches and heavy foliage, the soil around the tree is not shaded very much. In mid-summer, soil temperatures can get very high. Watering the tree frequently during the summer reduces this stress. For the same reason, birches planted in low-lying, poorly drained areas usually do better than those grown in well-drained areas. Because birches have a shallow root system, plants such as grass growing over the roots compete with them for nutrients and water. Shredded bark in a several-foot radius around the tree eliminates this competition and helps reduce dryness and heat. Birches are also susceptible to salt injury, so site trees away from paved areas where salt is applied during winter.

Resistant birches are available that bronze birch borers do not normally attack. Heritage is a variety of river birch that has light-colored bark and is not attacked by these borers. Whitespire is a Japanese species of white-barked birch that is only attacked under very severe stress and does not become infested in normal growing conditions.

Lilac Borer

Lilac borer tunnels into the larger trunks of lilac; as a common borer of ash, it is frequently called ash borer. The adult of this borer is a clear-winged moth. With its dark-colored body and transparent wings, this moth looks like a wasp. The moths lay their eggs into wounds, including pruning wounds, storm damaged branches, and old borer holes.

Control of this insect on lilac is accomplished by pruning out the larger trunks, leaving relatively young, small, fast-growing stems.



that are not susceptible to borer attack. On ash, insecticide sprays are usually needed, especially to protect young, newly transplanted trees that are particularly susceptible to trunk damage. On older trees, attack by this insect is limited to injured branches in the canopy, which is normally not controlled.

Timing of insecticide applications for lilac borer is critical on ash, since once the hatching larvae enter the tree, control is not practical. An important tool in timing these sprays is the use of pheromone traps. These traps attract and catch male borer moths, indicating when female moths are laying their eggs. Insecticide sprays of chlorpyrifos (sold as Dursban) should start when males are caught in the traps. Another application of Dursban is needed 4 weeks after the first application.

According to Don Orton in his book *Coincide*, larvae are hatching as *Spirea x vanhouttei* and *Lonicera korolkowi* 'Zabelii' are in full to late bloom, and the first spray would be applied at that time.

Flea Beetles

In early spring, many species of flea beetles damage various vegetable crops. These small, shiny jumping beetles feed on the foliage of many plants and leave small holes between the leaf veins. The best description of the results is that the leaf ends up looking like a piece of Swiss cheese. Below are some species of flea beetles and the crops they attack.

Potato flea beetle: Potato, tomato, green pepper, eggplant

Spinach flea beetle: Spinach, beet

Striped flea beetle: Cabbage, broccoli, turnip, radish, mustard

Palestriped flea beetle: Cabbage, bean, tomato, corn, pea

Sweetpotato flea beetle: Sweet potato

Red-headed flea beetle: Cabbage, bean, beet, potato

Other Beetles on Vegetables

Another flea beetle, *corn flea beetle*, attacks corn plants including sweet corn. These black, small jumping beetles scratch the surface of corn leaves. Severe feeding can cause wilting plants. These beetles may also transmit a wilt disease to the plants, stunting or killing susceptible varieties. Bean leaf beetles have emerged from hibernation and now are seeking out new stands of garden beans or soybean fields. These beetles have overwintered as adults and soon will chew large holes in new bean foliage. Sevin or rotenone sprays or dusts will control both corn flea beetles and bean leaf beetles.

Red and black asparagus beetles have been observed laying eggs on new spears in asparagus beds in many gardens. The conspicuous dark eggs can easily be seen on the spears, but control at this time is difficult. It is much more effective if asparagus beds are scouted for beetles on fern growth during July and August. Again, a Sevin or rotenone spray applied to the fern growth will control beetle populations for the next several years.

Striped cucumber beetles feed on vine crops, including melons, cucumbers, pumpkins, and squash, both summer and winter varieties.



Striped
cucumber beetle

These yellow and black striped beetles could be found on these crops last summer and fall. Now they are waiting for new plants to emerge from seed or for transplants to be set out. Cucumber beetles are strongly attracted to new melon, cucumber, pumpkin, or squash plants and will feed on the new foliage of these plants. Pumpkins and squash can be severely damaged by this feeding, and an application of Sevin or rotenone when damage is first observed will control them.

Bacterial wilt, a disease of young melons and cucumbers, is often transmitted to these susceptible plants as the cucumber beetles feed on the leaves, since they often have the disease within their mouth. Successful beetle control with repeated dusting or spraying of Sevin or rotenone is necessary to prevent loss of plants after emergence or transplanting. New foliage should be covered by the product every 5 to 7 days during the first 2 to 3 weeks of the season to control overwintering cucumber beetles.

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Cutworms

Transplants in the vegetable garden, especially tomatoes, need to be protected from cutworms. For the home gardener, large tomato patches can be protected by spraying the base of the plants with diazinon or rotenone. Smaller numbers of plants can be protected with collars of metal, cardboard, plastic, or any other solid material that is sunk at least an inch into the soil and sticks up at least an inch above the soil. Tin cans or milk cartons with both ends cut off work well for this purpose. These collars should be put into place when the transplant is planted to make it less likely that a cutworm is already in the soil next to the plant. These collars work because the cutworm is unwilling to crawl over or burrow under the barrier and thus never reaches the plant.

Another method is sticking a large nail into the ground next to the transplant's stem. Because cutworms normally curl the end of their abdomen around the base of the plant to feed, the additional diameter to the stem created by the nail makes it difficult for the cutworm to attack the plant. Collars and nails can be removed several weeks after transplanting, when the stem has increased in diameter and become woody.

PLANT DISEASES

Apple, Crabapple, Pear, Mountain-ash, Hawthorn, Firethorn (Pyracantha), Amelanchier, Cotoneaster, Japanese or Flowering Quince, Quince, and Spiraea: Fire Blight

Blossoms and fruit spurs turn brown (black on pear). Later, new shoots suddenly look as if they had been scorched by fire. Brown or blackened leaves cling to the blighted twigs. Fire blight is often followed by black rot and wood decay.

Control: To control blossom blight, commercial tree specialists can apply streptomycin two to four times, at 4- to 7-day intervals, during the bloom period when the temperature is above 65°F. To control twig blight, several weekly sprays of streptomycin are needed starting at petal fall. Carefully follow the manufacturer's directions. The best control will occur when the spray is applied at night. (Homeowners cannot legally apply streptomycin unless they are certified to handle restricted chemicals.) Other controls include avoiding overfertilization with high-nitrogen materials and pruning when the plant is dormant to eliminate infected twigs, branches, suckers, and water sprouts. Certain species and varieties of cotoneaster, hawthorn, pyracantha, and possibly other plants are sensitive to streptomycin. For more information on fire blight and its control, obtain a copy of Report on Plant Diseases No. 801, *Fire Blight*.

Woody Plants: Iron-induced Chlorosis

Chlorosis is or soon will be common on pin oak, sweet gum, and other susceptible plants. These include arborvitae, bald cypress, birch, boxelder, forsythia, silver and other varieties of maple, ginkgo, honeylocust, and varieties of oak, spruce, sycamore, tuliptree, walnut, and willow growing in neutral or alkaline soil (a pH of 6.5 or above). The symptoms include partial-to-complete yellowing (chlorosis) of the young, expanding leaves. The midrib and principal veins re-

main green. If chlorosis is severe, growth slows, leaves are dwarfed and quickly turn brown, and twigs and branches may die back. Although a lack of available iron is usually the cause, chlorosis may also be induced by poorly drained or compacted soil, root injury or disease, or a deficiency of other nutrients.

Control: Supply plants affected in the past with iron NOW. The iron may be sprayed onto the chlorotic foliage, introduced into the trunk, or added to the soil. Spraying the foliage with ferrous sulfate, iron chelate, or a soluble organic iron complex (commonly sold as Iron-Gro, Nultron, or Uraples) usually corrects chlorosis in treated leaves within a few days. Spraying will NOT benefit leaves produced later in the season. It is necessary to spray the leaves several times at 2- to 4-week intervals to keep the developing foliage green. Introducing an iron salt (such as ferric or ferrous citrate, ferric ammonium citrate, or chelated iron) into the trunk of an affected tree should control chlorosis for 2 to 4 years. Recovery may be seen within 30 days. Iron chelates are the best soil treatments. Trade names for iron chelates include Versenol Ag 4% Fe, ClawE1 Iron Chelate, Hamp-01 and Hampene Iron Chelates, Rayplex-Fe and Rayplex Chelated iron, Iron Chelates, Chelated Iron Solution, Iron Chelate Solution, THIS Liquid Iron Chelate, Sequestrene 138 Fe Iron Chelate, and Sequestrene 330 Fe Iron Chelate. Trees and shrubs that have been treated should become green within 30 days after application. When properly done, a single soil treatment should be effective for up to 4 years. Application of an iron salt to the foliage, trunk, or soil should be done by a licensed and experienced arborist with the proper tools and equipment.

For more information, read Report on Plant Diseases No. 603, *Iron Chlorosis of Woody Plants: Symptoms and Control*. Chlorosis caused by inadequate soil drainage or excessive soil moisture (poor root aeration) should be dealt with by avoiding overwatering and installing plastic drain tile or using another method to get rid of the excess water.

Rose: Cane Cankers, Black Spot, Other Foliar Diseases, Powdery Mildew

If you haven't already done so, now is the time to check over rose canes and carefully remove all dead and discolored parts, which can later cause girdling and dieback or poor stem growth. Minute, black fruiting bodies of a canker-producing fungus (or fungi) are usually visible in the cankered areas. Infections occur chiefly through wounds made by improper pruning

cuts, thorn abrasions, frost cracks, insect punctures, and rodent injuries.

Control: Maintain plants in high vigor, handle plants carefully to avoid injuring the canes, and thoroughly spray all aboveground parts with triforine (Funginex), chlorothalonil (Daconil), maneb, mancozeb, benomyl (plus one of the above fungicides), Zyban, Duosan, Topsin M, Ziram F-4, or Banner. These fungicides control not only canker diseases but also cane blight, black spot, spot anthracnose, anthracnose, and fungus leaf spots. Sprays should be applied at 7- to 10-day intervals starting when new growth appears. Shorten the spray interval to 5 or 7 days in rainy weather. Maneb, mancozeb, triforine, chlorothalonil, Duosan, and Zyban also control rust. A contact fungicide should be

added with Banner to control black spot.

Powdery mildew can be controlled by benomyl plus one of the fungicides listed directly below, which includes Karathane, Bayleton, triforine, Zyban, Duosan, Rubigan, Banner, and Topsin M. Milban is an excellent mildewicide but is a restricted-use pesticide because of possible injury to eyes. Pipron is another excellent product but for use *only* in commercial greenhouses. Always follow the manufacturer's directions when using any fungicide. Sprays are needed at 7- to 14-day intervals to control powdery mildew. Start when new growth appears. Thorough coverage is required for control of powdery mildew, black spot, cankers, and other rose diseases. The following Reports on Plant Diseases cover rose problems discussed above: No. 610, *Black Spot*; No. 611, *Powdery Mildew*; and No. 626, *Cane Cankers*.

PLANT CLINIC HIGHLIGHTS

May 1 to 5, 1990

Plant samples are beginning to arrive at the Clinic in ever increasing numbers. We are seeing a wide range of problems, many with overlapping symptoms. Please take time to provide as much information as possible with your samples and use our specimen data forms when possible (consult your local Cooperative Extension Adviser). With limited information we can be of limited help.

CROP	DIAGNOSIS	COUNTY
Exacum	Sclerotinia & Botrytis canker	Kane
Geranium	Botrytis	Cook
	Bacterial blight	Cook
Holly	Fusicoccum canker	Champaign
Kalanchoe	Sclerotinia & Botrytis stem canker	Kane
Lilac	Oystershell scale	Champaign
Maple	Verticillium wilt	Champaign
Pine	Sphaeropsis blight	Winnebago
Tulip	Bulb rot	Winnebago
	Botrytis	Winnebago
Weed ID	Small flowered buttercup	Vermilion
	Shepherd's purse	Vermilion
	Field pennycress	Mercer
	Purslane speedwell	McLean
	Marestail	Coles
	Butterweed	Coles,
		Vermilion
	Virginia pepperweed	Coles
	Foxtail barley	Coles
	Daisy fleabane	Coles

There has been some confusion concerning the cost of nematode samples sent to the Plant Clinic. The \$10.00 charge for Soybean Cyst or Pinewood Nematode Analysis is for *each* sample submitted; \$20.00 for *each* sample of any other Nematode.

Hawthorn: Leaf Spot or Blight

Small, dark, round to angular spots, commonly clustered along the veins, appear on English hawthorns, especially the cultivar Paul's scarlet. Cockspur and Washington hawthorns are resistant.

Control: Apply three or four sprays at 7- to 10-day intervals starting as new growth appears. Continue to spray during rainy seasons. Suggested fungicides include captan, maneb, mancozeb, dodine (Cyprex), chlorothalonil, and benomyl. The last-named product should be combined with another fungicide to avoid resistance problems. Maneb, chlorothalonil, and mancozeb also control rust diseases that are active now. The fungicides listed for control of leaf spot or blight also control scab and other fungus leaf spots. For more information, read Report on Plant Diseases No. 637, *Leaf Spot or Blight of hawthorn*.

Home, Yard & Garden Pest Newsletter is prepared by the following Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey: *Entomology*, Roscoe Randell and Philip Nixon. *Horticulture*, Thomas Fermanian, Floyd Giles, Daniel Meador, James Schmidt, Tom Voigt, and David Williams. *Plant Pathology*, Nancy Pataky and Malcolm Shurtleff. *Agricultural Engineering*, Loren Bode and Bob Wolf.

Information for this newsletter is gathered by these people with the help of staff members, county Extension advisers, and others in cooperation with the USDA Animal and Plant Health Inspection service.

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HOME, YARD & GARDEN PEST

Newsletter

No. 8 • May 22, 1991

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Spruce Needleminer

White, Norway, and other spruces in northern Illinois are commonly attacked by spruce needleminers. These caterpillars tunnel through several needles during their development, leaving holes in the ends of the needles and using silk to tie the mined, brown needles to the twig. These accumulations are easily seen at this time of year because one species of spruce needleminer in Illinois is now completing its larval development. Fully grown larvae pupate in the mass of needles, silk, and frass on the twig, emerging as moths in June. Chlorpyrifos sprays in late June in northern Illinois should be effective in controlling hatching larvae before they enter the needles.

Another species of spruce needleminer occurs in Illinois and causes similar damage. If you have spruces with needleminer damage, check to determine which species is present. Control of this other species is most effective in early spring and an application in mid- to late June will not be very effective. Pupae of this species will be reddish brown, oval capsules about 1/4 inch long. Mature larvae will be greenish caterpillars about 1/4 inch long. If pupae or mature larvae are not present, check other needles on the tree for the presence of mined needles containing much smaller larvae.

Scale Crawlers

Scale insects are resistant to chemical control throughout much of the year. Many species of scale can be controlled with dormant oil sprays as described in an earlier newsletter this spring; however, some species are not controlled by this method or are present on evergreens and other hosts that are more susceptible to damage from the dormant oil. Early spring weather conditions can also be unsuitable for application of dormant oils due to cold temperatures, wind, or rain.

Another control method is applying a crawler spray right after the eggs hatch. The hatching nymph is called a crawler. This stage is not protected by a thick, hard or waxy covering as are later nymphal stages and adults. A variety of insecticides are usually effective against these crawlers, such as acephate (sold as Orthene), malathion, diazinon, and chlorpyrifos (sold as Dursban).

Keep in mind several things concerning crawler sprays. Crawler sprays are only effective for the 10 to 14 days that the crawlers are unprotected. After this of time, they settle down onto the host and begin developing the hard or waxy coverings that protect later stages from most insecticides. The other complication is that different scale species produce crawlers at different times of the year.

Pine needle scale is a white, elongated scale that is common on Scots and mugo pine. The reddish crawlers are active in late May in central Illinois or when Zabeli honeysuckle is in bloom.

Euonymous scale crawlers are yellow and are usually active in early June in central Illinois; but they commonly emerge earlier in warm, early springs. Since our spring still appears to be several days ahead of schedule, keep a watch for an early hatch. *Euonymous scale* males are white and elongated, whereas the females are brown and roughly oval in shape. They are common on many varieties of euonymous and will kill the plant when present in very large numbers.

Leaf Galls

Galls are masses of plant tissue that are produced in response to injury or secretions produced by insects, disease, or injury. Several kinds of insects have developed the ability to cause plants to produce galls, including sucking insects, flies, and wasps. As the insect feeds on the plant, undifferentiated plant cells grow and divide rapidly to produce a bizarre growth that encloses the insect. By producing the gall, it is believed the plant is trying to compartmentalize, or wall off, the attacking insect and thus protect the rest of the plant from attack. The gall protects the insect inside from attack by predators and parasites, thus increasing its chances of survival.

Gall insects are very specific about which plant they attack. A particular plant species will produce the same shape and color of gall when

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attacked by a particular species of insect. If a plant is attacked by several species of gall insect, the plant will produce a different kind of gall for each species. Usually, several kinds of gall will be found on an individual plant, with each kind caused by a different species of insect. Because these galls are so different in appearance, the insect that caused a gall can usually be identified by the species of plant attacked and the shape and color of gall produced.



Succulent oak gall

Galls normally do not seem to harm their host plants seriously. Attacked plants growing near unattacked plants of the same species, variety, and age and growing under similar growing conditions usually are as large and healthy as the unattacked plants. For this reason, as well as the difficulty of timing effective controls, control measures are not normally recommended for most galls. An exception to this rule are galls that attack and girdle branches; in this case, the gall (such as gouty and horned oak galls) may kill the branch where it is attached.

Leaf galls, particularly those caused by fly larvae, are common on trees in late spring. We have been seeing some of these galls in the last week. One of these is the box elder leaf gall, in which the leaflet midribs are swollen to about 3/8 inch in diameter. A similarly appearing gall on ash is the ash midrib gall, which will turn from green to red in early summer. On sugar maple, we have been seeing gouty vein gall, in which the veins on the underside of the leaves are swollen to about 1/8 inch in diameter. These galls also turn from green to red as they

get older. If any of these galls are opened up, you can usually see the white, 1/16-inch long maggots inside.

Carpenter Bees

Carpenter bees resemble large bumble bees, but have shiny black abdomens. In contrast, bumble bees possess black and yellow, hairy abdomens. Carpenter bees are usually metallic blue-black, with relatively few yellow hairs. Normally, they are found buzzing around natural wood siding or unfinished wood products.

The adults of both sexes hibernate in tunnels of abandoned nests that are constructed by burrowing into wood and then forming a series of chambers. These chambers are especially designed for the rearing of young. The adult female bee provisions each chamber with a pollen mass, on which she lays a single egg; she then caps the chamber with disks of wood particles. These galleries usually run parallel to the wood grain.

Females often enlarge existing galleries or use old ones. In some cases, very complex gallery systems are established, possibly reducing the structural strength of the wood. The galleries can be up to 12 inches long. Nests may be found in siding, eaves, wooden shingles, porch ceilings, windowsills, doors, telephone poles, fence railings, posts, and wooden lawn furniture. The carpenter bees prefer unpainted or well-weathered wood to hardwood or well-painted wood surfaces.

In Illinois, carpenter bees complete one generation per year. The tunnels are constructed in the spring, followed by egg laying; then the larvae and pupae develop during early summer within the tunnels. Adult bees emerge in late summer and return to the tunnels to overwinter. In the spring, the adults emerge, mate, and lay eggs, completing the life cycle. The males do not possess stingers, and the females only sting if they are handled or confronted by people. Occasionally, the bees will make rapid flights around the head of a person who intrudes near the nest sites. Swatting bees is usually not effective.

There are no permanent ways of eliminating carpenter bees from an area. Painted wood appears to be less attractive, but stained or varnished wood appears to be just as vulnerable to attack as unfinished wood. Control of carpenter bees can be accomplished by dusting or spraying the entrance hole with Sevin. Do not plug the hole.

PLANT DISEASES

Registrations

Ridomil 2E is labeled for control of leather rot and red stele of strawberries. These two soil-borne fungi are effectively controlled by this product. Metalaxyl is the common name. The diseases occur most commonly in wet, poorly drained soils, and in sites with a thin or no mulch, which allows the berries to be in contact with damp soil. In wet years even this chemical may fail in a poorly drained soil, but it is the most effective treatment available.

Caddy fungicide, used for many years on turf to control *Sclerotinia* dollar spot, can be sold through the end of 1991 and used until the supply is exhausted. W. A. Cleary, which manufactures this product, which contains cadmium chloride, has voluntarily canceled its registration.

Broadway - Dow-Elanco has recently obtained a label for this turf product, a premix of Daconil 2787 and Rubigan. A fungicide that combines contact and systemic modes of action, it has label coverage for a large number of turf diseases.

Lawns: Cultural Practices to Control Diseases

Good cultural practices help maintain healthy turf despite the presence of disease-causing fungi and nematodes, both now or later in the season. Vigorous turf withstands wear better and recovers more quickly from injury caused by diseases and insects. The following cultural practices will greatly reduce turf disease problems. For more information on cultural practices and disease control, read Report on Plant Diseases No. 400, *Recommendations for the Control of Diseases of Turfgrasses*.

1. Provide for good surface and subsurface drainage when establishing a new turf area. Fill in low spots. The seedbed should be well prepared, free of coarse debris, and fertile, with a pH between 6 and 7.
2. Grow locally adapted, disease-resistant grasses or grass combinations (blends and mixtures). See the table in *Home, Yard, and Garden Pest Newsletter* No. 5, May 1, 1991.
3. Buy only top-quality, disease-free seed, sod, plugs, or sprigs. When feasible, plant only when the weather is cool and dry. Avoid overwatering the soil, but keep the soil damp until the turf is well established.

4. Fertilize on the basis of a soil test. Avoid overstimulation with a quickly soluble nitrogen fertilizer, especially in hot weather and late in the fall.

5. Mow frequently at the height recommended for your area and for the grasses being grown. Remove no more than one-third of the leaf height at one cutting. Mow until the grass stops growing in the fall.

6. Water an established turf thoroughly during extended droughts. Moisten the soil to a depth of at least 6 inches with each irrigation. Water as infrequently as possible. Avoid frequent light sprinklings, especially in late afternoon or evening. Such watering encourages infection by disease-causing fungi and shallow rooting.

7. Increase airflow and light over the turf by pruning or removing dense trees and shrubs that border turf areas.

8. Remove thatch that has accumulated to half an inch or more now (if not done earlier) and in late summer.

9. Cultivate compacted areas by core aerifying and reduce traffic by strategically placing walks, fences, shrubs, and other landscape elements.

10. Follow suggested insect- and weed-control practices for your area and for the grasses grown.

Broadleaf Trees: *Tubercularia* (*Nectria*), *Cytospora* (*Valsa*), *Fusicoccum*, and *Botryosphaeria* Cankers and Dieback

The fungi *Tubercularia*, *Cytospora*, *Fusicoccum*, and *Botryosphaeria* are "opportunistic" and often found associated with dead or dying twigs and branches of several kinds of maples, elms, beeches, honeylocust, tall hedge, euonymus, apple, peach, plum, cherry, hawthorn, holly, mountain ash, and many other broadleaf trees and shrubs. The fungi are easily identified by the presence of many small, coral pink fruiting bodies (*Nectria*) or black, erupting fruiting bodies (*Cytospora*, *Fusicoccum*, and *Botryosphaeria*) in the dead bark of affected twigs and branches, even the trunk. These fungi are considered as weak pathogens, incapable of doing significant damage on their own. It is believed that the fungi enter bark or wood that has already been injured by factors such as drought, extreme cold, and improper pruning or following another disease such as fire blight, and that they then cause additional damage by girdling

affected parts. These fungi can also grow on dead tissue.

Control: Prune out and destroy all dead twigs and branches now if not already done earlier. Be careful to prune into healthy wood at a side branch or bud a full several inches below the dead cankered area, and not to get any fungus on the pruning tools. If the tools become contaminated, they will spread the fungus or fungi to other pruning wounds, resulting in more infection. To sterilize pruning shears, wash in soap and water to remove sawdust and dark chips, then dip in 70 percent rubbing alcohol or liquid household bleach (1 part bleach to 4 parts of clean water). Bleach will eat away at metal, and tools should be washed with water as soon as pruning is complete.

Junipers, *Arborvitae*: *Phomopsis* Twig Blight

New shoots progressively die back, turning from a light yellow to reddish brown to ash gray. As dieback continues, the entire branch gradually dies and turns brown or ash gray. The central part of a plant is often more affected than its outer portion. Black specks (pycnidia) later appear erupting through the surface of blighted parts.

Control: Plant resistant species, varieties, and cultivars. Prune and destroy (burn) all

blighted parts as they appear. Prune in dry weather. Benomyl (Benlate), Zyban, Duosan, Cleary 3336, mancozeb, and Topsin M are suggested fungicides. Spray several times at 2-week intervals. The key to control is to keep new flushes of growth protected during wet periods. Spray applications should start at budbreak. For more information on symptoms, disease cycle, and control (especially in nurseries where the disease is most serious), read Report on Plant Diseases No. 622, *Phomopsis Twig Blight of Juniper*. This report also lists the susceptibility of many juniper species, varieties, and cultivars to damage by *Phomopsis* twig blight.

Geranium: Bacterial Blight

Bacterial blight, also known as bacterial leaf spot, stem rot, or wilt, is a major disease in warm, humid weather. Small, angular, dark brown to black spots form in the leaves. The leaves quickly wilt, wither, and drop off. On some plants the leaf spots are large, angular, and brown. Affected stems are a dull gray to blackish brown and later shrivel from a dry black rot. Roots are blackened but not decayed. Plants become defoliated except for a few dwarfed leaves at the stem tips. Diseased cuttings fall to root, and the stems slowly rot and turn a dull blackish brown from the base upwards and later die.

Control: Start with culture-indexed cuttings or cuttings taken from indexed, disease-free mother plants. Follow stringent sanitary precautions. Remove and destroy all infected plants as soon as you see them. Maintain good cultural conditions and ventilation. There are no protective or eradicated chemical treatments. For more information, write for a copy of Report on Plant Diseases No. 607, *Bacterial Blight of Geranium*.


PLANT CLINIC HIGHLIGHTS

May 10 to 17, 1991

PLANT	DIAGNOSIS	COUNTY
Blackberry	Orange rust, Anthracnose	Madison
Bluegrass	Helminthosporium	Cook
Buckeye	Rust	Champaign
Cork Tree	Verticillium wilt	Champaign
Crabapple	Apple scab	Champaign
Geranium	Bacterial blight	Cook
Iris	Iris leaf spot, Soft rot of rhizomes	Ford
Juniper	<i>Phomopsis</i> twig blight	LaSalle
	Quince rust	White Champaign Lake
Maple	Scale	Pike
	Spring leaf tatter	Carroll
	Verticillium wilt	Cass
Oak	Anthracnose	Champaign
	Herbicide drift	St. Clair
Peach	Peach leaf curl	Peoria
Spruce	Chemical injury	Winnebago
	Herbicide injury	McDonough
Vinca	Sclerotium stem rot	Kane
Yew	Water stress	Wabash

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HOME, YARD & GARDEN PEST

Newsletter

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This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Cottony Maple Scale

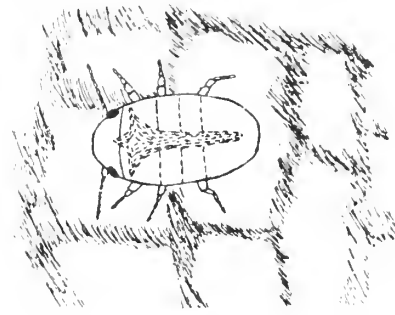
Every 5 to 10 years this scale species appears in some area of the northern or central Illinois. This week we have received reports of cottony maple scale containing egg sacs from Ford, Iroquois, Kankakee, and Will counties. The infested area is probably larger than these few counties.

The cottony maple scale is a small, sedentary insect that is flat, oval, and legless. It has sucking mouth parts and is about 3/8 of an inch long. The scale is covered by a green-to-brown, waxy shield that darkens as the scale matures. The most prominent feature of the cottony maple scale is a white "cottony" egg sac that develops under and protrudes outward from the female scale by late spring. The sacs on the host tree's branches make it appear to be covered by popcorn. The immature scales, or crawlers, that hatch from the egg sacs are tiny, light green insects that are oval, six-legged, and wingless. Each one is about the size of the period at the end of this sentence. The mature male scales resemble the crawler in size and color, but are winged.

The cottony maple scale overwinters as a flat, inconspicuous, immature female on the twigs of the host plant. As growth resumes rapidly in the spring, the scale soon triples in size. By late spring, the mature female begins to produce a white egg sac, constructed out of waxy filaments excreted by its body. The sac grows larger as the female produces more eggs. The egg sac may contain up to 1,000 eggs.

The eggs will start hatching in early June, and hatch is completed by the first week of July. The crawlers migrate to the underside of leaves where they settle down to feed for the remainder of the summer. The mature males emerge in the late summer and mate with the immature females. The females remain on the underside of the leaves until just before the

leaves drop. Then, the females return to the twigs, shed their legs and antennae, and secrete the waxy shield. There is only one generation of cottony maple scale a year.



Cottony maple scale (crawler stage)

The favored hosts of this insect are soft maple trees, such as silver maples. The insect may also be found on a wide variety of other woody plants. The cottony maple scale feeds on the sap of the host plant. This competition for moisture by a heavy population will cause twigs and branches to die back and some leaves to drop prematurely. During feeding, the scale excrete large quantities of honeydew. This is soon colonized by black, sooty mold fungi. The mold does not damage the tree, but is unsightly. Cars, lawn furniture, or anything else under the infested tree will be covered by the sticky honeydew.

Control:

What are effective natural or biological control measures? Many natural enemies such as wasp and fly parasites, as well as lady beetle larvae and adults, will feed on the scale eggs and the crawlers on the foliage.

What are effective chemical control measures? A dormant oil spray applied ahead of bud break next spring will greatly reduce the overwintering scale without affecting any predators or parasites. Do not apply dormant oil to Japanese, Norway, sugar, or any other hard maple.

If the honeydew excreted by the crawlers feeding during the summer months is a severe problem on cars, patios, etc., a spray of malathion on the infested foliage of the lower limbs will control the scale crawlers. Do not apply until after July 1, when hatch is complete. This crawler spray will also kill the scale's predators and parasites.

When will the scale disappear? After 3 years, the scale is usually not observed because of the abundance of a predator called twicestabbed

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lady beetle. There is a red dot on each of the black wing covers on this lady beetle. Some areas of the state may be in their second of 3-year cycles of this scale insect. Whether insecticide sprays are applied or not, the infestation is gone after 3 years.

Is cottony maple scale a serious pest? No. It is very visible in the spring because of bright popcorn-like egg sacs, the honeydew in July and August, and the black sooty mold on the foliage. Rarely is an applied control justified. Although some thinning of the foliage and die-back of small branches may occur due to this scale, attacked trees easily recover.

Bronze Birch Borer

The bronze birch borer beetles are flying in central Illinois. White-barked birches that are showing damage in the form of top-branch die-back should be treated, preferably with dimethoate (sold as Cygon). Chlorpyrifos (sold as Dursban) can also be used to protect the trees, as stated in *Home, Yard & Garden Newsletter* no. 7, May 15, 1991. Since Dursban will not kill young borer larvae that have already entered the tree, this insecticide applied in central and southern Illinois will not control all of the borers unless a spray has already been applied in the past several weeks. Because Cygon is a systemic insecticide that will kill borers within the tree, beginning applications at this time should give better control in the southern two-thirds of the state. In northern Illinois, either Dursban or Cygon should be very effective, but applications should begin immediately.

Dead Flies

Every year at this time, we get reports of dead flies hanging on the ends of leaves and twigs. This year, most of the flies seem to be on the ends of maple leaves. The flies, which are usually in the family Anthomyiidae, are not pests of these plants, but are killed by a fungus. While the fungus is killing the fly, the fly will tend to perch at the tip of an upright object and then die there. Thus, these dead flies will not only be on the tips of leaves and twigs, but also on the tops of fenceposts, roof ridges, and the top edges of cars. Perhaps the fungus causes these flies to do this so that spores will be spread farther on the wind.

Woodroaches

These insects continue to be active this spring, with increased reports over the last week or so. As a reminder, since woodroaches are strongly attracted to lights at night, keeping porch lights and other outdoor lighting at a minimum during

the next several weeks will reduce the number of these flying roaches that enter the home. The mating season will soon end for these native outdoor roaches, and they will cease to be a problem. For additional information, consult *Home, Yard & Garden Newsletter* no. 4, April 24, 1991.

Fleas

Preventative measures started now will help prevent a major indoor flea problem later this summer. Dogs and cats, particularly those that spend time both indoors and outdoors, should be treated once a month with a flea and tick powder rubbed into the skin. Although these powders are only effective for about a week, this occasional use during the warm seasons of the year should eliminate any early indoor infestations.

Any time pets develop a flea problem, these flea and tick powders should be applied weekly to control the infestation; and associated treatments for fleas in carpets, upholstered furniture, and cracks and crevices indoors may also be needed. Monthly applications as described above will not eliminate a heavy infestation, but will help prevent one from starting.

PLANT DISEASES

Asparagus Rust

Rust is the most common disease on asparagus in Illinois. There are actually several distinct stages to the disease cycle. The most conspicuous and damaging stage will show up after the harvest season when the ferns emerge. At that time, brick red pustules, known as uredia, will form on the leaves and stems. These infections weaken and kill foliar tissue, which is needed to feed the crowns so that they can produce the following season. Heavy rust infections weaken crowns and reduce yields. Another stage of the disease, known as the aecial stage, forms on the edible spears. The aecia are light green, very difficult to detect, and do not directly reduce yield or quality. They do, however, provide the inoculum that infects the ferns and produces the more damaging uredial stage.

One practice that helps to control the disease is to cut off the spears below the soil surface. If spears are cut off above the soil surface, aecia may develop on the exposed tissues. Below-ground cutting eliminates this source of inoculum and delays development of the disease. Unused beds and any wild asparagus within 300 yards of the planting should be destroyed because they can also serve as sources of in-

oculum. The fungicide mancozeb (sold as Dithane M-45, Manzate 200, and Penncozeb) can also be applied to help control rust. This fungicide is a protectant, thus it will only stop the spread of the disease and protect healthy tissues. Mancozeb will not eradicate established infections. Applications should start after the end of harvest, and should continue on a 7- to 10-day schedule through August. Do not apply mancozeb to spears that will be harvested.

Bacterial Wilt of Cucumber and Muskmelon

The most devastating disease that occurs on cucumbers, muskmelons, and several other cucurbitaceous crops in the Midwest is bacterial wilt. This disease is similar to Stewart's wilt of sweet corn in that it is caused by a bacterium (but not the same bacterium), is transmitted by an insect (in this case the striped and spotted cucumber beetles), and spreads systemically throughout the plant by way of the plant's vascular system. When a cucumber beetle carrying the bacterium feeds on a susceptible plant, the bacterium is introduced into the plant's water- and food-conducting system, where it multiplies and spreads. The bacterial infection gradually cuts off the plant's ability to move water from the roots to the leaves, and so the most obvious symptom of the disease is that leaves begin to wilt. Initially only one or two leaves on a plant may show this wilt symptom; but as the disease spreads, entire vines will wilt and die, and eventually the whole plant will be killed. The disease can develop at any time during the season, but is most severe on young plants.

Control: Cucumbers and muskmelons are the crop most susceptible to bacterial wilt. Pumpkins and squashes will occasionally get the disease, but they are not as susceptible as cucumbers and muskmelons. Although watermelons have been shown to get the disease after artificial inoculation with the pathogen, in the field watermelons appear to be almost immune from the disease. There is some variation in susceptibility among varieties, but resistance is not generally used as a method of controlling the disease. Control efforts are aimed at preventing infection by controlling the beetles that transmit the disease. Beetle control depends on early and continuous protection with a fast acting insecticide such as carbaryl (Sevin). Rogueing out infected plants will also help reduce the spread of the disease.

Stewart's Wilt of Sweet Corn

Because this past winter was a relatively mild one, a large number of flea beetles have proba-

bly survived the winter and will be feeding on corn this spring. Flea beetles carry, or vector, the bacterium that causes Stewart's bacterial wilt of sweet corn. When the beetles feed on the corn, they deposit the bacterium in the resulting wound. Once the bacterium has entered the leaf, it multiplies and spreads throughout the plant by way of the plant's vascular system. Symptoms of the disease start as light green to chlorotic stripes on the leaves, 1/4 to 1/2 inch wide, running the entire length of the leaf. These stripes characteristically have irregular or wavy margins. As the disease progresses, these stripes eventually turn yellow, then brown and necrotic, giving the plant a burned or blighted appearance. Late in the season, it can be difficult to distinguish severe Stewart's wilt from severe northern corn leaf blight infections. Stewart's wilt is most damaging on young seedlings, where total plant death may occur. Although older plants can get the disease, later infections have less of an impact on yield.

Control: The best way to control this disease is to plant disease resistant hybrids. Standard (sugary) hybrids with good resistance include Comet, Honey 'N Frost, Sugar Loaf, Silver Queen, and Sweet Sue. Resistant sugar-enhanced (SE) hybrids include Calico Bell, Incredible, Miracle, and Classic. Resistant super sweet (shrunken or SH2) hybrids include Challenger, Florida Staysweet, How Sweet It Is, and Sweetie 82. Hybrids susceptible to the disease include Jubilee, Sundance, Platinum Lady, Sugar Buns, Phenomenal, and Supersweet Jubilee. Early season control of the flea beetles with an approved insecticide can also aid in controlling the disease.

Cytospora Canker of Spruce

This disease is evident now, especially on Colorado blue and Norway spruces. Symptoms include a browning of the tufts of needles at the branch tips. Death of the lower branches follows. Occasionally, branches at the center or top of a tree are infected, even though the lower ones remain healthy. The needles may drop early from infected branches or persist for several months, leaving dry, brittle twigs. Conspicuous patches of white resin commonly form on the bark in cankered areas. Underneath the thin layer of outer bark, the diseased tissue is brown. Black, pinhead-size, spore-producing bodies of the causal fungus form in the dead inner bark.

Control: Plant healthy nursery stock on sites that are favorable for their growth. Avoid shallow, light soils, crowding with other trees or buildings, and unnecessary bark wounds. Do not plant in exposed sites (such as a south or

southwest slope). Apply a thick organic mulch to retain soil moisture and to prevent deep freezing and alternate freezing and thawing. Water trees thoroughly (moisten soil 12 to 14 inches deep) during extended dry periods, and fertilize at least every few years on the basis of a soil test. Cut down and burn severely cankered trees. All diseased and adjacent branches on less severely damaged trees should be pruned back to the nearest living lateral branch or to the trunk. Do *not* prune or work around trees when foliage, twigs, and branches are wet, or you will help spread the causal fungus and aid infections. No effective chemical treatment exists for this disease. For more details, see Report on Plant Diseases No. 604, *Cytospora Canker of Spruce*.

Crazy Top of Sweet Corn

Abundant rainfall has flooded fields in several areas of the state, and this will almost certainly result in an increased incidence of crazy top on sweet corn that has already emerged. Crazy top is caused by *Sclerophthora macrospora*, one of the downy mildew fungi. At least nine different downy mildews attack corn, but only a few occur in Illinois, and of those, crazy top is the most prevalent. The fungus that causes crazy top survives in the soil as resting spores called oospores. When the soil becomes saturated, the oospores germinate and produce a swimming spore, or zoospore, which swims to and infects the corn plant. Crazy top is most severe when flood waters rise above the top of young seedlings, allowing the zoospores to enter the whorl and infect the rapidly growing leaf tissue. Twenty-four to forty-eight hours of flooding are enough to start the infection process. Once the fungus has infected, it spreads systemically throughout the plant.

Infected plants usually show excessive tillering, and a rolling or twisting of the upper leaves. The most characteristic symptom, however, is the proliferation of the tassel into a mass of leaf-like structures. Infected plants will also be stunted and develop chlorotic stripes on the leaves; if they produce an ear, it will often be malformed. Crazy top is most likely to occur in the low areas of the field that are most susceptible to flooding, and can cause substantial yield losses in these areas.

Control: Crazy top does not usually cause enough damage to warrant much effort to control the disease. The primary means of controlling the disease is to insure good soil drainage. Applying fungicides to infested soils may effectively control the disease, but such applications are probably not economically feasible. For more

information, read Report on Plant Diseases No. 207, *Crazy Top of Corn*.

Septoria Blight of Tomato

With all the wet weather we have experienced in the past weeks, we expect Septoria blight on tomatoes to be plentiful this year. Look for circular spots on lower foliage. Spots begin as watersoaked areas and develop dark brown margins and sunken white or gray centers. Black specks (pycnidia) will later appear in the center of these 1/4 inch circles. Leaves will yellow and drop, beginning at the base of the plant and moving upward.

Control: Apply mancozeb, Bravo, or Dyrene on a 7- to 10-day schedule after the first signs of disease. Staking or caging plants and providing both good air circulation and all-day sun will help reduce this and other foliar diseases, as well as a variety of fruit rots. For additional information read, Report on Plant Diseases No. 908, *Early Blight, Septoria Leaf Spot, and Anthracnose Ripe Rot of Tomato*.

Reports on Plant Diseases

Copies of any Report on Plant Diseases mentioned in this or other newsletters are 50 cents each; five copies or more are 25 cents each. Checks should be made payable to the University of Illinois and mailed to Extension Plant Pathology, N-533 Turner Hall, 1102 South Goodwin Ave., Urbana, IL 61801. If you would like to have a copy of the complete listing of all 230 Reports on Plant Diseases, send a postcard or note to the same address. There is no charge for the list.

Home, Yard & Garden Pest Newsletter is prepared by the following Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey: *Entomology*, Roscoe Randell and Philip Nixon. *Horticulture*, James Schmidt and Tom Voigt. *Plant Pathology*, Nancy Pataky, Malcolm Shurtleff, and Darin Eastburn.

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Roscoe Randell
Extension Specialist
Entomology



HOME, YARD & GARDEN PEST

Newsletter

No. 10 • June 5, 1991

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Cottony Maple Scale Update

The infested area of cottony maple scale that was discussed in last week's *Home, Yard & Garden Newsletter* (No. 9) now includes McLean and Champaign counties to the south and Will County to the north. White popcorn-like scale egg sacs are easily observed on some soft maple trees, especially on the lower limbs. Eggs should soon be hatching; during July and August, the new crawlers will move on to suck plant sap from nearby leaves. This feeding can place stress on the tree, as did the drought in 1987 and 1988. Older trees that are low in vigor can be stressed by a scale infestation, causing loss of leaves and even some branches.

We are concerned about efforts to organize communitywide spraying in some towns or cities. Not all urban trees are soft maples or trees low in vigor. Not all soft maples in a town are infested with scale, and some trees have only a very slight infestation. Whether infested trees are treated with an insecticide or not, the scale population will diminish after 3 years. This is the second year of this 3-year period for many communities.

Superior oil applied in the spring will greatly reduce scale numbers without affecting beneficial predators such as lady beetles. Sprays in July containing malathion or a similar insecticide will also reduce predator numbers. Other insecticides, such as insecticidal soap (sold as Safer's or M-pede), must thoroughly cover the scale crawlers to be effective and also can reduce populations of immature ladybeetles. Scale control should be determined on a tree-to-tree basis, depending upon whether the tree is being damaged and how much of a nuisance is caused by honeydew dripping on sidewalks, parked cars, etc.

Generally, spraying the trees in all or part of a community to control an insect that does not threaten the life of the trees and that will be

controlled naturally within 2 to 3 years is probably not justified from the standpoints of tree health, use of public funds, or impact on the environment.

May Beetles

May beetles, also called June beetles or June bugs, spend most of their lives in the soil feeding on the roots of grasses and other crops. After about 2 years as grubs, the adult beetles emerge from the soil in early summer to feed on oak foliage and several other tree leaves. They can defoliate young trees, leaving them stunted. Active at night, they feed on foliage and are attracted to outdoor lights.

Potato Leafhopper on Trees

Potato leafhopper numbers have greatly increased in the last few days. Samples of damage to redbud, red maple, and sugar maple have been submitted to the plant clinic. Potato leafhoppers have been very numerous during the last two summers, creating considerable damage on these two trees as well as black locust.

Newly emerged leaves on red and sugar maple will be red and distorted; leaves on redbud and black locust will also be distorted, with brown edges and V-marked brown areas near the edges. In the nursery, many types of woody plants will show distorted leaves from potato leafhopper injury.

Control: Potato leafhoppers are about 1/8-inch long, green, slender insects that tend to walk sideways onto the other side of the leaf when disturbed. They can be controlled with pyrethroid insecticides such as bifenthrin (Talstar), cyfluthrin (Tempo), or permethrin (Ambush, Pounce). Ambush and Pounce can only be used in the nursery.

Maple Petiole Borer

These sawflies tunnel into the petioles of maple leaves, causing the leaves to drop from the trees. Affected petioles will be partially hollow due to the boring of the insect. Control is not recommended because rarely is more than one-third of the leaves of a tree attacked.

Red Plant Bugs

We have been receiving reports from around the state of fast moving, reddish insects about 1/4 inch long feeding on a wide variety of plants

along house foundations. Although somewhat resembling box elder bug nymphs, these insects are much more active and are found feeding on many plants other than box elder or other maples. These insects are plant bugs, apparently in the genus *Lopidea*, probably of several different species.

Some of the common host plants of this genus are phlox, daisy, red clover, honey locust, black locust, elm, yarrow, willow, snowberry, poplars, goldenrod, hazelnut, ash, and river birch. Damage will appear as 1/16 to 1/8 inch diameter, dark, sunken leaf spots that are most visible on the upper leaf surface. The numbers of these insects and their associated damage are usually not great enough to warrant any control measures. If control is needed, carbaryl (sold as Sevin) and malathion will effectively control them. The insects will mature in the next month or so and disappear until next spring.

Carpet Beetles

Each spring, carpet beetles of various types enter homes because they are attracted to lights at night. This year, we are receiving more reports than usual of *Anthrenus* entering homes. This carpet beetle is about 1/10 inch long and rather spherical with very short legs. Various species are black, white, and yellow or black, yellow, and red in color. These insects overwinter as adults and are small enough to come through the mesh of window screening when attracted to lights at night. Remove these insects by vacuuming or by hand as they are seen. Reducing lighting near screened or open windows at night will also reduce their numbers indoors.

Although primarily a nuisance by their presence in the home, they may lay eggs on fabric made of animal hair and feathers; the resulting larvae may damage clothing and carpets made of wool or felt. These larvae will be about 1/8 to 1/4 inch long, tan, and hairy. Prevent damage to clothing by dry cleaning or laundering it and then storing it in airtight containers, such as sealed plastic bags. For added protection, place some moth crystals or cedar shavings in folds of the clothing.

Carpets should be checked for strands of pile coming out of them, particularly under furniture or along the edges of the room. Control of infestations involves spraying cracks and crevices along baseboards and between floor boards with propoxur (sold as Baygon), chlorpyrifos (sold as Dursban), diazinon, or other acceptable crack and crevice insecticides. Very valuable carpets may be removed and fumigated.

Bird Mites

Bird mites feed on young birds in the nest and spend most of the day hiding in the nesting material. When the young birds become fledglings and mature and leave the nest, the mites in the nest get hungry and come indoors. Although unable to survive for very long on people or other mammals, they will bite people and pets, being a nuisance for about 2 weeks if not controlled. Since house sparrows are starting to fledge in Illinois and are the most common bird nesting on buildings, bird mites are starting to become a problem.

Interior surfaces infested with bird mites can be washed with soap and water or vacuumed to remove and kill the mites. Empty bird nests associated with window air conditioners, eaves, or other areas of the building should be removed; the area should be washed with soap and water or sprayed with a pyrethroid (sold as aerosol flying and crawling insect spray). The same spray can be used around windows to kill mites in cracks and crevices.

PLANT DISEASES

Oaks: Leaf Blister

This worldwide disease, mainly of oaks in the red and white oak groups, occurs during wet springs. Fortunately, it seldom causes serious damage. Heavy infections may cause oaks to be unsightly but do NOT endanger the life of the trees. Young, partially grown leaves develop circular, raised, wrinkled, yellowish white spots on their upper surfaces with yellowish brown to gray depressions of the same size on the corresponding lower surfaces. The "blisters" later turn reddish brown and finally dull brown with age. Severe disease may cause some premature defoliation.

Control: No controls are usually suggested. Collecting and composting or burning the leaves as they drop may be of some benefit in reducing the inoculum for next spring. For more information, send for a copy of Report on Plant Diseases No. 663, *Oak Leaf Blister*.

Many Ornamentals: Tomato Spotted Wilt Virus (TSWV)

This virus attacks hundreds of floral crops, bedding plants, vegetables, and weeds. It is found most commonly in garden and New Guinea impatiens, gloxinia, cyclamen, and exacum. It is a very serious problem in greenhouses, where environmental conditions are favorable for the growth and maturation of

thrips (at least 9 species of *Thrips*, *Frankliniella*, and *Scirtothrips*). The symptoms vary greatly from crop to crop and include various degrees of yellowing, browning, stunting, and enations. Many young plants decline and die. Terminal bud killing and white to yellow or dead ring-spots and line patterns on leaves are common in older plants. Infected leaves are often distorted with vein and petiole necrosis. Black or purple stem streaks, premature leaf or bud drop, stunting, distorted leaf shapes, whitish or black leaf spots (sometimes zoned), necrotic young leaves, and colored spots, line and ring patterns or stripes on flower petals are other symptoms. Flowers open late and are commonly distorted. Diagnosis based solely on symptoms is difficult. Symptoms vary greatly with the age of a plant, level of nutrition, and especially environmental conditions. Some infected plants may even be symptomless.

Control: Tomato spotted wilt virus (TSWV) is difficult to control where there is a source of the virus, many susceptible host plants, and an abundance of thrips vectors. Prevention, early detection, and quick action are required. This involves prompt destruction of infected plants, a routine thrips control program using insecticides suggested by University of Illinois Extension entomologists and given in the *Illinois Pest Control Handbook* (available at all Cooperative Extension Service offices). For much more information including monitoring procedures for thrips in greenhouses, other controls, and a fairly complete listing of plants susceptible to TSWV, read Report on Plant Diseases No. 665, *Tomato Spotted Wilt Virus*.

Many Trees, Especially Elms and Poplars: Bacterial Wetwood and Slime Flux

Bacterial wetwood, a watersoaked condition of wood in the trunk branches and roots of many shade and ornamental trees, is cosmopolitan in all older elms and both young and older poplars and cottonwoods. In most trees, wetwood is normally not serious. As a chronic disease, it may contribute to a general decline in tree vigor, especially of older trees growing under stressful conditions. Wetwood is most visible externally as a bubbling and seepage ("bleeding" or fluxing) from wounded tissue in V-shaped branch crotches, pruning wounds, injection holes, and trunk cracks, ribs, or beaks. Internal gas pressure commonly reopens old wounds; the sour liquid is colorless to tan as it oozes out. Light or dark streaks occur where the gray to brown foamy liquid flows down the bark. As it dries, a light gray to white incrustation is left (slime

flux). This liquid is toxic and commonly causes localized death of the cambium. Fluxing is most conspicuous during the summer, although it occurs from April to December.

Control: There is no cure or preventive treatment. The following practices may be helpful. Fertilize stressed trees in spring to stimulate vigorous growth. The installation of perforated plastic or iron drain tubes relieves the gas pressure and allows continual drainage away from the tree. (A disadvantage of drain tubes is that another deep wound is made that breaks the "compartment" the wetwood is in, thereby allowing the internal discoloration and any future decay to spread outside the wetwood-affected area.) Removing dead and weak branches plus promptly pruning and shaping bark wounds is helpful. For much more information, read Report on Plant Diseases No. 656, *Bacterial Wetwood and Slime Flux of Landscape Trees*.

Many Herbaceous Ornamentals and Vegetables: Fusarium Wilt Diseases

With hot weather here and air and soil temperatures in the 75° to 90° or 95°F range, we can expect Fusarium wilts of numerous vegetables, a few fruits and trees, and numerous other plants. Once a Fusarium wilt fungus is introduced into a garden, nursery, greenhouse, or field, it can live indefinitely in a wide variety of soil types independent of any host plants. This eliminates the rotation of crops as an effective control measure. Symptoms of Fusarium wilt are easily confused with crown or root rots, stem cankers, various insect injuries, drought, compacted or poor soil, and Verticillium wilt (which infects plants at lower soil temperatures – optimum about 70°F).

Typical symptoms of Fusarium wilt include a drooping and yellowing of the leaves, often starting on one side, and stunting of the plant. Symptoms often start at the base of the stem and progress upward, causing the leaves and flowers to wilt, wither, and die. When infected stems are split, brown to black streaks are evident in the vascular system.

Control: The first step is proper diagnosis (via laboratory culturing). Disinfesting greenhouse seedbed and potting soil with steam prior to planting is essential. Also treat containers, benches, work surfaces, tools, etc. Do not grow susceptible plants in Fusarium-infested soil where the same or closely related plants have grown previously. Purchase only top-quality, disease-free seed, cuttings, transplants, bulbs, tubers, corms, or other plant material. Fusarium-resistant varieties and cultivars are available for some plants for growing in wilt-infested

soil. Check seed, nursery or other catalogs. Plant in fertile, well-drained, wilt-free soil. Control soil insects following suggestions of University of Illinois Extension entomologists. Many other controls, lists of plants susceptible to Fusarium wilt diseases, and typical symptoms on various selected flowering plants are given in Report on Plant Diseases No. 650, *Fusarium Wilt Diseases of Herbaceous Ornamentals*.

Bacterial Diseases of Beans

There are essentially three bacterial diseases of snap and dry beans that cause problems in the Midwest: *Common or Fuscous Blight*, *Halo Blight*, and *Bacterial Brown Spot*. All three of these diseases result in the formation of lesions on leaves and pods; thus differentiating the diseases can be difficult. The spread and development of these diseases is favored by wet weather and plant injury, including damage from wind-blown rain or sand, hail, or damage from people or equipment moving through the field.

The symptoms of common blight show up as watersoaked spots on leaves which gradually expand into large irregular spots, and become dry and brown with distinct, narrow yellow margins. Spots may expand and coalesce and eventually affect most of the leaf surface. Similar irregular blotches appear on the pods, and

when severe the entire pod may shrivel. Symptoms of halo blight also start as small water-soaked spots on leaves which gradually turn dark brown, but the spots remain small and become surrounded by a wide yellow-green halo. Dark sunken spots can also develop on the pods. With bacterial brown spot, the disease first shows up as chlorotic (yellow) flecks on the leaves, which later turn dark brown. Individual spots are usually irregular in shape and remain fairly small, surrounded by a narrow yellow margin, but lacking a wide yellow halo. The development of common blight and bacterial blight is favored by warm temperatures, in the range of 80° to 90°F, while halo blight develops best when temperatures are somewhat cooler, in the low to mid 70's.

Control: All three of these diseases can be carried on and in infected seed; they can also survive in infested plant debris in and on the soil surface. Therefore, the best way to control these bacterial diseases is to plant only western-grown, certified disease-free seed, and to follow good crop rotation and field sanitation practices, including the removal or burial of infected plant tissues and cleaning contaminated equipment. Avoid working with plants when they are wet with rain or dew, as bacteria and other pathogens are easily transmitted in films of water. Application of copper-based materials, such as copper sulfate, copper hydroxide, and Bordeaux mixture, at weekly intervals can help prevent or reduce the spread of the disease. Some resistant varieties are also available. For more information, read Report on Plant Diseases No. 921, *Bacterial Blights of Garden Beans*.

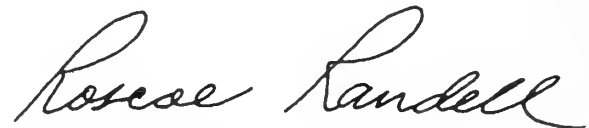
PLANT CLINIC HIGHLIGHTS

May 27 to 31, 1991

PLANT	DIAGNOSIS	COUNTY
Apple	Fire blight	Cumberland
	Powdery mildew	Champaign
Ash	Anthraxnose, Aphids	LaSalle
	Oystershell scale,	Champaign
	Wind injury	
Boxwood	Winter injury	McLean
Cherry	Cherry leaf spot	St. Clair
Crabapple	Apple scab	Champaign
Lisianthus	Rhizoctonia root rot	Kane
Maple	Spring leaf tatter	Bureau, Ogle
Oak	Leaf blister	Jersey
	Sphaeropsis canker	Champaign
Peach	Plum cucurlio	Mason
Pear	Fire blight	Cumberland
	Nectria canker	Champaign
Pine	Pine needle scale	Champaign
		Lawrence
	Pine wilt disease	Mercer
	Sphaeropsis tip blight	Lawrence
Serviceberry	Woolly hawthorn aphid	Champaign
Turf	Powdery mildew	Tazewell
	Red thread	Champaign
Vinca	Rhizoctonia root rot	Cook

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HOME, YARD & GARDEN PEST

Newsletter



No. 11 • June 12, 1991

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INSECTS

Note on Cottony Maple Scale

Tom Stoutenborough, Agriculture Extension Adviser for Coles County, reported observing immature lady beetles feeding on egg sacs on limbs of silver maple. This important predator is an effective control measure for this scale insect.

Beetles on Linden Trees

More than one report of beetles on linden trees has been received. At this time of the growing season, these are soldier beetles feeding on the flowers and pollen. No control is needed for soldier beetles. These beetles are also present on some flowering trees. They closely resemble lightning bugs, except there is no light producing organ; the head of the soldier beetle is visible when viewed from above, but the lightning bug's head is concealed by the pronotum, an area behind the head.

Sometimes in areas where Japanese beetles are present, these copper and green beetles can defoliate linden trees. Japanese beetles usually emerge in July.

Cabbageworms

White butterflies flying back and forth over vegetable gardens signal the beginning of cabbageworms feeding on cole crops. Cabbageworms include the imported cabbageworm, a velvety green worm that hatches from eggs laid by these conspicuous white butterflies. Another cabbageworm is the cabbage looper, a green and white striped worm that "loops" or measures as it moves about on plants. The third cabbageworm is the larva of the diamondback moth, a small, green worm that moves rapidly when disturbed. All three species eat holes in the foliage of cabbage, broccoli, cauliflower, brussel sprouts, and related crops. They also attack the edible heads of these plants. Cabbageworms increase in numbers throughout

the summer until parasites and diseases reduce them in early fall.

Homeowners can obtain effective control of any of the three species with applications of the bacterial agent *Bacillus thuringiensis*. It is sold under the trade names of Dipel, Thuricide, Caterpillar Attack, and other similar names with *B.t.* as the active ingredient. These products are effective only on a few caterpillars including cabbageworms. They are nontoxic to warm-blooded animals, including man, and are destroyed on the plant by sunlight after a week to 10 days (making repeat applications necessary). Follow label directions for rates and methods of application.

Annual White Grubs

This is question-and-answer time for the annual white grub. Many persons have asked about grub biology, drought effect, control, etc. This section will answer these often-asked questions.



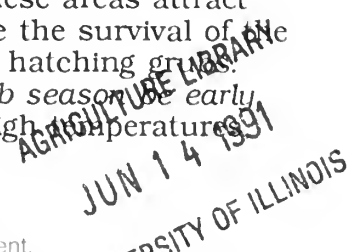
Annual White Grub

When will annual white grub adult beetles emerge and lay eggs? The tan beetles are emerging now in the southern two-thirds of Illinois. Egg-laying has begun in the southern part; it will peak in the central part during early July and 2 weeks later in the northern areas.

Will there be grub damage on dormant unwatered lawns? Attractive egg-laying sites are moist soil areas because the eggs are buried and soil moisture is necessary to prevent desiccation of the eggs before hatch. Damage is possible, but not likely.

Are irrigated turfgrass areas more likely to have grub damage? Yes. These areas attract more egg-laying and improve the survival of eggs as well as of the newly hatching grubs.

Will the annual white grub season be early this year? Despite recent high temperatures,



this year's heat unit accumulation is about normal. The first grub damage in central Illinois will be visible about mid-August, 2 weeks earlier in the southern area, and 2 weeks later in the northern area.

When is the best treatment time for effective grub control? At the early stages of grub damage and when there are more than 10 grubs per square foot, drench an effective insecticide into the soil. In situations where there has been a history of grub infestations, the ideal treatment period is during the 3 to 4 weeks prior to the first damage period.

Are there insecticides that can be applied 2 or 3 months earlier than the grub-damage period? No. At one time, Oftanol was effective when applied anytime during the 4 to 5 months ahead of the grub-damage season in August and September. Today, the labeled and effective grub control insecticides are effective for about 4 to 5 weeks.

Which are better, granules or sprays? If the grass blades are already wet and the treatment is drenched into the top half-inch of soil, either method is effective. But granules can be effectively drenched in after a few hours or a day or two later; whereas, sprays should not be allowed to dry on the foliage.

What are the suggested insecticides for annual white grub control? Diazinon is labeled as an emulsifiable concentrate and as a granular formulation for use on home lawns. Oftanol is labeled as a granular formulation on home lawns. Trichlorfon is formulated as Proxol, a soluble powder (SP), and Dylox as a soluble powder and granules. Turcam is labeled as a granular formulation and as a wettable powder. Triumph was first labeled in 1987 only as an emulsifiable concentrate for use on home lawns by commercial applicators.

Which of these insecticides are available for homeowners to purchase and apply? Only diazinon and Oftanol are available in garden centers and similar stores for purchase and use by homeowners.

Bagworms

Bagworms feed on a wide variety of evergreen and deciduous trees and shrubs, particularly eastern red cedar, other junipers, arborvitae, and spruce. Bagworm hatching is occurring or has finished in Illinois. Bagworms have individual silk tents to which they attach bits of the foliage from the host tree. They feed through most of the summer, starting at the top of the tree and working down. In late summer, they pupate, with the males emerging as clearwinged moths that fly around and mate with the females that remain wingless in the bags. The

female produces eggs in the bag in early fall and dies. The eggs overwinter in the bags and hatch in early June.



Bagworm infestation

Control: Bagworms are easily controlled during June before they get too large. Since the eggs hatch over several weeks or so, insecticide sprays applied before all the eggs have hatched may result in damage due to late-hatching eggs. Newly hatched bagworms will have bags that are about 1/8 inch long. To be sure that egg hatch has been completed, delay spraying until the smallest bags are 1/4 inch or longer, or spray a second time if additional eggs hatch.

Small bagworms with bags less than 3/4 inch long can be controlled with a variety of insecticides. Malathion, cyfluthrin (Tempo), chlorpyrifos (Dursban), trichlorfon (Dylox, Proxol), and *Bacillus thuringiensis kurstaki* (Dipel, Thuricide, Caterpillar Attack) should all be effective. Once the larvae get larger, cyfluthrin, trichlorfon, and *B.t.* should still give adequate control. Homeowners can control bagworms without insecticides by hand-picking the egg-containing bags from their trees and shrubs anytime between October and May.

Stable Flies

Flies that look similar to house flies that bite, particularly around the ankles in sunny areas during the morning and late afternoon, are probably stable flies. These flies have been more common last summer and this summer, probably due to the regulations prohibiting yard waste disposal in landfills. The resulting piles of grass clippings provide excellent conditions for the increase of these flies.

Stable flies are grayish, about 1/4 inch long, with black stripes behind the head and black spots on the abdomen. They can be distinguished from house flies by a needle-like beak that protrudes from the front of the head. The stable fly uses this beak to feed on the blood of people and other animals.

Adult flies lay their eggs in wet straw, strawy manure, piles of grass clippings, and other decaying organic materials. The eggs hatch into yellowish white maggots (larvae) that are tapered at the head end and squared-off at the posterior end. The maggots feed on the decaying organic matter for 11 to 30 days, becoming about 1/2 inch long. The maggots turn into pupae, emerging as flies 18 to 53 days after the eggs were laid.

Control: Prevent stable flies by not collecting grass clippings while mowing or making compost piles of grass clippings. A properly made compost pile will not produce very many stable flies. Insect repellents containing DEET are effective in repelling biting flies.

PLANT DISEASES

Vascular Wilts of Tomato

Several pathogens cause vascular wilts of tomato, including several bacteria and two fungi, *Fusarium oxysporum*, and *Verticillium dahliae*. The symptoms of *Fusarium* wilt and *Verticillium* wilt are similar. Infected plants may be somewhat stunted, and leaves turn yellow and die, often starting from the base of the plant and progressing upward. Leaves on one side of the plant may show symptoms, while leaves on the other side appear normal. Wilting may occur at or during the hottest part of the day or when the plants are stressed from dryness or a heavy fruit load. Infected leaves may dry up before wilting is detected. Both of these diseases cause a discoloration of the vascular (woody) tissue. With *Fusarium* wilt, the vascular tissue of stems and petioles becomes brown to reddish brown, while only the lower stem tissues take on a grayish color with *Verticillium* wilt. Laboratory isolation is required to distinguish these two pathogens positively. Both fungi are soil-borne and infect the plants through the root system; both are able to survive in soils in the absence of a susceptible tomato plant for many years. *Fusarium oxysporum* can also be seed-borne.

Control: Disease resistance is the most common way to control these diseases. Tomato varieties marked "VFN" have resistance to *Verticillium*, one or more races of *Fusarium*, and nematodes. Short-term crop rotations do little to control these diseases, but long-term (5 to 7 years) crop rotation can help reduce the incidence of *Verticillium* wilt. Removing infected plant parts, including roots, may help reduce the buildup of inoculum. Using nitrate forms of nitrogen can help reduce the severity of *Fusarium* wilt, while ammonium forms promote dis-

ease development. Low soil pH also favors *Fusarium*, so increasing soil pH to a range between 6 and 7 can help control *Fusarium* wilt—but not above 7.5, as this will favor the development of *Verticillium* wilt. For more information, read Reports on Plant Diseases No. 929, *Fusarium Wilt or 'Yellows' of Tomato*, and No. 1010, *Verticillium Wilt Disease*.

Botrytis Leaf Blight of Onions

In the warm humid days of summer, it is not unusual for *Botrytis* leaf blight to develop on onions, leeks, and other members of the onion family. The disease shows up as small whitish spots with greenish halos. The centers of the spots often become sunken and straw colored. With numerous infections, leaf tips or entire leaves can die back, giving the plants a "blasted" appearance. At least 24 hours of relative humidity close to 100 percent is required for infection. Temperatures below 80°F are conducive for the leaf-spot phase, while higher temperatures are required for the leaf-blight phase. The pathogen, *Botrytis squamosa*, overwinters on onion leaf debris or as hard, black, resting structures, called sclerotia, in the soil. Windborne conidia serve as secondary inoculum to spread the disease. A related fungus, *Botrytis cinerea*, can cause similar symptoms when it invades leaf tissues that have been damaged by high levels of ozone air pollution.

Control: Control of *Botrytis* leaf blight depends on sanitation (to remove the diseased tissue on which the pathogen will overwinter), crop rotation, and the application of a protectant fungicide such as Bravo (chlorothalonil). For more information, read Report on Plant Diseases No. 931, *Onion Leaf Blights*.

Lawn Diseases

Dollar spot is now very common on numerous turfgrasses. The disease occurs during warm (60° to 85°F), humid, or wet weather—especially



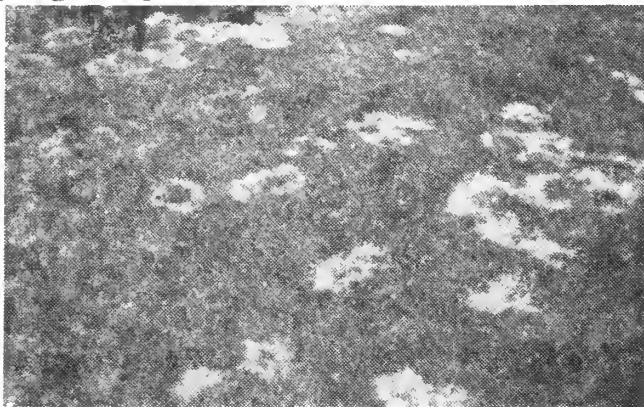
Dollar spot attacking Kentucky bluegrass.

in turf deficient in nitrogen. In closely cut bentgrass and bermudagrass, the brown then straw-colored spots are 1 to 2 inches in di-

ameter, while on taller, lawn-type grasses the spots may reach 4 to 8 inches in diameter. The key to diagnosis is the characteristic girdling lesions on the leaf blades of live plants at the margin of affected areas. The lesions are bleached white to light tan with a dark brown, reddish brown, or purplish border. The spots may merge and produce larger, irregular, sunken areas of straw-colored dead turf that has a drought-stricken appearance.

Control: Follow the cultural practices outlined in *Home, Yard & Garden Newsletter* No. 8 (p. 3). Fungicides effective against dollar spot include Banner L, Bayleton, Bromosan-F, Chipco 26019, Daconil, Duosan, Dyrene or Dymec, Rubigan, and Vorlan. Several applications may be needed spaced 7 to 30 days apart. Check label directions. Lists of tolerant or moderately resistant Kentucky bluegrasses, fine-leaf fescues, and perennial ryegrasses, plus the disease cycle, and much more information is given in Report on Plant Diseases No. 407, *Dollar Spot of Turfgrasses*.

Summer patch and necrotic ring spot are separate diseases that, formerly, were collectively known as *Fusarium blight*. These are probably the most serious diseases of established Kentucky bluegrass turfs that are managed intensively. The first symptom to appear is scattered light green patches 2 to 6 inches across.



Necrotic ring spot

In warm to hot weather, they soon enlarge and rapidly fade to a dull reddish brown, then a light tan, and finally to a straw color. The patches may become sunken elongated streaks, crescents, or rough circles 1 to 3 feet in diameter over a period of several years. The most characteristic symptom on Kentucky bluegrass is a roughly circular, doughnut-shaped area of dead or stunted grass up to 2 or 3 feet across, with tufts of apparently healthy grass in the center, giving a "frog-eye" pattern. Serious turf damage occurs when the blighted areas are numerous and overlap.

Control: Follow the cultural practices as for dollar spot. Avoid pure stands of very suscep-

tible grass cultivars such as Delft, Fylking, Galaxy, Kenblue, Merion, Newport, Nugget, Park, Pennstar, Plush, and Sydsport. The blending of 15 to 20 percent seed (by weight) of a turf-type perennial ryegrass mix (for example, All-star, Birdie II, Blazer, Cigil, Citation II, Delray, Manhattan II, NK-200, Omega II, Palmer, Pennant, Pennfine, Premier, and Yorktown II) with seed of resistant Kentucky bluegrass cultivars will sharply reduce both diseases. Overseeding diseased turf in late August or early September with a blend of perennial ryegrasses or resistant cultivars of Kentucky bluegrass also provides control. For much more additional information, including complete lists of resistant grasses, read Report on Plant Diseases No. 408, *Summer Patch and Necrotic Ring Spot of Lawns and Fine Turfgrasses*.

Where cultural practices are not providing the expected control, systemic fungicides are available. The first spray should be applied *before* symptoms are evident or when night temperatures do not drop below 70°F for the first time (we're already past this!). Carefully follow the label directions. The two fungicides that control both diseases when properly applied and watered in are Banner L and Rubigan A.S. plus Chipco 26019 or FLO, Cleary 3336, Fungo 50, Tersan 1991WP or Topsin M. Beware of "magic products" containing all kinds of weird chemicals that claim to control these diseases. Avoiding stress to turf through cultural practices, planting resistant grasses, and applying fungicides where needed are proven controls for summer patch and necrotic ring spot.

Rhizoctonia brownpatch on higher-cut, lawn-type turf is common in dense, highly fertilized turfgrass during prolonged periods of hot, moist, overcast weather. Diseased patches are usually circular, light brown, matted down, and up to about 2 feet in diameter. The patches may develop green centers and resemble summer patch and necrotic ring spot. In light infections, the affected turf generally recovers in 2 or 3 weeks. When the attack is severe, however, the crown, rhizomes, stolons, and roots may turn brown and rot—causing such turf to be thinned or killed in large areas. Leaf lesions that are ash brown or straw colored and often surrounded by a dark border are often evident.

Control: Follow the cultural practices given under dollar spot. Where cultural measures are not controlling brown patch, apply Banner L, Chipco 26019 or FLO, Daconil, Dyrene, Duosan, Dyrene or Dymec, Fungo, Rubigan plus Daconil or Chipco 26019, Tersan 1991WP plus Daconil, or Vorlan plus Fungo 50. Follow label directions. Report on Plant Diseases No. 411, *Rhizoctonia Diseases of Turfgrasses*, gives more

information on resistant grasses, disease cycle, and yellow patch or winter brown patch and its control—another type of disease caused by *Rhizoctonia*.

Pythium blight (also known as grease spot, spot blight, and cottony blight) attacks all cultivated turf grasses especially during hot (80° to 95°F), wet, or very humid weather when the grass is dense and lush and there is little or no air movement. Look for small, distinct, round to irregular, sunken spots that are 4 to 6 inches in diameter. The grass leaves are first water-soaked, slimy, and dark. They quickly fade to a reddish brown to a light tan as the grass blades dry out and shrivel. Clusters of blighted plants may merge to form irregular areas 1 to 10 feet in diameter or long streaks up to a foot or so wide that follow water drainage or mowing patterns. When the air is moisture-saturated, the grass leaves collapse and appear matted together by a cottony, cobwebby mass of hyphae. Another symptom is distinct, straw-colored lesions on the leaf blades that lack the brown or reddish brown borders of dollar spot. Such grass blades commonly twist, collapse, and die. *Pythium* is also a major cause of wiltings, collapse, and dying of grass seedlings (damping-off) in irregular patches.

Control: Follow the cultural practices mentioned under dollar spot. Avoid mowing when the grass is wet and watering during periods of intense disease activity. There are no grass cultivars resistant to *Pythium*. A preventive fungicide program may be needed, especially on bentgrass greens, during extended periods of hot, wet weather. Suggested fungicides include Banol L, Koban, Subdue 2E, Terrazole WP, Terremec or Terraneb SP, Chipco Aliette, or Pace. Carefully follow label directions. The first fungicide application should be made as soon as night temperatures are expected to remain at 68°F or above, when daytime air temperatures are 80°F or higher, and the forecast is for continued wet or very humid weather. For much more information, read Report on Plant Diseases No. 410, *Pythium Blight of Turfgrasses*.

Other turfgrass disease problems you may be experiencing include melting-out (the summer phase of "Helminthosporium" leafspot; see *Home, Yard & Garden Pest Newsletter* No. 4 and Report on Plant Diseases No. 405, *Helminthosporium Leaf, Crown, and Root Diseases of Turfgrasses*); fairy rings and mushrooms or toadstools popping up following wet periods (see Report on Plant Diseases No. 403, *Fairy Rings, Mushrooms, and Puffballs*); red thread (although the threat of this should be past; see Report on Plant Diseases No. 413, *Red Thread and Pink Patch of Turfgrasses*); and slime molds that

suddenly appear after heavy rains or watering in warm weather. Slime molds will grow up and over any low-lying objects and vegetation (such as turfgrasses, strawberries, bedded flowers, ground covers, mulches, growing media, base of trees, etc. For more information, read Report on Plant Diseases No. 401, *Slime Molds of Turfgrasses*.

Root Rots of Garden, Landscape, and House Plants

The Plant Clinic continues to receive plants affected by root rots caused by such common soilborne fungi as *Rhizoctonia* and *Pythium*. Symptoms may include collapse and dying of seedlings (damping-off) or a stunting of older plants that lack vigor, grow slowly, or wilt on a warm day. The foliage of such plants may turn yellow to brown and drop prematurely, starting with the bottom or oldest leaves and moving up the plant until only the youngest tufts of leaves remain. If severely affected, plants eventually die when the roots can no longer supply sufficient water and nutrients to the aboveground parts. The severity of root rot depends upon the fungal pathogen, the susceptibility of the host plant, and the soil conditions.

Control: Many cultural practices will prevent this disease complex. Start with *only* top-quality seed or transplants, etc. of well-adapted species and cultivars. Plant in fertile, light, well-drained soil (pasteurized with heat for house plants). Keep soil on the dry side—avoid over-watering. Rotate outdoor plantings with unrelated plants for several years. Adding composted hardwood bark as a growing medium or mulch will help suppress root rotting fungi. Other control measures and discussions of the major root rotting fungi, disease cycles, etc. are contained in Report on Plant Diseases No. 615, *Damping-off and Root Rots of House Plants and Garden Flowers*. Chemical controls are also given. What fungicides to use depends on what root rotting fungus or fungi are involved. Two fungicide mixtures that control most major fungi include Banrot and SA-Terraclor Super-X. If *Pythium* and *Phytophthora* only are involved, Aliette, Truban, Terrazole, or Subdue can be used. If *Rhizoctonia* is the major cause, PCNB (Terraclor, Fungi-clor or PCNB 75WP) is a good choice as is Benlate or Benomyl WP and Topsin M. Applications should start *before* symptoms are evident.

Many Plants: Botrytis Blight

Botrytis blight, or gray mold, attacks a wide range of tender tissues of ornamental plants, vegetables, and fruits in greenhouses or outdoors—especially during or following cool, damp, cloudy weather. It can also be a serious cold

storage and transit problem of many kinds of horticultural commodities. Flowers, stems, buds, leaves, fruits, bulbs, corms, tubers, seedlings and roots can all be attacked. Affected tissue is first water-soaked and brown. A conspicuous, tan to gray fuzzy mold forms on rotted tissues under humid conditions. (Putting suspected *Botrytis*-infected tissue in a sealed plastic bag with some moist paper toweling or tissue for 12 to 24 hours should result in a gray mold if *Botrytis* is the cause.)

Control: Strict sanitation is of *utmost* importance. Avoid splashing water on foliage when watering. Provide for good air movement by proper spacing of plants. Avoid overfertilization and unnecessarily wounding plants. Other controls, disease cycle, and much more information is given in the following Reports on Plant Diseases: No. 623, *Botrytis Blight or Gray Mold of Ornamental Plants*; No. 704, *Gray Mold of Strawberries*; No. 931, *Onion Leaf Diseases*; and No. 942. Chemical controls for *Botrytis* will vary with the crop. Be sure to check labels to ensure that the fungicide can be used on that particular plant. Good-to-excellent fungicides to control *Botrytis* include Ornalin, Daconil or Bravo, Topsin-M, Rovral, Benlate, Dyrene, Ronalin, mancozeb, Duosan, Zyban, Chipco 26019, and Botran.

Oaks: Oak Wilt

This is the most serious disease of red and black oaks, although all oaks are susceptible to a greater or lesser degree. On trees in the red and black oak group, the leaves in the crown and tips of the lateral branches discolor, wilt, and drop in large numbers. The symptoms progress downward and inward until the entire tree is affected. The leaves curl slightly and turn a

dull pale green, bronze, or tan starting at the margins. A brown or black discoloration usually develops in the current-season sapwood of wilting branches. Infected oaks in the red and black group do *not* recover.

On other oaks the leaves on affected branches usually turn light brown or straw-colored from the leaf tip toward the base. The leaves curl but remain attached. Usually only scattered branches are affected. Infected trees may die in one year, but usually die back slowly over several years or more. Laboratory culturing is needed for positive identification. Samples should be sent to the Plant Clinic *before* July 1.

Control measures are complicated and involve not wounding or pruning oaks except during late fall or the dormant winter season; root graft control through cutting the roots mechanically or using a chemical treatment (Vapam Soil Fumigant); prompt removal of dead trees; creating barriers of poisoned oaks; and the use of growth regulators and systemic fungicides. For information on additional symptoms, laboratory culturing, hosts, spread, and control, read Report on Plant Diseases No. 618, *Oak Wilt and Its Control*.

Reports on Plant Diseases

Copies of any Report on Plant Diseases mentioned in this or other newsletters are 50 cents each; five copies or more are 25 cents each. Checks should be made payable to the University of Illinois and mailed to Extension Plant Pathology, N-533 Turner Hall, 1102 South Goodwin Ave., Urbana, IL 61801. If you would like to have a copy of the complete listing of all 230 Reports on Plant Diseases, send a postcard or note to the same address. There is no charge for the list.

PLANT CLINIC HIGHLIGHTS

May 31 to June 6, 1991

PLANT	DIAGNOSIS	COUNTY
Ash	PGR herbicide injury	Livingston
Geranium	Botrytis	Champaign
Hickory	Herbicide injury	Peoria
	Midge gall	Lake
Impatiens	Rhizoctonia, Pythium root rot	Lake
Maple	Verticillium wilt	Champaign
Oak	Oak wilt	DuPage
	Herbicide injury	Peoria
Poinsettia	Pythium, Rhizoctonia root rot	Putnam
Pussy willow	Willow blight	McLean
Turf	Dollar spot	Champaign
Vinca	Rhizoctonia root rot	Lake

Home, Yard & Garden Pest Newsletter is prepared by the following Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey: *Entomology*, Roscoe Randell and Philip Nixon. *Horticulture*, James Schmidt and Tom Voigt. *Plant Pathology*, Nancy Pataky, Malcolm Shurtleff, and Darin Eastburn.

Information for this newsletter is gathered by these people with the help of staff members, county Extension advisers, and others in cooperation with the USDA Animal and Plant Health Inspection service.



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HOME, YARD & GARDEN PEST

Newsletter

No. 12 • June 19, 1991

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Caterpillars in the Vegetable Garden

Imported cabbage butterflies—the white ones with the black spots—are laying eggs on cabbage, broccoli and cauliflower plants. Sprays or dusts containing *B.t.* (*Bacillus thuringiensis*) will control them.

Corn earworm moths are numerous in the south and western areas of the state. Worms hatched from the eggs laid by these moths may attack early tomato fruit if there is no silking corn in the area. The moths would prefer to lay eggs on fresh corn silks. Again, *B.t.* will control these new worms on tomatoes as well as sprays or dusts containing Sevin. *B.t.* will not provide control on sweet corn. Spraying or dusting green silks every 2 days until the silks turn brown will prevent damage.

European corn borers are numerous in cornfields in the state. Some eggs were laid on potato plants. The new borers have tunneled into the potato stems causing the plants to wilt. No applied controls are effective in controlling borers inside the stems. Ridging or hilling the wilted plants may aid in saving the infested plants.

Fall Webworms

Fall webworms are present in the southern half of Illinois. In southern Illinois, fall webworm has two generations per year, with the first generation hatching in June. The second generation will hatch in late July through August. This second generation roughly corresponds to the occurrence of fall webworm in northern Illinois, which has only one generation per year.

The caterpillars are colonial, feeding in groups of 100 or more. The caterpillars spin a silk tent over the leaves on a branch and then feed on the enclosed leaves. When the leaves inside the tent are consumed, the tent is enlarged to include new leaves. Crabapple, walnut, butternut, and pecan are attacked most often but infestations on redbud and sweet gum are

common, particularly with this first generation in southern Illinois.



Fall webworm

Control the caterpillars by removing the silk tent and enclosed caterpillars or by spraying with an insecticide. If you opt for insecticide treatment, use sufficient pressure to break up the silk tent so that the insecticide reaches the caterpillars inside. Orthene, Sevin, diazinon, malathion, or Dipel provide effectively control.

Black Turfgrass Ataenius Grubs

These small, white, C-shaped grubs have been found on some golf courses in central Illinois feeding on grass roots. Reports of ataenius grubs damaging tees, greens, and bentgrass fairways have been received from the St. Louis area. Large numbers of grubs can chew off roots of turfgrass and cause wilting. This insect almost disappeared with the drought years of 1987-88; but during the winter months of the last 2 years, it has increased its numbers off the course, and migrated back to greens and fairways in May as a small black beetle to lay eggs. Damage in the greater Chicago area should begin to appear now, as we are about 2 weeks ahead of normal in accumulated degree days.

Look for wilting of Poa, bentgrass, and other turfgrasses. Check for grubs beneath the soil surface. A cup cutter (about 1/10 square foot) is a good tool to sample for ataenius grubs. The economic damage threshold is 50 or more grubs per square foot. Check low areas in the fairway, dollars, and aprons. There is no need to treat the whole course, only those areas where grubs are present. Drench the infested area before

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and after the grub treatment application. Proxol, Dylox, Triumph, and Turcam are suggested for atatenius control. Check restrictions on use of Triumph on golf courses.

Deer Flies

Deer flies are very numerous in many areas of Illinois this summer. These small relatives of horse flies are about 1/4 inch long, with clear wings that have brown patterns. They may have yellowish or brown abdomens. The flies feed by slicing the skin with their mouthparts, making the bite very painful, and lapping up the blood that oozes out of the wound.

They are more common in and near wooded areas and lay their eggs on vegetation near water. The larvae develop in damp soil in woodlands. Increased rainfall the past several years in Illinois may explain the increased number of these insects.

Control is most effective through the use of repellents containing DEET, which is usually effective for 2 to 3 hours. Since these flies commonly bite exposed areas of the shoulders and neck, be sure to apply the repellent to these areas as well as other exposed skin areas. Because deer flies are strong fliers and tend to stay in wooded areas, sprays against the adults are not usually effective. Treatments against the larvae are not recommended.

Earwigs

Earwigs become active in June, becoming adults in mid- to late June. These insects feed primarily on decaying material such as leaf litter, thatch, and bark mulch. They also feed on live plants, particularly flowers—including marigolds, zinnias, roses, and daylilies. They even feed on insects, such as fleas. Earwigs are relatively new as pests to most people in Illinois; their numbers have greatly increased over the last ten years.

Because earwigs are most active at night, preferring to hide in cracks and crevices during the day, they work their way through cracks and crevices in the foundation and become a nuisance in the home. Earwigs will also be found in large numbers in cracks and crevices of lawn furniture and under loose tree bark.

These insects are about 5/8 inch long, elongate, and reddish brown; they are easily recognized by the pincer-like forceps on the rear end of the body. When disturbed, the earwig will curl its abdomen up over its back and try to pinch the attacker with these forceps. Although they can puncture very soft skin, they are not poisonous and their pinch is rarely felt.

Control: Due to their habit of living in cracks and crevices and burrowing into the soil,

the number of earwigs in an area cannot be reduced to any great extent with any kind of control. For that reason, spraying entire yards to control this insect will not justify the impact of the insecticide on the environment.

Reducing the amount of dead organic matter, such as fallen leaves and bark mulch, as well as trimming back bushes along building foundations to reduce earwig food and moisture will reduce their numbers next to the building and result in fewer of them indoors. Caulking cracks and crevices in the foundation will also limit their entry into the building.

Spray the outside foundation and adjacent soil with diazinon or chlorpyrifos (Dursban) to reduce the number of earwigs that come indoors. These insecticides are effective for about one month, so if earwigs start reappearing indoors after this time, a reapplication may be needed. Earwigs will not reproduce indoors, so insecticide control inside is not needed. Remove any that are seen by hand or vacuuming.

Earwig damage to flowers and other plants can be controlled by sprays or dusts of carbaryl (Sevin), which should not be applied to blooms since it will kill visiting bees and other beneficial insects. Scout suspected feeding by observing the affected plants at night for the presence of earwigs on the foliage. Most vegetables are not heavily damaged by earwigs, so no control is usually needed. Earwigs do like to hide in lettuce and other greens, so shake these plants thoroughly when harvesting to dislodge them.

PLANT DISEASES

Peach, Nectarine, Plum, Apricot: Scab

Small, round, olive green spots, about 1/16 to 1/8 inch in diameter, develop on the fruit 6 to 7 weeks after the petals have fallen. The superficial spots may slowly enlarge and merge to form large, irregular blotches. Severely infected fruit are stunted, become misshapen, or crack open.

Control: Spray NOW and then every 10 days from petal-fall until 40 days before harvest. The fungicides to use include sulfur, Benlate, Topsin M, Duosan, Zyban, captan, or Bravo. *Thorough coverage* on the developing fruit is required. Home fruit growers should follow the spray program for peaches, nectarines, apricots, and plums described in University of Illinois Cooperative Extension Service Circular No. 1145. For details about scab, read Report on Plant Diseases No. 811, *Scab of Peach, Nectarine, Plum, and Apricot*.

Blackberries, Black and Purple**Raspberries: Orange Rust**

Orange rust is unusual in that the rust fungus is systemic in its host plants. Newly formed shoots are short, upright, weak, and spindly. They lack spines and are very susceptible to powdery mildew. The leaves on such canes are stunted or misshapen and are pale green to yellowish. The lower surface of the leaves is covered with waxy blisterlike pustules that soon turn powdery and bright orange.

Control: Dig up and burn infected plants before the orange pustules appear and the rust spores are released to infect healthy plants. Fungicide sprays applied to control anthracnose, spur and cane blights, and other foliar diseases will not control orange rust. For other control measures, disease cycle, and additional details, read RPD No. 708, *Orange Rust of Brambles*.

Junipers: Phomopsis Twig Blight

This disease is appearing as dead, gray shoots (last year's infections) and a progressive dieback of new shoot growth that changes from light yellow to red brown. Entire branches gradually die and then turn brown before turning ash gray. Small black dots (fungus fruiting bodies: *pycnidia*) can be seen in the ash gray parts of stems and needles.

Control: Grow resistant species, varieties, and cultivars of junipers (see RPD No. 622). Prune out and burn all dead and dying parts during dry weather. Benlate, Zyban, Duosan, mancozeb, Cleary 3336, and Topsin M sprays are effective when applied at 2-week intervals in rainy weather. Keep new flushes of growth protected. However, the best control is to plant resistant junipers.

Iris: Leaf Spot and Bacterial Soft Rot

Leafspot can be seen as minute, green to yellow, watersoaked lesions on the leaves, usually on the upper half. The lesions soon turn brown and dry, becoming surrounded by a water-soaked margin that later turns yellow. Later, the spots enlarge, merge, and form irregular dead areas that may cause the leaves to turn yellow, die back from the tip, and curl.

Control: Cut off and destroy infected parts of leaves as they occur. Space plants apart, keep down weeds, and (when watering and working among plants) avoid sprinkling the foliage that is already wet. Resistant species of iris are also available. Fungicides that are effective in controlling leaf spot include Daconil 2787, maneb, mancozeb, Benlate, Bayleton, Chipco 26019, and Topsin M. Four to six sprays are needed at 7- to 10-day intervals, starting when

the new leaves are several inches tall. Add a spreader-sticker to the spray to ensure wetting and coverage. For further details, read Report on Plant Diseases No. 628, *Iris Leaf Spot*.

Bacterial soft rot, caused by several types of common soilborne organisms, attacks a wide range of fleshy ornamentals, fruits, and vegetables. The bacteria enter primarily through a variety of fresh wounds and also follow other disease-producing organisms. Iris is very commonly infected, especially following attacks by the iris borer. The tips of leaves wither, and the basal portions are wet, slimy, and practically shredded before they collapse. The interior of an iris rhizome commonly disintegrates into a vile, foul-smelling yellow mess, while the epidermis remains firm. The rot is more serious in shaded locations, when iris is too crowded or planted too deeply.

Control: Apply recommended insecticides to control borers starting when the fan leaves are several inches tall. Spray weekly until bloom (too late in most areas). Dig up infected and crowded plants after bloom and transplant disease-free, borer-free rhizomes. Destroy seriously infected plants. If rhizomes are only partially rotted, cut out rotted portions, dry thoroughly in the sun for a day or two then soak for an hour in a 2 percent formaldehyde solution. Drain and plant immediately. For more information, read Report on Plant Diseases No. 943, *Bacterial Soft Rot of Vegetables, Fruits, and Ornamentals*.

Cherry: Leaf Spot

Small, round-to-irregular, purplish-to-brown spots form in the leaves. Some spots drop out, leaving "shot-holes." Later, affected leaves turn golden yellow and drop early in large numbers.

Control: Spray 3 or 4 times, about 10 to 12 days apart, using Topsin M, Bravo, Ziram F-4, captan, dodine (Cyprex), or Benlate. Follow the cherry spray program outlined in University of Illinois Cooperative Extension Service Circular No. 1145. The critical spraying periods are when husks begin to split and pull away from the base of the young fruit; 10 to 12 days later; just after the fruit is picked; and then 10 to 14 days later.

Shade Trees: Leaf Tatter

A number of leaf specimens from dogwood, maple, linden, oak, and other shade trees have been received at the Plant Clinic during the past month. We believe leaf tatter is due to a combination of frost injury (when the young leaves were expanding) followed by strong winds (and rains) that tore away the injured and tender tissues. In many cases, the damage re-

bles anthracnose or insect injury. Some leaf tatter appears every spring and nothing can be done to control it.

Alternaria Leaf Blight on Melons and Other Cucurbits

Alternaria leaf blight has already begun to appear on both watermelon and muskmelon. Other cucurbit crops, such as cucumbers and squash, can also become infected. Symptoms on the leaves show up as brown circular spots, up to 1/2 inch in diameter, which characteristically have a target-like appearance (circles within circles). These spots usually show up on older leaves first, and infections can grow together to blight large portions of the leaf. The disease can also develop on the fruit, where it causes a fruit rot, and defoliation from the leaf spot phase of the disease can lead to premature ripening of the fruit. Spores of the pathogen are spread by wind, and rainfall promotes spore production. The disease is most severe when temperatures are between 70° and 90°F. Plants are most susceptible when they are young, up to 30 days old, and after flowering.

Control: The fungal pathogen that causes this disease survives from season to season on infected plant debris, so it is important to follow a 2- to 3-year crop rotation schedule, and to remove, burn, or incorporate infected plant debris. Regular applications of a protectant fungicide, such as chlorothalonil (sold as Bravo), or a copper-based fungicide, may be necessary in seasons when conditions favor rapid disease development. For additional information read Report on Plant Diseases No. 918, *Alternaria Leaf Spot or Blight of Cucurbits*.

Ash Decline and Dieback

We have had a few reports of ash decline and dieback this season. The primary cause of this disease is still unknown. Symptoms are yellow leaves, scorching of leaf margins, small leaves, reduced twig and stem growth, early leaf drop, premature fall coloration, and thinning of foliage in the crown. The condition usually becomes progressively worse each year with leaves becoming both smaller in size and fewer in number.

Stress factors alone or collectively can initiate decline and lead to dieback, although decline and dieback rarely result from a single stress factor. Factors adding to decline may be rapid temperature changes, great fluctuations in soil moisture, mechanical damage to roots from construction or livestock, disease, insect attack, or adverse soil or air environmental conditions. As a tree is weakened by one or more factors, it becomes more susceptible to other problems, such as secondary wood-rotting fungi.

Control: Trees showing symptoms of decline should be well watered and fertilized. Remove any dead wood present and try to maintain vigor to avoid further decline by winter stresses. Consult Report on Plant Diseases No. 641 for details on decline of trees and shrubs.

PLANT CLINIC HIGHLIGHTS

June 7 to June 14, 1991

PLANT	DIAGNOSIS	COUNTY
Apple	Fire blight	Crawford, McHenry, Saline
Elm	Flat-headed borer Dutch elm disease	Ogle McHenry, St. Clair
Grape	Black rot	Washington
Hawthorn	Mealy bug & bagworm	Peoria
Hedge mustard	<i>Sclerotium</i> infection	Champaign
Jade	Pythium root rot	Champaign
Liatris	<i>Sclerotinia</i> stem rot	DuPage
Magnolia	Sassafras weevil	Champaign
Maple	Anthracnose, root injury, Anthracnose Chemical injury	Cass Kane, White Piatt
Oak	Leaf tatter Herbicide injury Iron chlorosis	Iroquois Knox Champaign, Logan
Peach	Suspect oak wilt Scab	Kane Knox
Pear	Suspect bacterial blast	Knox
Pine	Pine bark adelgid	Crawford
Spruce	Herbicide injury Spider mites	Lake Champaign
Turf	<i>Helminthosporium</i> Pythium damping off	Henry Pike

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HOME, YARD & GARDEN PEST

Newsletter

No. 13 • June 26, 1991

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Annual White Grubs

Adult, half-inch, tan beetles have emerged from turfgrass areas to mate and lay eggs for another generation of annual white grubs. The above-normal temperatures have pushed insect activity ahead about 2 weeks; therefore, egg-laying that usually would occur in early July is now occurring in central Illinois. Damage will follow about 6 weeks later. Egg-laying in the northern third of the state should peak around July 4, and first damage appear in mid-August.

Japanese Beetles

Japanese beetles have emerged from sod areas in eastern Illinois from Lake to Clark counties, with scattered populations appearing in other areas. These metallic green and copper beetles are clustered on certain trees (such as linden and dogwood) or shrubs (such as roses). Adult beetle control is difficult, but Sevin is probably as effective as any of the small package insecticides. The Japanese beetle traps baited with a food and sex attractant will trap these beetles; but do not place the traps in the host tree, as this will attract more beetles to the tree or shrub. Traps should be placed at least 50 feet away from plants that you want to protect.

Greenstriped Mapleworm and Other Tree Defoliators

This insect was reported by Rick Zipprich, Calhoun County Extension Adviser, Agriculture. The small, green worms were observed feeding on maple leaves. These caterpillars have a pale white stripe along each side of their bodies. Although these caterpillars can defoliate maples, their feeding activity will not kill the trees. Sevin and *B.t.* formulations (Dipel, Thuricide, Bactur, and Sok-Bt) will not control this insect. Orthene gave fair-to-good control of infestations in past years. New insecticides, such as Tempo and Talstar, as well as Dylox should be effective on

these difficult-to-control caterpillars. There will probably be a second generation of these worms in August.

Other tree defoliators being observed now include *fall webworms* feeding inside loosely formed tents at the ends of branches. *Dusky birch sawflies* are skeletonizing foliage of some birch trees, including river birch. *Bagworms* and *spring cankerworms* can occasionally be found feeding on some trees. *Bacillus thuringiensis* formulations will easily control fall webworm, cabbageworm, and bagworm—but not sawflies and green striped mapleworm. If you do use one of the new tree and shrub insecticides, Tempo or Talstar, we would appreciate a report from you on your results.

Gypsy Moth Traps

Each year, the Illinois Department of Agriculture in cooperation with the U.S. Department of Agriculture Animal and Plant Health Inspection Service (APHIS) carries out a gypsy moth detection trapping program in Illinois. Since most gypsy moth infestations from the northeastern United States arrive in Illinois through household moves, and because each year many more people move from the northeast United States into the Chicago metropolitan area than elsewhere in the state, traps are placed in that area of the state each year. The rest of the state is covered every 3 or 4 years depending on the availability of funds.

This year, 37 counties outside the Chicago area are being trapped. Traps are placed in each square mile since they will attract moths from 1/2 mile away. Gypsy moth traps are usually reddish orange, although some may be tan. They are made of cardboard and are about 6 inches long, 3 inches wide, and triangular in shape. The inside of the trap is covered with a sticky glue that holds any insect that enters.

These traps also contain lures that contain synthetic gypsy moth pheromone, which is similar to the natural pheromone that the female gypsy moth releases to attract male moths for mating. Thus male moths will fly 1/2 mile to this synthetic odor and get caught on the glue inside the trap. These traps do not contain any insecticide.

Other moths beside gypsy moths will enter the trap while looking for a place to hide. Thus the presence of moths inside the trap does not mean that there are gypsy moths in the area. One gypsy moth in the trap may be the result

of a single cocoon in the area and may not represent an infestation. Do not tamper with the trap. If the tree or post that the trap is on has to be removed, contact your local Extension adviser or Illinois Department of Agriculture fieldman for additional information.

Gypsy moth traps are put out in June and collected in August. The following counties outside the Chicago metropolitan area are being trapped this summer:

Boone	Bureau	Carroll
Cass	Champaign	DeKalb
Ford	Fulton	Grundy
Henderson	Henry	Iroquois
Jo Daviess	Kankakee	Kendall
Knox	LaSalle	Lee
Livingston	Marshall	Mason
McLean	Menard	Mercer
Ogle	Peoria	Putnam
Rock Island	Stark	Stephenson
Tazewell	Vermilion	Warren
Whiteside	Will	Winnebago
Woodford		

Rove Beetles

Harold Hunzicker, County Extension Adviser in Agriculture in Marion County, has reported tremendous numbers of rove beetles being attracted to lights at night. We have also received several other reports of large numbers of these beetles in other areas of the state. These rove beetles are about 1/8 inch long, dark brown, and have short wing covers. They live in damp, decaying material such as leaf litter in forested areas and may be numerous in bark mulch.

They are strongly attracted to lights at night, but are primarily a nuisance. The large swarms that are occurring are probably related to the heavy rainfalls we experienced in the last month in several areas of the state. As moisture decreases, the rove beetles will also become less numerous.

Horntails

Horntails, also called wood wasps, tunnel as larvae in dead trees, causing burrows that are several inches long and about 1/4 inch in diameter. We have received several calls this year about adult horntails tunneling out of plasterboard in recently constructed homes. Most of these reports have been from central Illinois between Bloomington and Effingham, although we received one report from Lake County.

These insects are coming from larvae living in the studs behind the plasterboard. Apparently a shipment of lumber from the northwestern United States or western Canada was the source of these insects. Trees harvested for lumber may contain these larvae. Kiln-drying will kill these insects, but they may survive in air-dried lumber.

Fortunately, the amount of infestation appears to be low, with no more than two insects emerging from any 8-foot stud. If five or more horntails emerge from a single stud, there will probably be enough damage to the stud to justify replacing it. Otherwise, patching the hole in the plasterboard and repainting should solve the problem.

Adult horntails are elongate, cylindrical, wasp-like, brown insects that range from about 1 to 1-1/2 inches long. Females will have a 1/4-inch long, stiff ovipositor that looks like a sting sticking out the posterior end of the body. These insects do not sting.

Millipedes

Very large numbers of these insect relatives are being found throughout Illinois both outdoors and indoors, particularly in areas that recently have received heavy rainfall. Realize that these



Millipedes

animals are usually only a nuisance and do not cause any damage. Once the soil dries and the nighttime humidity decreases, the millipedes will not be as noticeable. For further information, refer to *Home, Yard & Garden Newsletter* no. 5, May 1, 1991.

PLANT DISEASES

Bacterial Spot of Pepper

The most common foliar disease of peppers in Illinois is bacterial spot. As with most bacterial diseases, bacterial spot is most likely to develop during periods of high humidity and semi-frequent rainfall. This is because the bacterium spreads from plant to plant in splashing water, and because a film of water on the leaf surface is necessary for infection to occur. In addition to rainfall, sprinkler irrigation and heavy dew can also lead to the development of bacterial spot.

The disease is able to attack leaves, stems, and fruit. Leaf spots first appear as light to dark green, water-soaked areas. Raised areas may develop on lower leaf surfaces. Spots usually remain small, but can reach almost 1/2 inch in diameter if conditions are favorable. Eventually the centers of the spots die and turn brown. Numerous infections can cause leaves to drop off. On fruit, spots begin as circular dark green areas that become brown and raised with a cracked surface.

Control: Because the disease is easily transmitted in films of water, it is best to avoid working with plants when they are wet. The disease is seedborne, and can be introduced on infected transplants, so plant only high quality seeds or transplants, and inspect transplants for disease symptoms before planting. The pathogen can also overwinter on infected debris for a short time, so good sanitation practices, removing or burying infected plant parts, and crop rotation can also help control the disease. Once bacterial spot is established, applications of copper-based fungicides can help reduce further spread of the disease. For more information read Report on Plant Diseases No. 910, *Bacterial Spot of Pepper and Tomato*.

Gladiolus: Virus Diseases

These diseases are widespread. The symptoms vary depending on the virus and virus strain involved, the gladiolus variety, and environmental conditions. Typically, infected plants are stunted, with mild-to-severe yellowing and green-to-white or pale gray leaves that are spotted, mottled, or striped. Infected plants may bloom early. Flower spikes are often stunted, with crinkled or deformed petals, and are streaked, striped, or flecked with white, yellow, or light green blotches. Diseased corms are often small, and sometimes they are warty, pitted, or deformed. Such corms may not produce shoots. Certain viruses (for example, tobacco ringspot, bean yellow mosaic, or cucumber mosaic) may be spread by the cutting shears used to harvest the flowers or corms.

Control: Infected plants will not recover. Dig up and destroy them when they are first found. Eliminate broadleaf weeds because these weeds commonly harbor one or more viruses. Control aphids and thrips because they can transmit certain viruses. Plant large virus-free corms. Disinfect the shears after cutting suspicious flower spikes. For more information, see Report on Plant Diseases No. 612, *Gladiolus Viruses*.

Chrysanthemums, Asters, Daisies, Marigolds, Petunia, Other Flowers, and Weeds: Aster Yellows

The affected plants are yellowish, stunted, stiff, erect, and bushy. Flowers are deformed, with partially or totally green, leafy petals.

Control: This disease is caused by a mycoplasma, and it is transmitted by leafhoppers. Control measures include destroying all affected plants when they are first seen, eliminating all broadleaf weeds, and buying disease-free plants. Spraying regularly to keep leafhoppers from feeding may be beneficial. Frequent insecticide applications are necessary. For more information, read Report on Plant Diseases No. 903, *Aster Yellows*.

Mosaics, Mottles, Crinkles, Streaks, Infectious Variegation: Many Plants

The most common symptoms are a mild-to-severe yellowing or pattern of light and dark green areas forming a mosaic or mottle. Sometimes yellowish or white ring patterns, line patterns, or both may be seen. Commonly, leaves are curled, distorted, puckered, crinkled, leathery, or even cupped sharply upward or downward. Leaf veins may be lighter than normal (cleared) or may be banded with dark green or yellow areas. Fruit will lack flavor and be stunted or deformed.

Control: Most mosaic viruses are usually transmitted by aphids; a few by beetles or other insects; some by contact; and all by propagating from infected buds, scions, rootstocks, and slips. Once a plant is infected, there is no cure — although symptoms may disappear temporarily in hot weather. Strict insect control, starting with virus-free seed and planting material (certified if possible), keeping down all weeds, and destruction of infected plants are the primary controls.

Raspberries, Blackberries: Virus Diseases

Virus diseases reduce the yield and fruit quality of bramble fruits more than they do that of any other fruit crop. Once infected, brambles remain so for life. The viruses are spread by the feeding of aphids; they are not spread by pruning or other mechanical injuries. Infected plants commonly decline in vigor. The leaves may be yellowish, light to dark green, mottled, blistered or puckered, dwarfed, curled, wrinkled, and cupped downward (mosaics). Plants may be slightly stunted to dwarfed and "bushy," with small, dark green, bunchy, stiff, tightly curled leaves (leaf curl).

Control: Destroy all infected cultivated and wild brambles within 1,000 feet, if possible. Start new plantings with certified, virus-free plants. If growing both black and red raspberries, separate them by 150 feet or more to reduce virus cross-infection. Maintain strict aphid control at all times. Follow recommendations of the University of Illinois Extension entomologists. For more information, read Report on Plant Diseases No. 710, *Virus Diseases of Brambles*.

Many Woody Plants: Crown Gall

This common disease attacks hundreds of plants in at least 142 genera. It is most important on young, rapidly growing plants, including most fruit trees, grapes, brambles, euonymus, poplar, pyracantha, rose, walnut, and willow. Affected plants often grow poorly, become stunted, weak, and more susceptible to winter injury, and thus have reduced flowering and yields. The crown gall bacterium can enter and infect ONLY through wounds less than 24 hours old.

PLANT CLINIC HIGHLIGHTS

June 14 to June 21, 1991

PLANT	DIAGNOSIS	COUNTY
Apple	Fire blight	Woodford
Ash	Anthracnose leaf spot Ash plant bug injury	JoDaviss
Chrysanthemum	Pythium root rot	Cook
Geraniums	Bacterial blight, Botrytis	Lake
Juniper	Phomopsis twig blight Spider mite, Heat stress	Livingston Champaign
Maple McLean	Cottony maple scale	Mason,
Oak	Leaf blister	Peoria Champaign
	Anthracnose	Iroquois
	Herbicide injury	Peoria Champaign McDonough Putnam
Pear	Fire blight	Woodford
Pine	Naemacyclus needlecast	Lake
	Brown spot	Livingston
Plum	Bacterial leaf spot	Massac
Poinsettia	Pythium root rot	Cook
Spruce	Spider mites	Champaign
Turf	Helminthosporium melting-out	Tazewell
		Champaign Iroquois
	Dollar spot	Winnebago
	Summer patch	Champaign Madison

The disease appears as overgrowths on the stem (trunk or cane), crown, and roots, usually near the soil line or a graft and bud union. On poplar and willow, the galls may be several feet above the ground. The gall or tumor is white or flesh colored at first and soft or spongy. The enlarging gall later darkens and becomes rough and corky or woody in texture.

Control: Carefully dig up and burn or place in the trash can all severely infected plants. Remove as many roots as feasible. Whenever possible, do not replant the same type of plant in the same site for at least 5 years. Plant only certified, disease-free nursery stock that has a smooth graft union and that is free of suspicious overgrowths on the roots and stems. Protect susceptible plants against winter injury, and avoid unnecessary wounds when transplanting, cultivating, or mowing. Dip pruning and grafting or budding tools in fresh liquid household bleach (one part bleach to four parts of clean water) or rubbing alcohol. Pasteurize soil in greenhouses by treating with steam (180°F for at least 30 minutes at the coolest spot) or a soil fumigant such as methyl bromide, Vorlex, or chloropicrin. The newest control is biological in nature and involves dipping or spraying nursery seedlings, cuttings, or bare-root rootstock plants in a suspension of non-pathogenic (or antagonistic) bacterium strain 84 of *Agrobacterium radiobacter*, registered by the EPA and sold as Galltrol-A (AgBioChem, Inc., 3 Fleetwood Court, Orlinda, California 94563) or Norbac 84-C (Nortel Laboratories, Inc., P.O. Box 856, Corvallis, Oregon 97330). The non-pathogenic bacterium colonizes wounds, such as those made when taking cuttings or pruning roots, and thus prevents the crown gall organism from infecting the wounds. For more information, read Report on Plant Diseases No. 1006, *Crown Gall*.

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HOME, YARD & GARDEN PEST

Newsletter

No. 14 • July 3, 1991

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Defoliating Insects

By the time July rolls around each year, many species of defoliating insects can be found on trees and shrubs. Spring cankerworms followed eastern tent caterpillars as common pests on some trees in April. Then fall webworms could be found in tents at ends of branches on sweet gum and other trees. Green striped mapeworms have completed their growth and are leaving defoliated maples to pupate and emerge as adult moths to lay eggs for another generation in August. Sawflies, often called slugs, have been observed on pear, apple, purple leaf plum, birch, pin oak, and other trees. These sawflies skeletonize the leaf surface, removing the green tissue and leaving the netting of veins. Japanese beetles have been observed in many areas of the state feeding on linden trees, rose bushes, and other plants. These metallic green beetles with copper-colored wing covers have emerged from sod, where the larvae or grubs fed on grass roots. Bagworms in the central part of the state are half grown and are actively feeding and enlarging their spindle-shaped bags.

We continually receive questions as to the threshold or severity of damage needed to justify applied control. The problem is that the injury level threshold is aesthetic and not necessarily economic. Elm leaf beetle defoliation of a Siberian elm or green striped mapeworm defoliation of a silver maple will not kill the tree. Defoliated trees are unsightly, and if small, can be stunted. Quite often, the trees are severely defoliated before the infestation is observed. There is no reason to apply a spray to a defoliated tree, especially if the damaging insect has migrated from the tree. It is questionable whether spraying on any vigorously growing shade tree is justified to control defoliating caterpillars or beetles. Repeated annual defoliation can severely stress and even kill a tree, but a single defoliation will not injure or kill the tree.

Sawflies on pines, which sometimes occurs in May, can severely damage branches or even entire trees. Detection and early treatment is needed to prevent this damage. Bagworms can defoliate arborvitae and junipers, causing serious damage or even death of the evergreen shrubs. These examples of species being able to cause severe injury or death are the exception rather than the rule for defoliators.

In summary, whether to treat for a defoliating insect problem depends on the insect species, the tree or shrub being damaged, its condition, whether it is an evergreen, whether the damage is repeated more than one year, and if the damaging insect is still feeding and not fully grown.

Squash Bugs

Adult squash bugs have completed their migration into plantings of cucumbers, melons, pumpkins, and squash. The adults of the squash bug are dingy, brownish black insects that are about 5/8 inch long and have a very disagreeable odor. When newly hatched, they have reddish heads and legs and green bodies. Later they become darker: the heads and legs turn black, and the bodies turn light-to-dark gray. As they mature, they become brownish black.

Squash and pumpkin, particularly the winter varieties of squash such as the Hubbard, are the vegetable crops most severely injured by the squash bug, which feeds by inserting its needle-like mouthparts into the plant tissue and withdrawing the sap. The young bugs are usually found in clusters. During the early part of the growing season, vine crops are killed easily by these bugs. Older plants often have one or more runners damaged. The leaves on damaged runners wilt and later die, becoming crisp and dark brown. Squash bugs overwinter as adults under rubbish, in piles of boards, in packing crates, and in buildings. In late spring they fly out to fields of squash or pumpkin, where they feed and lay eggs. The reddish brown eggs are about 1/6 inch long and are usually deposited in neat clusters on leaves or stems. The young bugs remain in clusters after hatching. There is only one generation each year.

Control: No effective chemical control is available for use by home gardeners. Look for the adults and pick them off the plants. Watch for eggs on the foliage and rub them off the leaves.

Cucumber Beetles

Cucumber beetles were numerous in May at planting or transplanting time. These black-and-yellow striped beetles were attracted to the new plants from overwintering sites. Now some gardeners are observing a new generation. After cucumber and melon plants are transplanted or emerge from the soil, they should be protected from feeding by these beetles. The feeding activity usually does not kill the plant; but as the beetles feed, they transmit a disease called bacterial wilt, which will kill melons and cucumber plants. There are no resistant varieties. Symptoms of bacterial wilt appear on plants 3 to 4 weeks after becoming infested. Such plants become completely or partially wilted and die.

Control: It is essential to control beetles on new plants, on plants in bloom, or plants with fruit setting. Spray or dust with Sevin or rotenone late in the day if beetles are present. Apply some of the insecticide to the soil around the base of the plant, because the beetles crawl into the soil to lay eggs on the stem of the plant. If beetles were controlled at planting time in May or early June, little if any beetle activity should occur during the rest of the season.



Striped
cucumber beetle

Elm Leaf Beetle

Elm tree leaves are turning brown across the state from the feeding damage of elm leaf beetle larvae. Elm leaf beetle larvae are about 1/4 inch long when fully grown and are yellowish with black margins. Younger larvae have more black on them, as well as being smaller. These larvae feed on the underside of the leaves, eating the lower epidermis and mesophyll tissue and leaving the upper epidermis intact. This upper epidermis soon dries out and dies, turning brown. Siberian elm is very heavily attacked, and American elm sustains heavy damage; Chinese elm is fed upon much less than the other two species.

There are two generations per year in northern Illinois, and three generations in southern Illinois. Eggs are laid on the leaves for the first generation by overwintering adult beetles. This first generation is complete by this time in southern Illinois, with mature larvae being present in northern Illinois. When the larvae finish feeding, they migrate down the trunk of the tree to pupate in bark crevices of the trunk and in soil at the base of the tree.

The pupae are bright yellow in color and about 1/4 quarter inch long. The adults that emerge from these pupae are yellow with black margins on the wing covers, as well as a thin black stripe down the middle of the back where the wing covers meet. These 1/4-inch long beetles fly up to eat holes in the leaves. They lay yellow egg clusters that are about 1/2 inch long by 1/8 inch wide on the leaves. These eggs hatch into black larvae that develop yellow coloring as they get older.

Elm leaf beetle larvae are controlled with sprays of Sevin (carbaryl) or M-One (*Bacillus thuringiensis* 'tenebrionis' or 'san diego'). *B.t. tenebrionis* and *san diego* are strains of bacteria that are effective against some kinds of beetle larvae. Generally, M-One is more effective against younger than older larvae.

Imported Willow Leaf Beetle

Another beetle that has a life cycle similar to elm leaf beetle is the imported willow leaf beetle. This beetle is a 3/16-inch long bluish black beetle that overwinters as an adult and feeds on willows. It is prevalent only in northern Illinois. At this time of year, yellow egg masses are laid on willow leaves that hatch into black larvae. As with elm leaf beetle larvae, these larvae also feed on the lower epidermis and mesophyll, leaving the upper epidermis intact that dries and turns brown.

Young larvae are present at this time in northern Illinois and can be controlled with sprays of Sevin or M-One. Although this insect does considerable damage to the foliage, the damage is not very obvious, probably due to the many small branches of the tree. Thus, control may not be necessary.

Green June Beetles

Green June beetles are 1-inch long, robust, metallic green beetles with yellowish wing cover margins. They live as larvae in decaying straw, grass clippings, and other organic debris. These beetles have increased in the past year; since yard waste can no longer be disposed of in landfills, the larvae are living in piles of grass clippings in residential areas. They fly with a loud buzzing sound during the sunny hours of the day, commonly flying into people. No controls will effectively reduce the overall numbers of these adult beetles.

Chiggers

Chiggers appear to be very numerous this summer. The chigger is a mite that feeds on people and other vertebrates during the larval stage and is a predator on other mites during the

nymphal and adult stages. Larval chiggers are reddish and very tiny, barely visible to the unaided eye. They are present in vegetation, being more numerous in unmowed areas. They are attracted to their host by the production of carbon dioxide, and the chiggers grab on as a host goes by.

On people, chiggers tend to crawl to an area where clothing or folds of skin restrict their further movement before they bite. Thus most bites occur at the edges of socks and underwear and at the waist, knee, and armpit. The mite does not burrow into the skin, but inserts its mouthparts into the skin, injecting saliva to digest skin and other cells. It then sucks up the partially digested material.

Chiggers normally feed for 2 to 4 days before dropping off to molt to the nymphal stage. Bites swell and itch due to the saliva that is injected into the bite. This itching normally does not start until several hours to a day after feeding begins, making it difficult to know where and when the biting occurred. Chiggers are not known to carry any diseases, but infection can result from scratching the bites.

A bath with plenty of soap within an hour or so after exposure will kill the chiggers and will usually prevent itching bites. Insect repellents containing DEET, such as Off and Cutter's, are effective in reducing attack by chiggers.

PLANT DISEASES

Trees and Shrubs: Canker and Dieback Diseases

Hot dry weather is accentuating canker and dieback diseases where moisture and/or shade and other stresses have been increasing. Look for wilting and dry, dead leaves on twigs and branches. Many branches have died back to wounds or definitely marked dead areas (cankers), usually round or oval in shape, that have been enlarging for months or even several years to girdle twigs, branches, and scaffold limbs. Most cankers are caused by fungi that have entered because of some type of stress or wound (summer or winter sunscald, transplant shock, excess or deficiency of water, sudden hard freezes in mid- to late fall or spring, frost cracks, nutritional imbalance, soil compaction, changes in the soil grade, extensive defoliation, a variety of mechanical injuries, pruning wounds, root rot, insect borers, nematodes, dogs, rodents, improper digging, storing, or planting).

Control: Grow only species and varieties or cultivars well adapted to the area. The nursery

stock should be vigorous and disease-free. Plant at the proper depth in a large hole, well spaced apart, in fertile, well-drained soil of the proper pH. Carefully prune out all affected parts, cutting several inches behind any sign of disease. Remove and destroy all prunings. Avoid leaving branch stubs. Prune in dry weather and sterilize tools between cuts by swabbing with 70 percent rubbing alcohol or freshly prepared liquid household bleach (1 part bleach to 9 parts of clean water). For much more information, 11 figures, and an extensive listing of major canker and dieback producing fungi and woody plants that each infects, read Report on Plant Diseases No. 636, *Canker and Dieback Diseases of Woody Plants*.

Hackberry: Witches' Broom

This common disfiguring disease can be found on practically all older trees. It is caused by a mite and a powdery mildew fungus acting together. Look for clusters of thin, short, stubby twigs that arise close together on a branch. Many of the twigs in a "broom" die back during the dormant season. A single hackberry tree may have a few to a hundred or more brooms without any obvious lack of vigor.

Control: Where feasible, purchase broom-free trees of resistant species such as *Celtis sinensis* and *C. jessoensis*. Avoid planting the common hackberry (*C. occidentalis*) if the presence of witches' broom is aesthetically unpleasant. Pruning out and destroying the brooms is of limited value. For more information, read Report on Plant Diseases No. 662, *Witches' Broom of Hackberry*.

Stone Fruits: Bacterial Spot

This disease has been common on peach, nectarine, plum, prune, apricot, and cherry for the past month or more. The organism attacks leaves, twigs, and fruit. Early and frequent defoliation weakens the tree, predisposing it to winter injury and later attack by canker fungi and insect borers. The disease is favored by warm, rainy weather in spring and summer. Symptoms at present include angular to irregular, deep purple to mostly brown or black spots in the leaves. The centers often dry and tear away, leaving ragged "shot-holes." Severely affected leaves appear scorched or blighted and ragged before they turn yellow and drop early. Fruit spots on peaches are round, olive brown to black, and slightly sunken, often with water-soaked margins. The lesions slowly enlarge and may cover large irregular areas that develop skin cracking, checking, and deep pitting. Plum fruit develop large, round, sunken, greasy spots that darken to black lesions and may crack

open. On other plum cultivars the lesions are small and pitted. Girdling cankers form on the twigs that may die back.

Control: Plant trees where air and soil drainage are good. Destroy nearby wild and neglected stone fruits. Purchase only vigorous, disease-free trees from a reputable nursery. Select peach cultivars with resistance to bacterial spot. Prune trees annually to allow for good air circulation and to maintain tree vigor. Fertilize based on a soil test. Trees should have sufficient but *not* excessive nitrogen. Commercial orchardists can apply Mycoshield. Spraying for bacterial spot in the home orchard is not practical. Growers should follow the spray schedules outlined in Extension Circular 1145, *Home Fruit Pest Control* (available from University of Illinois, OACE, Agricultural Publications, 69 Mumford Hall, Urbana, IL 61801). For additional information, read Report on Plant Diseases No. 810, *Bacterial Spot of Stone Fruits*.

Lawn Diseases

Several lawn diseases are common now: Melting-out, dollar spot, summer patch, brown patch, and Pythium blight. These diseases and their control have been discussed in *Home, Yard & Garden Pest Newsletters* No. 4, 5, 8, and 11.

Dogwood: Spot Anthracnose

This disease is widespread when springs are wet. Infected buds do not open, or they produce stunted, malformed flowers with many small, round to elongated spots with light tan centers and dark purple to brown borders. Leaf spots

are small with yellow-gray centers and purple margins. The spots may drop out, leaving ragged "shot-holes." Similar spots occur on the petioles, stems, and fruit clusters.

Control: Collect and destroy fallen leaves in autumn. Keep trees pruned to increase air movement. Fertilize and water to maintain tree vigor. Effective fungicides include Daconil, Benlate, maneb, mancozeb, captan, Duosan, and Zyban. Apply just before the flower bracts are fully expanded. In wet years (such as 1991), repeat two or three more times, 10 to 14 days apart. Fungicide sprays applied now will do no good.

Disease Control

To control plant diseases, it is necessary to apply cultural, mechanical, genetic, chemical, and other measures *before* symptoms appear. Almost all the diseases being sent to the Plant Clinic have been covered in past newsletters. There is little that can be done now to control diseases. We need to think ahead to next year and make corrective plans. Keeping a diary of plant problems, including when they appear and control measure taken, will greatly help in controlling diseases in the future.

Reports on Plant Diseases

Copies of any Report on Plant Diseases mentioned in this or other newsletters are 50 cents each; five copies or more are 25 cents each. Checks should be made payable to the University of Illinois and mailed to Extension Plant Pathology, N-533 Turner Hall, 1102 South Goodwin Ave., Urbana, IL 61801. If you would like to have a copy of the complete listing of all 230 Reports on Plant Diseases, send a postcard or note to the same address. There is no charge for the list.

PLANT CLINIC HIGHLIGHTS

June 21 to 27, 1991

PLANT	DIAGNOSIS	COUNTY
Ash	Thrips	Tazewell
Exacum	Rhizoctonia	Montgomery
Geranium	Bacterial blight and Blackleg	Sangamon
Juniper	Phomopsis tip blight	Champaign
Kalanchoe	Fusarium stem rot	Montgomery
Maple	Antracnose	Knox, DeKalb
	Verticillium wilt	Fulton
	Eriophyid mites,	Mason
	Maple bladder gall	Mason
Mums	Pythium root rot	Lake
Oak	Iron chlorosis	Champaign
	Oak wilt	McHenry
Pine	Sphaeropsis tip blight	Livingston
	Cytospora canker	Ford
Rose	Thrips	Cook

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HOME, YARD & GARDEN PEST

Newsletter

No. 15 • July 10, 1991

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Bagworms

This insect is nearing the end of its feeding period in central Illinois. There have been many reports of these dark worms emerging from



their spindle-shaped bags to feed on junipers, arborvitae, and other shrubs and trees.

Control of half-grown or larger bagworms by spraying is not always successful. The biological agent *Bacillus thuringiensis* (Dipel, Bactur, or Thuricide) is the most effective insecticide for large bagworms. Other

insecticides suggested are Orthene, Dylox, and Dursban.

Zimmerman Pine Moth

Pines, particularly Scotch pine, are attacked by a caterpillar borer, Zimmerman pine moth. Trees are attacked where the branches join the trunk. Here sap oozes out and hardens into approximately 1-inch long globs or cone-shaped masses. Moths emerge from these damaged areas and lay eggs that hatch during August into tiny caterpillars. These caterpillars crawl around on the bark for several weeks before they crawl under a loose piece of bark to spend the winter. In the spring, usually in April, they emerge from their overwintering sites and crawl on the bark looking for a place to bore into the tree for the summer.

Control: While the caterpillars are boring inside the tree or are hidden under the bark, they cannot be controlled. While they are wan-

dering on the bark in August and in April, they are susceptible to insecticides. Chlorpyrifos (Dursban) or dimethoate (Cygon) sprayed on the trunk during these times should be effective.

Fall Webworm

The second generation of fall webworm usually appears during the last 10 days of July. This year, with our accelerated seasons, we anticipate that the earliest hatching should occur during the second week of July. The southern half of the state has two generations per year, while northern Illinois has one generation. Usually, the second generation emerges at the same time as the northern Illinois fall webworms.

Hatching usually occurs in northern Illinois over about a 2-week period, so trees that are treated early may have late-hatching egg clusters produce additional webs at a later date. This problem is much worse in the southern half of the state, where two generations occur. In this area, egg hatch occurs over a span of 4 or more weeks, resulting in some caterpillars dropping to the ground to pupate before some late-laid eggs hatch. Thus second generation fall webworm feeding occurs over a 6-to-8-week period.

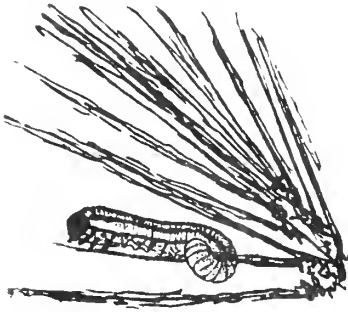
In most years, we suggest that controlling fall webworm is not all that necessary, since damage occurs late enough that trees do not releaf defoliated areas. Also, since the leaves have already accomplished almost all of the photosynthesis and produced most of the food that they will for the entire growing season, the loss of these leaves in late summer is not very important to the tree's health. This year, however, the early spring and continuing early summer has probably resulted in this insect's damage being earlier than usual; therefore, trees are likely to refoilate in response to fall webworm damage and use up food reserves in the process. Thus, control may be needed this summer to preserve tree health, rather than just for aesthetic reasons.

Control fall webworm by pruning out the damage and associated caterpillars while the webs are still small. Since the caterpillars remain in the web throughout the day and night, pruning can be done at any time of day. Sprays of *Bacillus thuringiensis kurstaki* (Dipel, Thuricide, Caterpillar Attack), acephate (Orthene), carbaryl (Sevin), malathion, or chlorpyrifos (Dursban) should be effective if sprayed with

enough pressure to break up the webs so that the foliage inside the webs gets treated.

White Pine Sawfly

Although European pine sawfly is the most common sawfly on pines in Illinois and is a spring occurring insect, many species of sawfly attack conifers, particularly in the northern United States and Canada. A variety of these sawflies will occasionally be found in Illinois, particularly in the northern area of the state. Since European pine sawfly does not feed on the emerging candle, the insect is an aesthetic threat to pines; but it will not kill the tree since



European pine sawfly larva.

it does not remove all of the foliage. Most other sawfly species, particularly those that occur later in the season, will feed on all of the foliage, causing both aesthetic damage and occasionally the death of branches or entire trees due to complete defoliation.

The white pine sawfly fits this latter description. Although we have had only one report of it last week from northern Illinois, this points out the need to continue scouting trees and shrubs throughout the summer, even when common insect problems are not likely to occur.

White pine sawfly larvae are 1-inch long yellowish insects with black heads and four rows of black spots running from front to back. They feed in groups, completely defoliating one branch before moving on to the next. They can be controlled with sprays of carbaryl (Sevin), acephate (Orthene), and chlorpyrifos (Dursban).

Lawn Grubs

Here are answers to some questions about lawn grubs in 1991.

Will damage appear earlier than normal because of unusually high temperatures in May and June? Yes. As with many other insects, the life cycle of the annual white grub accelerated during May and June to the point where it is 14 to 16 days ahead of normal seasons. First damage in southern Illinois could appear by July 15, by the first week of August in the central section, and by mid-August in northern areas of the state.

Was egg laying by the tan adult beetles hampered by the drying out of soil surface of many turfgrass areas? Grub adults prefer to lay eggs in moist soil rather than dry soil and dormant

turf. If there is a choice, moist soil conditions attract more egg laying.

Will hot and dry weather conditions have any effect on egg hatch and grub survival? Soil temperatures above 90°F and soil moisture of 12 percent or less can reduce egg hatch. Either high temperatures or low soil moisture can cause egg desiccation.

What is the threshold for damage? Ten to twelve grubs or more per square foot can chew off enough grass roots to cause wilt and death of turf areas. Watering and fertilizing grub-infested turf will regenerate grass root growth, but grubs will continue to feed beneath sod until early November. The numbers will not decrease much during the fall months, nor will they increase after the first symptoms of grub damage appear. If the sod has its roots pruned, the grub numbers will stay the same unless treated. The only change will be an increase in the size of grubs.

Common-Sense Pest Control

A recently published book that may be of particular interest to those who work with the public or who are interested in increasing the use of nonchemical controls is *Common-Sense Pest Control: Least-toxic Solutions for Your Home, Garden, Pets and Community* by William Olkowski, Sheila Daar, and Helga Olkowski of the Bio-Integral Resource Center. Most of the text covers household insects; but indoor plant, lawn, and ornamentals insects are also addressed. This book, a compilation of their IPM methods, is available through Taunton Press, Newtown, CT. It contains 715 pages and costs \$39.95.

The authors have worked with commercial pest control operators and landscape maintenance people, communities, and residents for years throughout the United States. Their attitude toward pest control is that of Integrated Pest Management—that is, using cultural and biological pest controls first, then naturally-occurring chemicals or least-toxic synthetic chemicals if needed. Basic to their IPM program is scouting to determine whether a treatable problem exists. Their methods are based on scientific evidence and are well thought out.

PLANT DISEASES

Rose: Rosette

Rose rosette disease, also known as witches' broom, is a fatal disease of multiflora rose and occasionally infects numerous species, hybrids,

and cultivars of ornamental and garden roses grown outdoors and in greenhouses. Rose rosette disease, cause presently unknown, is transmitted from plant to plant by a minute eriophyid mite. The causal agent is also transmitted through grafting, but apparently not through multiflora rose seed. Multiflora rose plants die an average of 22 months after becoming infected. New infections usually appear in July or August as a brighter red to dark red mosaic pattern on the new leaves. Infected plants soon begin to produce numerous, lateral, bright red elongated shoots that grow in different directions. A proliferation of these shoots produces a witches' broom effect. In late May or June, other symptoms appear, including rapid stem elongation and bunched clusters of wrinkled, distorted, and dwarfed reddish green leaves. Infected canes have an abnormally high number of thorns. Under drought conditions, some diseased shoot tips produce less foliage and fewer yellowish leaf tips in addition to being a bright pink.

Symptoms on garden roses are usually less severe than on multiflora rose, but some cultivars are killed by the disease; others "recover" or die when infected by another disease. Rapid stem elongation and greatly thickened canes almost "furry" with thorns and slow to mature are other symptoms. Many short, deformed shoots, often with red blotches and streaks, an abnormal number of buds, and tiny misshapen leaves are common. Flower parts are distorted, abortive, leaflike, and sterile on infected stems. Infected plants commonly die within a year or two of becoming infected as symptoms affect all canes.

Control: At present there is no practical control except to dig up and destroy (burn or bury) infected plants when first noticed. Destroy multiflora rose hedges whenever possible. (Many such hedges have already died in Illinois in the past several years.) Control of the mite vector is not practical at present.

Many Flowers, Vegetables and Fruits: Bacterial Soft Rot

Roots, stems, fleshy tubers, rhizomes, bulbs, buds, and fruits rapidly become mushy, slimy, or "cheesy" with a putrid odor. The foliage on affected plants wilts and withers and may collapse when the lower stem or underground parts rot. Infections occur through a variety of wounds (for example, insect or nematode injuries, other diseases, hail injury, and cultivator or harvest wounds). Rot is most destructive in heavy, poorly drained soils in warm-to-hot, moist weather.

Control: Avoid planting in poorly drained,

unfertilized soil. Control insects that feed underground, on foliage, or inside stems. Follow suggestions of University of Illinois Extension Entomologists. Carefully dig up and burn infected plants. Avoid wounding plants when cultivating, digging, handling at or after harvest, etc. Store only dry, sound, blemish-free vegetables and fruits in a clean, dry, well-ventilated room at the recommended temperature and humidity. For calla and iris, cut out rotted portions in bulbs, corms, or rhizomes and dry thoroughly for a day or two before storage or replanting. For more information, read Report on Plant Diseases No. 943, *Bacterial Soft Rot of Vegetables, Fruits and Ornamentals*.

All Woody Plants: Wood Rots or Decay

More than 1,000 wound-infecting fungi can produce decay in woody parts of trees and shrubs. Decay usually progresses slowly over a period of years and may not noticeably shorten a plant's life—except that such trees are structurally weak and more susceptible to storm damage. Most decay is confined to the older,



Ganoderma wood rot of oak

central heartwood of roots, trunks, and branches. Affected trees and shrubs may show a gradual decline in vigor, which is followed by a dieback of twigs and then branches. Decayed wood may be water-soaked, stringy, spongy, crumbly, or flaky and discolored (usually brown, white, yellow, or some shade of red). Fungus fruiting structures of the bracket (shell), hoof, or mushroom type appear at the base or on the trunk, or branches, usually after decay is well advanced.

Control: Plant only species and cultivars of trees and shrubs that are vigorous, disease-free, and well adapted to the area. Keep plants vigorous through proper planting, wrapping the trunks of young trees, fertilization, watering thoroughly during extended dry periods, and

periodic pruning to remove all dead, dying, interfering, and broken branches. Do not leave branch stubs or allow trees to be topped. A number of other controls, pictures of wood rots and their causal fungi, and disease cycles are given in Report on Plant Diseases No. 642, *Wood Rots and Decays*.

Fruit Spots and Rots: Vegetables and Fruits

Enlarging spots of various colors develop on growing fruits, usually close to harvest. Entire fruits may later rot and shrivel. Decay commonly starts at the blossom or stem-end or the underside of fruits resting on damp soil.

Control: Keep ripening fruit off soil by dry mulches and staking or caging plants. Follow suggested fungicide spray programs for vegetables (see Report on Plant Diseases No. 900) and fruits (given in University of Illinois Extension Circular 1145). Captan plus Benlate is best for fruits and can be used right up to harvest. The best fungicides to use on vegetables include Bravo, maneb, mancozeb, and Dyrene; carefully follow directions on the container label. The same fruit and vegetable fungicides also control foliage diseases. Control insects that transmit fungi and provide entrance wounds. Follow suggestions of University of Illinois Extension Entomologists. Promptly collect and burn all spotted and rotted fruits. Guard against wounding fruits and vegetables from harvest until the product is consumed. Store only blemish-free fruits and vegetables at the recommended storage temperature and humidity.

Most Ornamentals and Vegetables: Flower Blights
A number of fungi cause flowers to be spotted, then wither and decay in warm, humid-to-wet weather. The rotting flowers are often covered with a dense mold during and following damp weather.

Most Ornamentals and Vegetables: Flower Blights

Control: Keep flowers protected in moist weather by light, misty sprays containing a mixture of benomyl (Benlate) and captan, chlorothalonil (Bravo and Daconil), maneb, or mancozeb. On many flowers you can use Ormalin, Chipco 26019, Duosan, Zyban, or triforine (Funginex). Check container labels for specific information and crop registrations. Where practical, carefully remove, place in a sack, and burn all spotted and decayed or fading flowers before the petals fall. AVOID overcrowding, overfertilizing (especially with nitrogen), overhead sprinkling, water-holding mulches, and shady or low spots where air circulation is poor. Keep down weeds.

PLANT CLINIC HIGHLIGHTS


June 28 to July 5, 1991

PLANT	DIAGNOSIS	COUNTY
Apple	Apple scab, Quince rust	Livingston
Cabbage	Black rot	Fulton
Cucumber	Bacterial wilt	Fulton
Elm	Leaf blister	Champaign
Hawthorn	Rust	Jefferson
Hickory	Anthrachnose leaf spot	Macoupin
Holly	Planthopper feeding	Massac
Kentucky coffee tree	Roundheaded borers	
Maple	Anthrachnose	DeKalb
Maple	Eriophyid mites	Mason
	Bladder gall insect	Mason
Oak	Oak wilt	Kane
	<i>Sphaeropsis</i> canker	St. Clair
	Oak gall scale	Kane
Periwinkle	Macrophoma leaf spot	Peoria
Pine	Pinewood nematode	LaSalle
	Tip blight	Madison
		Champaign
Red Bud	Verticillium wilt	Henderson
Serviceberry	Fabraea leaf blight	Champaign
Spruce	Spider mites	Carroll
Tomato	Verticillium wilt	Winnebago
Turf	"Helmintho- sporium" leaf, crown, root rot; Fusarium root/crown rot; excess thatch; Rhizoctonia brown patch	Will, DuPage Boone, Tazewell, Champaign, Will
Vinca	Fungal stem blight	Champaign
White Oak	Thrips, plant growth regulator injury	Bureau
Willow	Canker	Lake

Control: Keep flowers protected in moist weather by light, misty sprays containing a mixture of benomyl (Benlate) and captan, chlorothalonil (Bravo and Daconil), maneb, or mancozeb. On many flowers you can use Ormalin, Chipco 26019, Duosan, Zyban, or triforine (Funginex). Check container labels for specific information and crop registrations. Where practical, carefully remove, place in a sack, and burn all spotted and decayed or fading flowers before the petals fall. AVOID overcrowding, overfertilizing (especially with nitrogen), overhead sprinkling, water-holding mulches, and shady or low spots where air circulation is poor. Keep down weeds.

Home, Yard & Garden Pest Newsletter is prepared by the following Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey: *Entomology*, Roscoe Randell and Philip Nixon. *Horticulture*, James Schmidt and Tom Voigt. *Plant Pathology*, Nancy Pataky, Malcolm Shurtleff, and Darin Eastburn.

Information for this newsletter is gathered by these people with the help of staff members, county Extension advisers, and others in cooperation with the USDA Animal and Plant Health Inspection service.



Roscoe Randell
Extension Specialist
Entomology



HOME, YARD & GARDEN PEST

July 1991
Newsletter

UNIVERSITY OF ILLINOIS

No. 16 • July 17, 1991

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Annual White Grub Control Suggestions

In 1970, chlordane was the only soil insecticide labeled for grub control in turf, and the grubs were resistant to it. Today, we are fortunate to have more than one effective insecticide. The following ones are suggested with the special considerations.

Diazinon (sold as 5-percent granule or emulsifiable concentrate) is available to homeowners in garden centers and other stores; or it can be applied by lawn care operators. It is not to be applied to golf courses.

Turcam is marketed as a granular or a wettable powder formulation. It is a restricted use insecticide, but can be used on all turf areas.

Trichlorfon (sold as Proxol or Dylox) is available for use on all turf areas. Proxol is marketed only as a soluble powder; Dylox is sold as a soluble powder or as a granular formulation.

Triumph is sold only as an emulsifiable concentrate. It can be used on home lawns. On golf courses, apply only to greens, tees, and aprons.

Oftanol, marketed as a granular or emulsifiable concentrate, is not as effective as it was in the mid-1980s; in fact, it has generally been ineffective in many grub control situations. If it has been effective in past years for you, continue to use it, but do not switch to it as an alternative.

Regardless of which insecticide is used, these steps should be followed:

1. Read the label completely.
2. Apply uniformly.
3. Drench treatment into top inch of soil under sod before spray dries on grass blades.
4. Evaluate effectiveness weekly instead of daily.

Cicada Killer Wasps

Cicada killers, Illinois' largest wasps, can be seen darting back and forth around shrubbery and trees and across lawns. These dark-colored wasps with bright yellow markings may be up to 1-1/2 inches long, although they look much bigger. Cicada killers are solitary wasps that construct burrows in the soil. The wasps rear their young within these underground chambers.

Each wasp provisions its burrow with a cicada—one of those large insects, sometimes incorrectly called locusts, that "sing" from the trees in late summer. The wasp attacks the cicada—stunning, but not killing it. Then, often with some difficulty, it transports the paralyzed cicada back to the burrow. It may carry the cicada in flight, drag it along the ground, or climb a tree or other object and glide back to the burrow with the cicada. Once inside the burrow, the wasp lays an egg or two on the cicada. The eggs hatch into grublike larvae, which then consume the cicada. The larvae eventually develop into adult cicada killer wasps.

Cicada killers are considered beneficial insects because they help control destructive cicadas. When numerous, however, the wasps can become a nuisance and occasionally disrupt the soil in lawns. Most of the cicada killers darting through the air are males and cannot sting. Females usually sting only if grabbed or stepped upon. Control of cicada killer wasps is relatively simple. Treat the burrows at night when the wasps are less active. Use carbaryl (Sevin) 5 percent dust or diazinon 5 percent granules applied to the burrow and its entrance, and then cover with soil.

Pine Weevils

Christmas tree growers commonly have problems with either northern pine weevil or pales weevil. These weevils live as larvae in dead stumps, with the adults usually emerging in mid-August. With the summer being about 2 weeks ahead of schedule, weevils should be emerging soon.

Adult weevils feed on the shoots of older pines and also on seedlings, eating patches of the bark, which kills the shoot or seedling. Large amounts of pitch are usually produced where feeding occurs, and this hardens into a dull to shiny whitish deposit on the twigs.

Damage from pales weevil tends to occur most commonly in Illinois on eastern white pine, whereas northern pine weevil damage is more common on Scots pine.

Control both weevils by drenching dead stumps with chlorpyrifos (Dursban) at about the end of July. If damage occurs on living shoots or seedlings, Dursban sprays on the foliage should reduce adult feeding. If stumps are treated in time, foliage sprays should not be necessary. Similar sprays in mid-April will also help reduce damage next spring.

Prevent damage by removing dead stumps by spring to eliminate breeding sites for the larvae during the summer. Leaving a live branch on the stump will keep the stump alive, and weevils will not breed in it. This allows you to cut Christmas trees selectively in an area one year and remove the rest of the trees over the next several years as they reach marketable size. Once the trees have all been harvested, removing all the stumps and waiting 2 years before replanting in the area will prevent feeding damage to seedlings. Adult weevils may live for over a year.

Interplanting seedlings into Christmas tree plantations with dead stumps creates the most likely situation for damage to occur. Having even-aged stands of trees that are clear-cut harvested and then replanted 2 years later with seedlings represents the ideal situation for avoiding weevil damage.

Yellow-necked Caterpillars

Yellow-necked caterpillars were reported last week by Rick Zipprich, agriculture Extension adviser for Calhoun and Jersey counties. These caterpillars are reddish brown when young, with several whitish stripes. As they get older, they turn black, keep the whitish stripes, and have a yellowish to orangish area behind the head that gives them their name. When fully grown, they are about 2 inches long. Those reported last week were already black and quite large.

They are most commonly found on oak, pecan, hickory, and walnut. They feed in groups of about 100, eating the leaves of their host trees. They do not live in a silk tent, but migrate down to the tree trunk to molt. Although each group may strip the leaves from several tree branches, this damage usually occurs late enough in the summer that the tree is not severely harmed. Due to the advanced development of pests this summer because of the warmer weather, damage is occurring early enough this year that damaged trees are likely to releaf defoliated areas, which will weaken them. Also because of the earlier appearance of this pest this summer, another generation of

caterpillars may be produced before frost, causing additional damage over a normal year. For these reasons, control is more justified this year than in most years.

Control: *Bacillus thuringiensis kurstaki* (Dipel, Thuricide, Caterpillar Attack), malathion, chlorpyrifos (Dursban), or acephate (Orthene) should provide effective control.

Walnut Caterpillars

This caterpillar is closely related to the yellow-necked caterpillar and usually feeds on pecan, hickory, and walnut. Young walnut caterpillars are also reddish brown, but without whitish stripes. Older caterpillars are black with long white hairs and without a yellowish or orangish neck. Decisions on control and control options are the same as for yellow-necked caterpillar.

Spider Webs on Yews

Spider webs that occur as flat sheets of silk on yews and other plants are caused by funnel web spiders. They get that name from the funnel-shaped retreat that the spider sits in at the edge of the web. If you look closely, you will see a series of silk strands that are spun crosswise above the sheet web. These cross strands serve to knock down flying insects onto the sheet web so that the spider can run out and catch them. The spider will drag the prey back into the funnel to feed on it.

These webs occur commonly in mid- to late summer and do not represent an insect pest problem. Spiders are generally considered to be beneficial because they will catch some harmful insects, although most of the insects that they catch are probably neither harmful nor beneficial to us. These spiders and their prey are just part of the natural ecology.

The webs can be removed by brushing them off with a broom or washing them off with a hose, but the spiders will probably rebuild their webs within several days.

Black vine weevils are the only insects likely to be present on yews at this time of year. These adult weevils feed at night on the foliage, eating notches in the needles; heavy feeding produces badly frayed leaf stubs.

Control: Applications of acephate (Orthene) can provide some control if damage is severe. Light damage probably does not warrant any control.

Imported Longhorned Weevils

Imported longhorned weevils are hard-shelled, grayish to brownish beetles with black spots. They are about 3/16 inch long and have a broad muzzle at the front of the head. As

larvae, they feed on a wide variety of ornamental plants and emerge as adults at this time of year. They have a tendency to come into the house where they usually do not feed on anything but are only a nuisance. We have been receiving reports, particularly from northern Illinois, about these beetles entering homes and clumping on the outside of buildings. Remove beetles indoors by hand or vacuuming; insecticides are usually not effective. Control is usually not needed outdoors.

PLANT DISEASES

Diagnosing Nematode Problems

In every acre of soil in the United States, tiny wormlike animals called plant-parasitic nematodes feed upon roots and sometimes above-ground plant parts of all crop plants, including those grown in the home garden and yard. Most nematodes average about 1/50 to 1/25 inch long, most are transparent, and most are not visible without the aid of a microscope. Consequently, they usually go unnoticed, and the damage they cause is attributed to other factors.

A plant responds to nematode damage as it would to any root disorder. Aboveground symptoms appear as stunting of plants in patches that are usually elliptical to oval in outline. Wilting and nutrient deficiency symptoms appear as one of the telltale signs of nematode damage. Other factors may produce the same symptoms, however; and nematode damage is often incorrectly diagnosed as a nutrient deficiency, drought, or insect injury. Belowground, some nematodes cause a stunted, reduced root system. Others stimulate formation of branch roots giving the root system a bearded appearance. Still others produce galls and dark-colored lesions. Other agents, however, can cause the same symptoms.

To diagnose nematode infestations correctly, it is necessary to see and identify them in association with injured plants. Consequently, nematodes must be recovered from soil or plant roots and, because of their small size, be identified under a microscope. Soil samples can be collected at any time of year, as long as the sampling tool can be inserted in the ground. Tools that can be used include a soil sampling tube, trowel, or narrow-blade shovel.

For vegetable crops, collect soil and roots at a distance of 2 inches from the plant base to a depth of 8 inches. Collect subsamples from spots around 10 to 20 plants showing moderate symptoms or from the margins of a severely

damaged area. For fruit crops and ornamentals, collect soil and roots within the circumference of the dripline to a depth of 12 to 15 inches. Repeat this process 3 or 4 times around the plant. Include feeder roots along with the soil sample. From commercial turf and home lawns, collect soil and root samples from margins of the affected area where the grass still appears normal. Collect 10 to 20 cores in a systematic manner to a depth of 4 to 6 inches.

Regardless of the crop sampled, place a 1-quart soil sample in a sturdy plastic bag. Strong freezer bags are excellent. Fasten the open end of the bag securely. Next, complete the "Nematode Soil Sample Form" (available at your county Extension office) and submit it with the packaged sample. Do not expose samples to high temperatures that exceed 90°F. If the sample must be held for a period of time, store it in a refrigerator. Address the package(s) to: Plant Clinic, 1401 West St. Mary's Road, Urbana, IL 61801. The cost of a complete nematode analysis is \$20.00 per sample. For more information on collecting soil samples for nematode analysis, refer to Report on Plant Diseases No. 1100, *Collecting and Submitting Soil Samples for Nematode Analysis*. Other excellent Extension publications on plant-parasitic nematodes include Report on Plant Diseases No. 1101, *Root-knot Nematodes*; No. 1102, *Foliar Nematode Diseases of Ornamentals*; No. 1103, *Lesion Nematodes*; No. 1104, *Pine Wilt Disease*; No. 1106, *The Ectoparasitic Nematodes of Illinois*; and No. 1108, *Nematode Parasites of Turfgrass*.

Control: Several methods of effectively controlling plant-parasitic nematodes are available. In general, these involve the use of resistant varieties, cultural practices such as crop rotations, soil disinfection through the use of heat, and chemicals. The Reports on Plant Diseases listed above contain various control approaches for specific nematode problems. In practice, a combination of several of these is usually employed for controlling nematode diseases of plants.

All Low-lying Vegetation: Slime Molds

Slime molds suddenly appear after heavy rains or watering in warm, muggy weather. These primitive organisms flow over low-lying objects (mulches, even sidewalks and driveways) or vegetation (for example, turfgrasses, strawberries, bedded flowers, ground covers, weeds, and bases of woody plants). The organisms are not parasitic; they feed on decaying organic matter, fungi, and bacteria in the soil and the turfgrass thatch layer. During warm, moist weather the slimy, amoebalike stage flows over low-lying

objects and appears as watery-white, gray, cream to light yellow, violet, blue, green, or purple-brown greasy masses as large as 1 to 2 feet in diameter. The amoebalike stage soon turns into purplish gray, blue-gray, dirty yellow, white, purplish, or black crusty fruiting bodies filled with masses of dusty spores.

Control: No measures are necessary. If mold is abundant, you can break up the unsightly spore masses by vigorous raking, brushing, or hosing down with a stream of water. Mowing the lawn will usually remove the spore masses. For more information about slime molds, read Report on Plant Diseases No. 401, *Slime Molds in Turfgrasses*.

Many Flowers, Vegetables and Shrubs: Phytophthora Stem and Crown Rots

There are a number of soilborne species of the water mold fungus *Phytophthora*. The insides of stems, crowns, and roots of affected herbaceous plants are often soft, brown, and decayed. The stems and crowns of woody plants are dry and brown. The result is that diseased plants wilt,

wither, and die. Seedlings may damp-off.

Control: Plant in well-drained soil that is free of surface drainage water. Avoid overwatering. Set out healthy plants. Nurserymen and florists should grow plants in soil that has been properly steamed or treated with a biocide (for example, methyl bromide, chloropicrin, methyl bromide-chloropicrin mixes, Vapam, or Vorlex). These are highly-toxic restricted chemicals for use only by persons who have passed pesticide training examinations. If the soil cannot be steamed or treated with a biocide before planting, one of the following systemic fungicides or mixtures may be added to the soil before planting or can be drenched in after planting: Banol, Truban, Terrazole, Subdue, Banrot, or Alliette. All these fungicides will also control other water mold fungi (for example, *Pythium*) that produce very similar symptoms on herbaceous plants. To control all major types of stem, crown, and root rots that are caused by soilborne fungi, apply Banrot, SA Terraclor Super-X, or mixtures of Subdue, Truban, or Terrazole plus Terraclor 75WP. It is important to apply these protective fungicides *before* any symptoms of disease appear. Once plants are showing signs of wilting, it is too late to apply a fungicide. Always follow directions on any pesticide label carefully.

PLANT CLINIC HIGHLIGHTS

July 8 to 12, 1991

PLANT	DIAGNOSIS	COUNTY
Begonia	Pythium crown/stem rot	DuPage
Bluegrass	Dollar spot, <i>Fusarium</i> , Thick thatch	Champaign
	Helminthosporium leaf and crown blight, <i>Fusarium</i>	Rock Island
Crabapple	Apple scab	Will
Fir	Spider mites	Champaign
Grape	Anthracnose	Adams
Hawthorn	Hawthorn quince rust	Wayne
Maple	Cottony maple scale	Will
	Sooty mold	
	Verticillium wilt	Cook
Norfolk Pine	Anthracnose	Champaign
Raspberry	Anthracnose	Lake, LaSalle
Spruce	Pine needle scale	Lake
	Spider mites	Champaign
Strawberry	Anthracnose	McHenry
	Black root rot	Fulton
	Strawberry leaf spot	Fulton, Logan
Tulip	Midge insect	Peoria
Turf	<i>Fusarium</i> , <i>Rhizoctonia</i>	Kankakee
	Helminthosporium leaf, crown, and root rot	Lake
Zoysia	Curvularia blight, <i>Fusarium</i> , Thick thatch	St. Clair

Reports on Plant Diseases

Copies of any Report on Plant Diseases mentioned in this or other newsletters are 50 cents each; five copies or more are 25 cents each. Checks should be made payable to the University of Illinois and mailed to Extension Plant Pathology, N-533 Turner Hall, 1102 South Goodwin Ave., Urbana, IL 61801. If you would like to have a copy of the complete listing of all 230 Reports on Plant Diseases, send a postcard or note to the same address. There is no charge for the list.

Home, Yard & Garden Pest Newsletter is prepared by the following Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey: *Entomology*, Roscoe Randell and Philip Nixon. *Horticulture*, James Schmidt and Tom Voigt. *Plant Pathology*, Nancy Pataky, Malcolm Shurtleff, and Darin Eastburn.

Information for this newsletter is gathered by these people with the help of staff members, county Extension advisers, and others in cooperation with the USDA Animal and Plant Health Inspection service.

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HOME, YARD & GARDEN PEST

Newsletter

No. 17 • July 24, 1991

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Galls on Trees

Close inspection of tree leaves, especially oak foliage, will reveal various shapes and sizes of abnormal growths. The galls may be shaped like a bullet, button, spindle, pouch, pocket, or many other shapes. We have received many leaf galls from oaks, including bullet gall, hedgehog gall, wool sower gall, and succulent oak gall. Sometimes there is more than one gall species on a single tree.

All leaf galls are caused by the immature stage of an insect or perhaps a mite species. Gall producing insects include certain aphids, wasps, jumping plant aphids, gnats, beetles, and mites. Galls are formed by the plant after it is stimulated by the presence of insect secretions. Often the gall begins to form in the leaf-bud stage and continues to enlarge as the leaves develop. The immature stage of the gall making insect is found inside the gall.

Control: Once galls are visible, there is no effective applied control. In general, these leaf galls will not damage the tree or shrub. Whether the gall-makers will be active again the following year is anyone's guess. What should be done about leaf galls? Nothing more than observing their development and even learning the correct common name of the gall. Forget about attempting to apply some product to control leaf galls.

Cucumber Beetles

Black and yellow striped beetles are present on some vine crops, including pumpkin, melons, cucumber, and squash. These beetles are feeding on new foliage, blossoms, and pollen. Occasionally, other beetles may be observed in the blossoms; these include *green beetles* (commonly called northern corn rootworm adults) and *western corn rootworm adults*, black and yellow beetles with yellow on the underside of the abdomen. The black and yellow striped

cucumber beetles with the black undersides can transmit bacterial wilt to cucumbers and muskmelons as they feed on foliage. These susceptible plants can be protected with applications of Sevin as a dust or spray. Apply at dusk to avoid bee kill and use no more than the labeled rate to avoid phytotoxicity. Cucumber beetles, rootworm beetles, and other similar insects in squash and pumpkin blossoms are only a nuisance and will not cause plant loss.

Imported Willow Leaf Beetle

This insect is very numerous in some areas of northern Illinois. The bluish black, metallic, rounded, 1/4-inch long beetles overwinter under loose tree bark, emerging in the spring to eat holes in the leaves of weeping, black, and other willows. Usually, eggs are laid in late June, but they were laid earlier this year. The eggs are yellowish green and laid in loose clusters that are about 1/2 inch across.

The hatching larvae are black and spiny, and feed on the undersurfaces of the leaves, eating the lower epidermis and mesophyll. The upper epidermis remains intact and turns brown due to moisture loss in feeding areas. Fully grown larvae are about 1/4 inch long and transform into pupae, emerging as adult beetles to cause more leaf feeding damage. This is the stage that we are currently seeing. Additional eggs will be laid for another generation before cold weather hits this fall.

Although this insect causes a tremendous amount of leaf damage, willows never seem to show any ill effects from the feeding. In addition, probably because weeping willows have so many fine branches, even heavily attacked trees do not show obvious damage to casual passersby. Thus aesthetic damage is minimal. Probably the main concern with this insect is the tendency of the adult beetles to drop into hair and inside shirt collars when people are near attacked trees. For these reasons, even heavily attacked trees may not warrant treatment if they are not in heavily travelled areas.

Control can be achieved by spraying the trees with carbaryl (Sevin) or *Bacillus thuringiensis* 'san diego' or 'tenebrionis' (M-One). Sevin is effective against both larvae and adults; M-One is only effective against larvae. Sprays are most effective when the larvae are on the trees. Since the adult beetles fly readily, treated trees are commonly reinfested by beetles from nearby untreated trees.

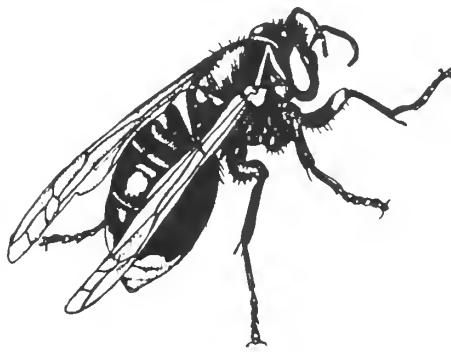
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Green-Striped Mapleworm

Rick Zipprich, Agriculture Extension Adviser for Calhoun and Jersey counties, reports the presence of first generation adult and young second generation green-striped mapleworm larvae. Adults, called rosy maple moths, are yellow and hairy with a 2-inch wingspan. The base and margin of the front wings are reddish or purplish, leaving a broad yellow band across the middle. The larvae he was seeing last week were about 1/4 inch long. Refer to *Home, Yard & Garden Newsletter* no. 13, June 26, 1991, for additional information.

Hornets

Bald-faced hornets construct a football-shaped nest that is usually located in a tree or shrub.



Bald-faced Hornet

The nest is made of paper that the wasps make themselves from wood fibers and saliva. Inside the covering, which is several layers thick, are usually four layers of cells that are used to rear the maggot-like developing hornets. Hornets enter and leave the nest through a hole in the bottom of the nest.

The hornets themselves are about 1 inch long and black, with a whitish face and posterior end. They feed on flower nectar and juice from rotting and damaged fruit. They also catch insects (primarily flies), chew them up, and feed them to the developing larvae in the nest.

Although hornets will sting repeatedly if the nest is disturbed, a person is usually not treated as a threat until within 3 feet of the nest. Also, hornet nests are built for only one summer's use. For these reasons, most nests do not need to be destroyed.

Eliminating the hornets in a nest is best attempted in late evening or at night, when they are less active. Wear protective clothing over your entire body to guard against stings. Bald-faced hornets have individuals posted on the outside of the nest and on adjoining tree branches throughout the night. These guards are changed about every 1/2 hour, so they are not likely to be asleep. When you attempt to kill the nest, these guards will attack you—hence the protective clothing. If you try to kill the guards first, you risk waking the several hundred hornets in the nest. Spraying the nest through the hole in the bottom with an aerosol

pyrethroid wasp and hornet spray should be effective.

Ants in Lawns

Many people have called in this summer, especially recently, about large numbers of anthills in their lawns. Realize that ants are not normally a problem in turfgrass, but may be considered a nuisance by many people. Ants in the lawn do not usually enter houses, except if they are very close to the foundation. The ants are primarily scavengers, feeding on dead insects and any other similar food. They will also kill some kinds of insects, particularly caterpillars such as sod webworms. Their nests normally do not cause any damage. Ants are so common that any nests killed are usually quickly replaced with new nests in the same area.

For these reasons, eliminating ant nests over large areas of turf is not recommended. Occasionally, a large anthill is built that is about a foot across; since it sticks up where it is hit by lawnmowers, grass on the anthill will be killed. These ant colonies can be killed by opening up the top of the anthill and soaking the nest with diazinon diluted according to label directions. In 4 to 6 weeks, a new ant colony will usually appear in the area to replace the old colony; but it will likely be a species of ant that does not produce such a large anthill.

The only other situation where ants will probably need to be treated is where ants are common where sod is being laid. In this case, ants will travel in large numbers beneath the sod, reducing the ability of the sod to knit into the soil.

Caddisflies

Caddisflies live as larvae in streams and other bodies of water where they feed on small aquatic animals. Adult caddisflies emerge at various times of the year in large numbers to mate and lay eggs for the next generation. Those that have been recently reported are tan with long antennae and will be very numerous near bodies of water (usually hundreds to thousands are present). They are strongly attracted to lights at night. These insects do not cause any damage and usually disappear within several weeks. Control is rarely needed.

PLANT DISEASES

We Goofed!

In *Home, Yard & Garden Newsletter* no. 7, May 15, under control for fire blight, we stated: "Home owners cannot legally apply streptomycin

unless they are certified to handle restricted chemicals." This is wrong in two ways: (1) Streptomycin is not on the restricted-use list, and (2) Ferti-lome's Fire Blight Spray, and probably other streptomycin products, can legally be used by homeowners without restriction. The label rate of 100 parts per million for use on apple, pear, and *Pyracantha* is 4 ounces of the streptomycin mix in 50 gallons of water, or 1 level tablespoonful in 2 1/2 gallons of water. We regret the error.

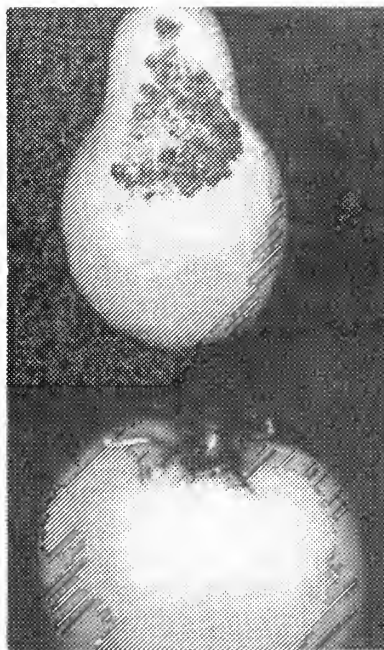
Blossom End Rot and Sunscald of Tomatoes and Peppers

Maturing tomato and pepper fruit sometimes develop large necrotic (dead) areas on their surfaces. The two most common causes of these lesions are blossom end rot and sunscald.

As the name suggests, *blossom end rot* develops as a necrotic area at the blossom end of the fruit, the end farthest from the stem. On tomatoes the tips of the fruit often turn dark brown to black in color, while on peppers the ends usually become light brown or tan. Blossom end rot results from a calcium deficiency in the plant that is caused by large fluctuations in soil moisture. When soil moisture is limited, plant growth slows, and nutrient uptake by the roots is reduced. If water becomes available again, from rain or irrigation, the plant begins to grow rapidly, but the uptake of calcium lags behind. Thus the rapidly expanding fruit tip does not have enough calcium available to develop properly, even though there is plenty of calcium in the soil.

Control: Foliar applications of a calcium-rich fertilizer to control blossom end rot have had mixed reviews. Some studies indicate that some control is achieved, while others report little or no reduction in the disease. The best method for controlling blossom end rot is to maintain even and adequate levels of soil moisture. With soil that becomes neither too dry or too wet, the plant grows at an even rate, and the nutrients stay in balance.

Sunscald is the other problem causing large necrotic areas on tomato and pepper fruit. Sunscald develops when an area on the fruit surface becomes too hot because it is exposed to the sun. Unlike blossom end rot, which always develops on the blossom end of the fruit, sunscald can occur on any part of the fruit exposed to the sun. So, on tomatoes and some peppers, sunscald often develops on the sides or "shoulders" of the fruit, near the stem end. Sunscald often develops on fruit that have formed in the shade of the plant canopy and then are suddenly exposed to direct sunlight for



Tomato sunscald

one reason or another. Sunscald often occurs when plants lose leaves because of foliar diseases. On tomato, early blight and *Septoria* leaf blight can cause premature defoliation, which leads to sunscald. On pepper the same thing occurs when plants infected with bacterial spot drop their leaves. Vascular wilt diseases (such as *Fusarium* and *Verticillium* wilt) and bacterial canker can also cause defoliation and, thus, lead to sunscald.

Control: Avoid sunscald by controlling diseases that may cause premature defoliation. Grow tomato varieties that are resistant to *Verticillium* and *Fusarium* wilts (VFN tomatoes). Plant pepper varieties that produce fruit that hang down and are covered by the foliage. Minimize plant breakage during harvesting to avoid suddenly exposing the fruit to sunlight.

Russian Olive Diseases

You have probably noticed many dead and dying Russian olive trees. The principal reason is canker diseases caused by such fungi as *Phomopsis*, *Lasiodiplodia* (*Botryodiplodia*), *Nectria* (*Tubercularia*), and *Phytophthora*. In Illinois the most important of these by far is *Phomopsis* canker. Unlike other canker fungi, *Phomopsis* is an aggressive pathogen that can attack and kill vigorous trees. Trees seriously injured by drought, hail, or ice are subject to decline and more rapid spread of the disease. *Phomopsis*-infected trees often appear ragged, with several dying or dead twigs and branches. Current-season twigs and small branches often wilt and die, with the dead, withered leaves hanging on for some time. Oval-to-elongate, depressed cankers are most evident on the large branches and trunks. Diseased bark on such cankers varies from orange-brown to dark reddish brown. Ridges often form around the canker margins. Branches girdled by the enlarging and encircling cankers wilt and die. The white sapwood beneath the cankers turns dark brown to black and extends beyond the margins. Minute, slightly raised, rounded pustules of the *Phomop-*

sis fungus are embedded in the dead, cankered bark.

Control: Purchase only healthy, vigorous trees from a reputable nursery. Avoid trees showing *any* evidence of canker and dieback. Also avoid all unnecessary bark wounds since this is the pathogen's main avenue of entry. Make flush pruning cuts; don't leave stubs. All seriously infected trees showing dieback should be cut off near the ground line and destroyed, preferably by burning. For more information, read Report on Plant Diseases no. 606, *Phomopsis Canker and Dieback of Russian Olive*.

A number of fungi cause spots on leaves of this tree, but their attack is rarely severe enough to warrant the use of protective fungicides or other control measures. The same is true of two rust fungi that infect Russian olive and have sedges (*Carex* species) and reed-grasses (*Calamagrostis* spp.) as alternate hosts.

Russian olive is occasionally affected by bac-

terial crown gall (see *Home, Yard & Garden Newsletter* no. 13, June 26) and *Verticillium* wilt (see *Home, Yard & Garden Newsletter* no. 6, May 6). These two newsletters give symptoms, disease cycles, and suggested control measures.

House Plant Problems

Soluble salts injury. The result is a scorching of the leaf tips or margins, especially after the plants have been in the same container for several months or longer. Affected plants may be stunted, with the roots showing a dieback of the tips. Salts build up from those introduced by watering (and left behind after transpiration and evaporation), and from excessive applications of fertilizers. Containers with high salts frequently show a whitish crust on or near the soil surface.

Control: Periodically flush the soil with soft (or rain) water equivalent to 5 or 6 times the soil volume. Repot house plants every 6 to 12 months when salt deposits become obvious.

Excessive watering. The common result is stunting, a sudden leaf drop, wilting, a yellowing or spotting of the leaves, and a soft rot of the roots or stem. Essential air is cut off from the roots.

Control: Nearly all indoor plants except cacti need a steady supply of water. A general rule is to apply water when the topsoil feels dry and then do not water again until the surface again feels dry. One or more drainage holes should be present in the bottom of the growing container. The amount of water needed by house plants varies with the temperature and humidity, soil mix, type and size of container, and exposure to the sun and wind.

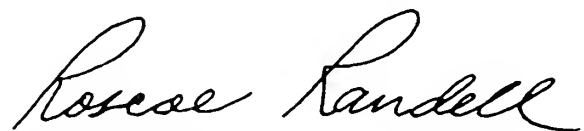
PLANT CLINIC HIGHLIGHTS

July 12 to 26, 1990

PLANT	DIAGNOSIS	COUNTY
Apple	Apple scab	Cook
	Apple scab, mites	Sangamon
	Spider mites	Tazewell
Dogwood	Phomopsis canker	Wabash
Elm	Dutch elm disease	Boone, Cook
Oak	Actinopelte leaf spot,	Champaign,
	Iron chlorosis	Piatt
Pine	Oak wilt	Marion,
	Bagworm	Mason
	Brown spot needle	Bond
	blight	Livingston
	Northern pine weevil	Douglas
Sphaeropsis tip blight	Bond,	
		Champaign,
		Jo Daviess,
		Lake,
		Livingston,
		McHenry,
		Piatt, Taze-
		well
Rhododendron	Black vine weevil	Wabash
Rose	Chemical phytotoxicity	Champaign
	Possible rose mosaic	McLean
Spruce	virus	
	Spider mites	Champaign,
		St. Clair,
		Jo Daviess
Turf	Helminthosporium	Iroquois,
	melting out	Knox
	Helminthosporium	Kankakee
	root and crown rot,	
	and leaf spot	
	Summer patch	Kankakee

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Next Two Issues Biweekly

After this issue of the *Home, Yard, and Garden Pest Newsletter*, the remaining two issues will be published at 2-week intervals. Thus, you will receive your next issue in 2 weeks, and the last issue for this year another two weeks later.

Extramural Courses in Horticulture

The University of Illinois Office of Continuing Education and Public Service is offering the following extramural courses for Fall 1991.

Horticulture 221: Plant Propagation (East Moline). Course Description: Examines theory and methods employed in propagation of plants, emphasizing anatomical, physiological, and ecological principles involved in sexual propagation (seeds) and asexual propagation (division, cuttings, budding, grafting, tissue culture, etc.). Prereq: Plant Biology 100 or consent of instructor. Instructor: Prof. Martin M. Meyer. Meeting Time and Place: 6:30-9:45 p.m., Mondays, beginning Sept. 9-Dec. 9, 1991. CES Office, 1188 John Deere Road. Credit and Tuition: 3 hours; \$231, plus support fee of \$30.

Horticulture 300: Ornamental Plant Pests (Rockford). Course Description: Biology of insect and other animal pests of trees, shrubs, turf, flowers, and interiorscapes and the damage that they cause will be addressed. Methods of control of these pests through Integrated Pest Management will also be covered. Instructor: Extension Entomologist Philip L. Nixon. Meeting Time and Place: 6:30-9:45 p.m., Mondays, beginning Sept. 9-Nov. 11, 1991. UIC College of Medicine. Credit and Tuition: 2 hours or 1/2 unit; \$154, plus support fee of \$30.

To preregister for the above courses, contact: Ms. Robbin Nelson, Office of Statewide Programming, 1601 Parkview Ave., Rockford, IL 61107; Phone: (815) 395-5592.

Horticulture 212: Landscape Contracting (Glen-coe). Course Description: Interpretation of the landscape architect's plans and specifications; estimating quantities of materials; and computing costs and procedures for bidding and execution of landscape construction. Instructor: Prof.

Floyd A. Giles. Meeting Time and Place: 6:30-9:45 p.m., Mondays, beginning Sept. 9-Dec. 9, 1991. Education Center, Chicago Botanic Gardens. Credit: 3 hours; \$231, plus support fee of \$30.

To preregister for the above course, contact: Ms. Patricia Susin, Office of Statewide Programming, 1010 Jorie Blvd., Suite 38, Oak Brook, IL 60521; Phone: (708) 990-9740.

INSECTS

Extra Insect Generations Likely

The earliness of this summer is similar to that of 1987, when measurements in early August of that year showed the season to be 17 days ahead of a normal year. Continued earliness this late in the summer is very unusual, since "early" springs due to early warm weather are usually balanced by colder than normal periods in the summer. Alternatively, "late" springs caused by cold weather lasting into the spring longer than usual are usually balanced by very warm weather later. This year the "early" spring has been followed by very warm weather, making us feel that at this time we are about 18 days ahead of a normal year.

This advanced season makes it likely that additional generations of insects will appear above what we normally see. Insects that have additional generations in the southern part of the United States where this type of summer is normal are likely to have additional generations in Illinois this year. For this reason, be alert for extra generations of oystershell scale, mimosa webworm, elm leaf beetle, yellow-necked caterpillar, and other insect pests.

We have received several calls from people predicting an early winter as nature's way of balancing an overly warm spring and summer. From what we can determine, an early winter is no more likely in this type of year than in any other year. Be prepared, then, for an extra helping of insect pest problems yet this summer.

Squash Bugs

Adult squash bugs have completed their migration into plantings of cucumbers, melons, pumpkins, and squash. The adults of the squash bug are dingy, brownish black insects that are about 5/8 inch long and have a very disagreeable odor. When newly hatched, they

have reddish heads and legs and green bodies. Later they become darker: the heads and legs turn black, and the bodies turn light to dark gray. As they mature, they become brownish black.

Squash and pumpkin, particularly the winter varieties of squash such as the Hubbard, are the vegetable crops most severely injured by the squash bug, which feeds by inserting its needlelike mouthparts into the plant tissue and withdrawing the sap. The young bugs are usually found in clusters. During the early part of the growing season, vine crops are killed easily by these bugs. One or more runners are often damaged on older plants. The leaves on damaged runners wilt and later die, becoming crisp and dark brown. Squash bugs overwinter as adults under rubbish, in piles of boards, in packing crates, and in buildings. In late spring, they fly out to fields of squash or pumpkin, where they feed and lay eggs. The eggs are about 1/6 inch long, light to dark brown, and usually deposited in neat clusters on leaves or stems. The young bugs remain in clusters after hatching. There is only one generation per year.

Control: There is no effective chemical control available for use by home gardeners. Look for the adults and pick them off the plants. Watch for eggs on the foliage, and rub them off the leaves.

Squash Vine Borer

Adult squash vine borers should be present from now until early August. The insect is a brightly colored, clear-winged moth that resembles an orange wasp. It flies quickly from plant to plant during the middle of the day. During this flight, eggs are deposited on the plant, particularly on the basal stem. The young larvae bore into the stem and cause the plant to wilt rapidly from the point of attack outward. To control the squash vine borer, apply Sevin weekly to the crowns and runners of the plant. Apply the treatment late in the day.

Black Turfgrass Ataenius

Black turfgrass ataenius grubs reappeared on the scene in 1973 as a pest of golf course fairways. Greenskeepers hear horror stories of 100, 200, even 400 or more grubs per square foot on some fairways of other courses.

This grub was different in its life history, habits, and host plants from the typical white grub, whether the annual or the 3-year grub species. Good life history information was available 15 years ago, including timing of adult activity to tree and shrub phenology.

Briefly, the life history can be described as follows: The 1/4-inch adult black beetles over-

winter in wooded swamp areas adjacent to the golf course. The shiny beetles begin to migrate to golf courses in April when crocus are in bloom. Egg-laying peaks when "bridal wreath" spirea and Washington hawthorns are in bloom. At Urbana, this is usually about May 15 and a week later each 100 miles north; May 22-24 in South Cook county; and much later in Lake and North Cook counties because of the cool lake effect. It is common to observe black ataenius beetles in the greens mower baskets at this time. Eggs hatch and the small grubs begin to feed on the roots of annual bluegrass and sometimes bentgrass. Wilted turf caused by grub feeding will appear about 3 to 4 weeks after egg-laying.

Monitoring for ataenius grubs requires checking low areas in the fairways, especially where damage occurred in previous years. Check for wilted areas, loose sod, or presence of grubs. A cup cutter is a good tool for sampling for ataenius grubs in non-wilted sod. The grubs, if present, will be feeding at the soil surface. Cut only through the first inch of soil with the cutter. The threshold for ataenius grubs to cause damage is 50 per square foot. A cup cutter samples 1/10 square foot at each cut. Sample many sites in fairways with a history of grub infestations. Pie-shaped cuts with a pocket knife will also expose grubs, if present.

During the past 17 seasons since 1973, there have been some interesting occurrences with black turfgrass ataenius grubs. Numbers of infested golf courses increased in the 1970s and declined after the mid-1980s. The drought years of 1987 and 1988 reduced favorable overwintering sites, and this reduced overall populations. This effect can reverse during the early 1990s. Some growing seasons were warmer than others. The year 1987 was usually warm; therefore, the heat units that accumulated caused the season to be 14 to 18 days ahead of normal. Ataenius eggs were laid in early May, and then damage appeared in early June in the Chicago area.

During this growing season, ataenius grubs damaged fairways in many Illinois golf courses. The first generation damage happened 2 to 3 weeks earlier than normal, and now second generation egg-laying and hatch is reported from areas as far north as Cook and DuPage counties. Normally, the earliest damage of second generation ataenius grubs should be found in late August in these counties. Continue to scout low areas of fairways, especially in annual bluegrass sod for these grubs. Suggested control products include trichlorfon (Proxol or Dylox), Turcam, and Triumph. Follow label directions for use restrictions and application methods.

Crickets

Field crickets are black crickets that enter homes during the late summer and fall. The males attract females for mating by chirping, causing many people to lose sleep due to the loud chirping. Field crickets that come indoors usually die within several weeks and do not reproduce indoors. They have a reputation of eating cloth; but the most that will occur is the fraying of an area rug or a similar piece of cloth if it is in a basement or other damp area where many crickets are present.

Control: Removing decaying organic matter (such as fallen leaves and bark mulch next to the building foundation) will reduce the number of crickets that will enter. Caulking cracks and crevices in the foundation will also reduce cricket entry. Diazinon sprayed on the foundation until runoff and on the adjacent 6-inch band of soil should keep out the crickets for about a month.

Individual crickets indoors can be eliminated by spraying cracks and crevices along baseboards and in other areas where the crickets are heard with an aerosol ant and roach spray (propoxur) or aerosol crack and crevice spray (chlorpyrifos).

PLANT DISEASES

Ajuga or Bugleweed, Delphinium, Iris, Aconite, Other Ornamentals and Vegetables: Crown Rot or Southern Blight

This disease can be devastating in hot muggy weather if abundant moisture is present. The causal fungus infects a wide host range; fortunately it is mostly a southern problem except during hot summers. Look for white wefts of mycelium at the base of plant stems which grow up in a somewhat fan-shaped pattern, even spreading over wet soil. The small, round sclerotia formed in the white fungal growth are first white, later reddish tan or light brown and finally dark reddish brown. They may be so numerous that they form a crust around the plant's crown and spread for several inches around a stem.

Control: Carefully dig up diseased plants when first noticed and include the soil for 6 inches beyond the diseased area. Be careful to include all the sclerotia (which is how the fungus overwinters). Place plants and soil in a plastic bag and then into the garbage. Increase the organic matter of the soil before planting and add a nitrogen fertilizer such as ammonium

nitrate. Buy plants grown locally in pasteurized soil; many infections in Illinois start with southern-grown plants that appear healthy but were grown in infested soil. Fungicidal soil drenches at planting time of PCNB, 75 percent WP (Ter-raclor) or Banrot are effective. Or add PCNB dust or granules to the soil surface and then thoroughly work them into the top 2 inches of soil. Carefully follow the manufacturer's directions. Fungicides applied now would do no good.

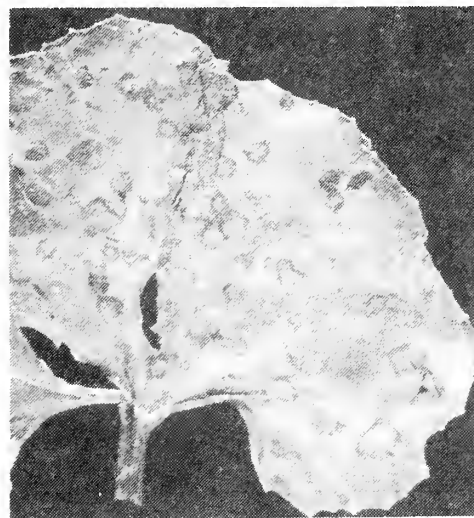
Oak: Actinopelte Leaf Spot

This common leaf spot, caused by the fungus *Tubakia dryina* (formerly called *Actinopelte dryina*), forms small, oval to irregular, dark brown to black spots in leaves between the veins. Some spots have a light brown center. In time, many lesions may merge to form large dead areas that involve much of a leaf. The disease is most conspicuous during mid- to late summer.

Control: Like most leaf spot diseases of woody plants, it does not cause sufficient damage to warrant control measures.

Alternaria Leaf Blight on Melons

Alternaria leaf blight has already begun to ap-



*Alternaria leaf spot
on muskmelon*

pear on both watermelon and muskmelon. Other cucurbit crops, such as cucumbers and squash, can also become infected. Symptoms on the leaves show up as brown circular spots, up to 1/2 inch in diameter, which characteristi-

cally have a target-like appearance (circles with-in circles). These spots usually show up on older leaves first, and infections can grow together to blight large portions of the leaf. The disease can also develop on the fruit, where it causes a fruit rot. Defoliation from the leaf spot phase of the disease can lead to premature ripening of the fruit. Spores of the pathogen are spread by wind, and rainfall promotes spore production. The disease is most severe when temperatures fall between 70° and 90°F. Plants are most susceptible when they are young, up to 30 days old, and after flowering.

Control: The fungal pathogen that causes this disease survives from season to season on infected plant debris, so it is important to follow a 2- to 3-year crop rotation schedule, and to remove, burn, or incorporate infected plant debris. Regular applications of a protectant fungicide, such as chlorothalonil (sold as Bravo), or a copper-based fungicide may be necessary in seasons when conditions favor rapid disease development.

Viruses of Melons and Cucumbers

Virus diseases are fairly common on cucurbit crops (cucumber, melons, and pumpkin) late in the season. It is thought that the viruses that infect these crops overwinter on weed hosts in southern states, and that the viruses are brought into Illinois from the south by aphids. This year virus diseases have already been found in plantings of zucchini, pumpkin, and several other cucurbit crops. Many viruses cause diseases on these crops. The most common viruses in this area are cucumber mosaic virus, zucchini yellows mosaic virus, and watermelon mosaic virus.

Symptoms of virus infections usually include the development of deformed leaves and fruit, and a mosaic or mottled pattern on leaves and fruit. Leaves may look crinkled or strapped, with the veins becoming more parallel. Infected leaves often are thicker and feel tough and brittle. The most common symptom is the mottled or mosaic coloration of the leaves, which shows

up as alternating patches of light and dark green. Mottling may also develop on the fruit, and infected fruit often become bumpy and distorted. On yellow fruit, such as yellow squash, a patchwork of green and yellow may develop. Symptoms produced by the different viruses are very similar. Therefore, diagnosing the exact cause of the disease using symptoms alone is often impossible.

The viruses mentioned above are all transmitted (or vectored) by aphids. As the aphid feeds on an infected plant, virus particles attach to its stylet, the tube it uses to suck nutrients from the plant. When the aphid moves to a healthy plant and begins to feed, the virus particles come off the stylet and infect the plant.



Cucumber mosaic

Control: Although these viruses are transmitted by aphids, using insecticides to control the aphids will not control the disease because the virus is transmitted so quickly that by the time the insecticide can kill the aphid the plant is already

infected. Control for most of the virus diseases is difficult. Reflective mulches or the use of trap crops, such as wheat, can help keep the aphids, and thus the virus, out of the desired crop; but these may not work well in small plantings. Plant breeders are currently working to develop virus resistant varieties, but most of the varieties available today are susceptible. The early removal of symptomatic plants can help slow the spread of the disease to healthy plants.

PLANT CLINIC HIGHLIGHTS

July 19 to 25, 1991

PLANT	DIAGNOSIS	COUNTY
Elm	Elm leaf beetle	Champaign
Hosta	Pellicularia crown rot	DeWitt
Impatiens	Pythium root rot	McLean
Nectarine	Brown rot, bacterial leaf spot	Sangamon
Oak	Oak wilt	Cook
	Sphaeropsis canker	Kane
Pine	Pinewood nematodes	Cook
	Sphaeropsis tip blight	Adams, Bond, Champaign, LaSalle, McHenry, Stephenson
Turf	Dollar spot	Macoupin
	Helminthosporium leaf, crown, and root rot	Kankakee, Macoupin
	Rhizoctonia brown patch	Kankakee
	Thick thatch	Will

Home, Yard & Garden Pest Newsletter is prepared by the following Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey: *Entomology*, Roscoe Randell and Philip Nixon. *Horticulture*, James Schmidt and Tom Voigt. *Plant Pathology*, Nancy Pataky, Malcolm Shurtleff, and Darin Eastburn.

Information for this newsletter is gathered by these people with the help of staff members, county Extension advisers, and others in cooperation with the USDA Animal and Plant Health Inspection service.

Roscoe Randell

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Extension Specialist
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HOME, YARD & GARDEN PEST

Newsletter

No. 19 • August 14, 1991

This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

INSECTS

Corn Flea Beetles on Turf

Very large numbers of corn flea beetles in Illinois are causing a lot of damage to late sweet corn plantings. Golf courses near cornfields are reporting large numbers of these insects on their greens. The black beetles are about 1/16 inch long and jump. As the corn plants dry up, these beetles are migrating to the greens, probably looking for water. We do not expect them to damage the turf in any way.

Golfers report being bitten by these beetles. Whether this is due to the spines on the beetles' legs or their chewing is not clear. At any rate, they will not break the skin. The presence of large numbers of small, dark, jumping insects that give a biting sensation causes many golfers to call them fleas. Applications of insecticides that would normally be used for cutworm control should reduce the numbers of flea beetles.

Fall Webworm

Fall webworm has shown itself to be abundant this year in Illinois, particularly in the southern part of the state. It is locally abundant in central Illinois as well. New colonies are continuing to show up due to late-hatching eggs, so keep alert to new infestations in areas that have already been sprayed or scouted. Additional information on this insect was given in *Home, Yard & Garden Pest Newsletter* no. 15, July 10, 1991.

Lacebugs

Lacebugs are 1/8-inch long whitish insects with brownish markings that have lacelike wings. Nymphs are smaller and blackish. They live on the underside of leaves, sucking the sap out of the leaves. Their feces are black and tarlike and appear as tiny dots on the undersides of attacked leaves.

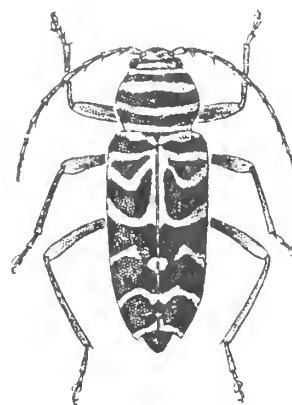
These insects are common in most years

sycamore, where they cause light stippling on the uppersides of the leaves, but do not usually cause enough damage to warrant control. This year they are also common on hackberry, oak, walnut, hickory, and linden. There is a species of lacebug that is specific for most common shade tree species, so don't be surprised to see them on other trees as well.

Damage on most trees appears similar to that on sycamore. On hackberry, foliage of heavily attacked trees is turning yellowish without stippling being present. This damage is not likely to be dangerous to the tree, particularly this late in the growing season. Sprays of acephate (Orthene), carbaryl (Sevin), or cyfluthrin (Tempo) should be effective if control is desired.

Locust Borer

Locust borer adults are black with yellow markings that are shaped into Ws, bands, stripes, and other markings.



Locust borer.

They are about 1 inch long and have antennae that are about half as long as the body. They are commonly seen feeding on blossoms of goldenrod during the late summer. This insect feeds on the pollen of goldenrod and is one of the many species of beetles that pollinate plants as they go from flower to flower.

The beetles lay their eggs in bark crevices of black locust, with the hatching borer larvae tunneling to the cambium where they spend the winter. In the spring, they feed on the cambium, making a shallow burrow that is about 2 inches in diameter. In early summer, the larvae tunnel about 5 inches into the wood, leaving a pile of wood debris on the ground below the entrance hole.

The larvae are legless, white grubs that taper in diameter from front to the back. Thus, if the burrow is chewed large enough for the front of the larva to wriggle through, the back end won't get stuck. Fully grown larvae pupate in the burrows near the surface of the wood, making it easy for the emerging adult to chew its way out. Locust borer attacks the trunks and larger branches of black locusts that are 2 to 6

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inches in diameter. Once the trunk gets larger than 6 inches, the tree will be able to grow quite large. Because locust borers are so common, black locust are rarely able to develop trunks that large before they are killed, resulting in most black locust being bushy thickets of small branches that have sprouted from the root system.

Sprays of chlorpyrifos (Dursban) should be effective this year if applied to trunks and larger branches in mid-August and early September in central Illinois. These dates should be 2 weeks earlier in southern Illinois and 2 weeks later in northern Illinois.

Chinch Bugs

Noel Troxclair, Area IPM Extension Adviser in southern Illinois, reports the presence of chinch bugs on zoysiagrass in St. Clair County. These are southern chinch bugs that are not likely to feed on other species of turfgrasses. Adult chinch bugs are black and white and about 1/5 inch long. The young nymphs are bright red with a white band across the body. Older nymphs are dark in color.

Scout for chinch bugs by pushing a coffee can or similar container that has both ends cut off into the turf and fill it with water. Chinch bugs will come to the surface within 5 to 10 minutes. Checking the base of grass plants carefully and scratching in the thatch will also reveal if these insects are present.

Chinch bugs feed by sucking the sap out of the grass, causing it to turn pale yellow and then brown. Because they tend to be spotty in occurrence, but present in large numbers in those areas that are attacked, turf will commonly show damaged areas interspersed with healthy turf. Sprays of chlorpyrifos (Dursban) will effectively control chinch bugs.

Hairy chinch bug occurs in northeastern Illinois and feeds on red fescue, perennial ryegrass, bentgrass, and Kentucky bluegrass, as well as zoysiagrass. It is similar in appearance to southern chinch bug and is controlled in the same way. So far this year we have not received any reports of large numbers of this chinch bug.

Yellowjackets

Yellowjacket nests are becoming obvious. These half-inch, yellow and black banded wasps nest underground and in aboveground cavities such as wall voids and attics. Nests at this time of year may contain two to three thousand individuals.

Underground nests can be controlled with diazinon poured into the hole and covered with a shovelful of soil. Nests in wall voids can be

controlled by applying carbaryl (Sevin) dust around the opening that the yellowjackets are using to get to the nest. The wasps will carry the dust into the nest, which will kill off the colony within a few days. Openings can be caulked later in the fall or winter once it is certain that the nest is dead. Wear protective clothing while treating yellowjacket colonies with insecticide. Treatment is usually easier late in the evening when the wasps are less active.

PLANT DISEASES

Periwinkle, Vinca Minor: Stem Blight

This disease (caused by a soilborne fungus, *Phoma exigua* var. *inoxydabilis*) is widespread whenever this popular ground cover is grown in the United States. Damage is most prevalent in cool wet weather in spring. Newly planted beds, where plantings are not well established, are most susceptible. Dark brown to black girdling lesions near the soil line cause the shoots to wilt, turn dark brown to black, and die. Entire clumps may wither and die from midspring to midsummer and into autumn.

Control: Select and plant only vigorous, disease-free stock from a reputable nursery that follows all the practices outlined below. At transplanting, apply only enough water to maintain vigor. Avoid frequent irrigations; keep soil on the dry side. Mulch vinca beds with 6-mil black plastic (perforated every 4 to 6 inches with a sharp object) and then cover with pea gravel or ground corn cobs. In newly planted beds, apply a soil drench of Benlate, 50% WP or thiabendazole (Mertect, TBZ 42 28%F) just before plants break dormancy in April or early May. One pound of Benlate or 16 fluid ounces of thiabendazole in 100 gallons of water is sufficient to cover 1,000 square feet of bed. Apply 1 to 2 pints per square foot of bed. Annual drenches in April or early May should be applied each year if stem blight has been a serious problem the growing season before. Benlate and thiabendazole also give effective control, applied as a cutting dip using the same rate of Benlate or double the rate of thiabendazole outlined above. Immerse the cuttings from field-grown plants for 10 to 15 minutes in the fungicide suspension before draining and sticking in the planting medium. Apply a soil drench of either fungicide at monthly intervals until the plants are well rooted and large enough for sale (or planting in beds). For more information,

read Report on Plant Diseases No. 640, *Stem Blight of Vinca Minor*.

Sooty Mold or Blotch: Many Plants

This disease, caused by one or more of a number of different fungi, produces unsightly, superficial, dark brown or black blotches, crust, or coating on leaves, fruit, and stems. The mold can be removed easily by rubbing. The fungus or fungi usually grow on "honeydew" excretions made by sucking insects such as aphids, scales, white flies, mealybugs, and others or in flowing sap. The disease causes little damage to most plants.

Control insects following suggestions made by University of Illinois Extension Entomologists. Follow a standard spray schedule for fruits. Avoid wounds on woody plants. For additional information, read Report on Plant Diseases No. 815, *Sooty Blotch and Flyspeck of Apple*.

Peony: Red Spot, Leaf Blotch, or Measles

This disease, which affects all aboveground parts of peonies, is caused by the fungus *Cladosporium paeoniae*. It is most serious in large plantings where plants are dense and grown closely together and the old tops are not destroyed in late autumn or early spring. Small, circular, red or purple spots ("measles") appear in the upper surface of young leaves just before the peony blooms. Later, the spots appear on the underleaf surface. The lower sides of infected leaves soon turn a dull chestnut-brown while the upper surfaces appear a glossy dark purple. As the host tissues mature, the lesions enlarge rapidly and may form large, irregular blotches that make affected plants unsightly. Spots on flower buds, floral bracts, petals, and seed pods resemble those on the leaves. Stem and petiole lesions are short, reddish brown streaks at first. The lesions on stems near the soil line become somewhat sunken or pitted and tend to merge and darken. Spots on all plant parts remain purplish or brownish red throughout the season.

Control: Before new shoot growth appears in the spring, remove all old tops to ground level and destroy by burning, discard with the trash, or bury in an area away from peony beds. Just before the shoots break through to the soil surface in the spring, spray the soil around the plants with mancozeb, maneb, or benomyl (Benlate). Use 1 gallon of spray to cover 200 square feet. Be sure to soak the soil surface area, stem stubs, and any other peony debris that may

remain. Spray the plants weekly during cool, damp, overcast weather, starting when the new shoots are 2 to 4 inches tall and continue until the flowers begin to open. The addition of a commercial spreader-sticker (surfactant) to the spray will aid in coverage. These sprays also control the serious Botrytis blight, bud blight, and shoot blight disease. For more information, read Report on Plant Diseases No. 631, *Red Spot, Leaf Blotch, or Measles of Peonies*.

Poplars and Willows: Leaf Rusts

Several rust fungi in the genus *Melampsora* cause premature defoliation of willows, poplars, aspens, and cottonwoods in the Midwest. In wet years, young trees may be severely defoliated, suppressing growth by 30 percent or more. Continued defoliation of successive flushes of growth decreases vigor and often leads to invasion by such canker-forming fungi as *Cytospora*, *Dothichiza*, and *Phomopsis*. Rusts are worst where susceptible clones of poplars and willows are grown in crowded, monocultural stands and air movement is restricted.

Small yellow spots form on the upper leaf surface in early summer with bright, lemon-to-orange yellow, powdery pustules developing on the corresponding lower leaf surface. By late summer to midautumn, the pustules turn dark brown to black and become crustlike.

Control: In ornamental plantings, collect and compost or burn the fallen leaves. In nurseries, cut willow stems or "rods" in the spring followed by a summer cut that removes infected rods. This leaves the third crop virtually disease-free. In nurseries, where leaf rusts are a problem, apply two or more sprays, 7 to 20 days apart, starting when rust is *first* evident (preferably a week or two *before* the rust normally appears). Suggested fungicides for willows include sulfur, Bayleton, and Rubigan. These same fungicides also control powdery mildew. Other fungicides that can be used on poplars to control leaf rusts include trifenox (Funginex), mancozeb, and maneb. For additional information, read Report on Plant Diseases No. 605, *Leaf Rusts of Poplars and Willows in the Midwest*.

Leaf Scorch: All Woody Plants

Scorch, a noninfectious disease, is most common following hot, dry, windy weather when the roots are unable to supply water to the foliage as rapidly as it is lost through the leaves by transpiration. Damage is most severe in sandy or gravelly soil, near obstructions or pavement that restricts the area for root growth, on exposed windy slopes, and where trees and shrubs are grown closely together. Where scorch is severe, as it is now over much of Illinois,

plants are dropping many of their leaves prematurely—some weaker trees and shrubs have already died where left unirrigated. Trees weakened by drought are very susceptible to attack by opportunistic canker fungi, to attack by secondary insects, to injury by severe winter weather, and to other environmental problems. Besides drought, leaf scorch can also be caused by a nutrient deficiency; transplant shock; excess water; girdling roots; soil area too restricted for good growth; a paved surface over the roots; shallow, compacted, or poor soils; a change in the soil grade; an altered water table;

PLANT CLINIC HIGHLIGHTS

July 26 to August 9, 1990

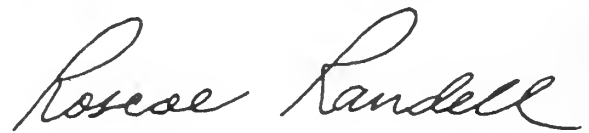
PLANT	DIAGNOSIS	COUNTY
Apple	Apple scab, scorch	LaSalle
Catalpa	Verticillium wilt	Iroquois
Cotoneaster	Fireblight	Cook
Crabapple	Apple scab	Cook II
Dogwood	Spot anthracnose, Oystershell scale	Champaign
Elm	Dutch elm disease	Cook, McLean
Geranium	Bacterial blight	DuPage
Hawthorne	Hawthorne rust	Champaign
Hollyhock	Weevil feeding injury, mites	Champaign
Impatiens	Rhizoctonia root and stem rot	Champaign
Maple	Cicada damage, possible iron chlorosis	Cook
Marigold	Verticillium wilt	Peoria
Monarda	Aster yellows Spider mites	Champaign Ogle
Pine	Rhizoctonia crown rot	Champaign
Strawberry	Pine wilt Sphaeropsis tip blight	LaSalle Adams, Champaign Cook, Macon St. Clair, Winnebago
Tumeric	Phomopsis leaf blotch	Clark, Peoria
Turf	Anthracnose, <i>Rhizoctonia</i> , <i>Fusarium</i>	Peoria
	Rhizoctonia root rot	Jackson
	Dollar spot Helminthosporium leaf, crown, and root disease	Champaign Champaign Lake
	Rhizoctonia brown patch, Thick thatch	Champaign Will

toxic concentrations of one or more chemicals (e.g., deicing salt, fertilizer, or pesticide); air pollutants; root destruction from nearby construction work; heavy infestations of sucking or boring insects; nematode, insect, or rodent damage to the roots; a diseased root system; wood rot; wilt disease; and large girdling cankers.

Control: Plant only trees and shrubs well adapted to the area and site in a fertile, well-drained soil at the same depth the plants grew in the nursery and with an adequate supply of organic matter. Avoid planting shock by pruning back branches by about one-third if this was not done previously at the nursery. Thoroughly water plants low in vigor, especially during periods of drought. The soil should be moist to a depth of 10 to 12 inches with each irrigation. Supply at least an inch of water per week (900 gallons on a 30- by 50-foot area) to recently transplanted trees and shrubs or weakened plants during dry periods. Slow soaking of the soil is most effective. Feeding lances or needles are a convenient means of soaking the soil. Fertilize based on a soil test—it is best to fertilize in early spring or late fall. For much more information on symptoms and control, read Report on Plant Diseases No. 620, *Leaf Scorch of Woody Plants*.

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HOME, YARD & GARDEN PEST

Newsletter

No. 20 • August 28, 1991

Last issue: This newsletter is issued weekly to provide timely information on insect, weed, and plant disease pests of the home, yard, and garden. Current control procedures, application equipment and methods, safe storage and disposal of pesticides, and other topics of interest are discussed.

This week's newsletter is the last for 1991. My plans are to retire, effective August 1991; but the *Home, Yard and Garden Pest Newsletter* will continue in 1992. You will receive a form to subscribe to the newsletter for next year. Thanks to many of you for your friendship, cooperation, and assistance in past years. There will be a newsletter in 1992, but with a new editor.--R.R.

1992 Subscriptions

During the fall, you should receive a brochure instructing you on renewing your subscription to the *Home, Yard, and Garden Newsletter*. University of Illinois Cooperative Extension Service winter meetings will commonly have these brochures available as well. If you do not receive a brochure, contact University of Illinois, Ag Newsletter Service, 116 Mumford Hall, 1301 West Gregory Drive, Urbana, IL 61801; phone, (217)333-2666.

Suggestions concerning this newsletter are always welcome. Address these to Phil Nixon, 172 Natural Resources Building, 607 East Peabody Drive, Champaign, IL 61820. Thank you for your support. We look forward to providing weekly assistance during next year's growing season through this newsletter.

INSECTS

Moths in the Lawn

We are getting reports from people that are concerned about sod webworm problems due to large numbers of moths in the lawn, particularly in the evening. Although sod webworm attack is very possible (as discussed in the next article), many of these moths are European corn-borer moths, which are exceedingly common this year.

Similar to sod webworms, these moths are tan and about one inch long. They have long palps sticking out the front of the moth, giving them "snouts." The easiest way to tell the

difference between species is to look at the moth as it sits. A sod webworm moth holds the wings tightly around the body, appearing tubelike. A European corn-borer moth holds the wings outward, forming a triangle. European corn borers will not damage turf.

Sod Webworms

Damage from sod webworm is being found around the state, particularly in areas that have had drought conditions. Lawns with this damage did not green up once the rains came.

The sod webworm larvae live in the thatch, emerging at night to clip grass blades. Damaged turf will be firmly rooted but look brownish because the thatch is visible. At the base of the plants, you may see green stubs of grass about one-eighth inch tall. The sod webworm larvae leave these stubs when they eat the grass blades. Small piles of greenish feces will also be present.

You may uncover a few sod webworm larvae. They are three-quarters to an inch long and cream-colored, with brown spots. Applying a mixture of one tablespoon of 2% pyrethrin in a gallon of water to a square foot of turf will cause the sod webworm larvae to come to the surface. Two to three sod webworms per square foot are enough to cause damage. Sod webworm larvae are also present about two weeks after a heavy flight of their moths.

Control sod webworms with carbaryl (Sevin), diazinon, chlorpyrifos (Dursban), or trichlorfon (Dylox, Proxol). Sprays can be applied to the turf and allowed to dry on the grass blades to achieve control. Granules should be activated by watering after application.

Mimosa Webworms

Honey locust as well as mimosa are attacked by mimosa webworms. Damage that is occurring now in Illinois appears as two or three compound leaves webbed together and fed upon, causing the leaflets to turn brown. Mimosa webworm larvae live inside the webbing and are slender, greenish to brownish caterpillars that wiggle nervously when disturbed. Fully grown caterpillars are about three-fourths inch long.

Fully grown caterpillars leave the webbing and overwinter under the bark of the host and other trees, as well as under siding and in other protected areas. Because these caterpillars are marginally hardy in Illinois, trees

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near heated buildings tend to be more consistently attacked because the overwintering larvae are warmer under the siding. Moths emerge the following summer to lay eggs for a new generation. There are two generations per year.

Sprays of *Bacillus thuringiensis kurstaki* (Dipel, Thuricide, Caterpillar Attack), acephate (Orthene), malathion, or chlorpyrifos (Dursban) should be effective controls. Spray with sufficient pressure to penetrate the webbed leaves.

Phenology and Timing Insect Controls

This spring and summer growing season has been an excellent example of the use of phenology or degree days instead of calendar dates for timing insect control methods. As you have seen in this newsletter, we have reported throughout the season that insect development has ranged from two to three weeks ahead of schedule.

This occurs because insects are cold-blooded, thus their body temperature is only a few degrees above air temperature. Enzymes within the insect do not function properly at very low temperatures. As a result, insects generally do not develop at temperatures much below 50°F. This base temperature varies between insect species but is usually within a couple degrees of 50°F. Insects at temperatures between 32° and 50°F are normally very sluggish, do very little feeding, and do not grow or develop into later growth stages. Prolonged periods at this temperature usually kill the insects.

As temperatures rise above 50°F, development proceeds more and more rapidly until a high-end temperature is reached. At very high temperatures, enzymes again do not function properly; growth and development tend to cease. Small differences in temperature between 50° and 100° can greatly change the rate of insect development. As an example, German cockroaches raised at 80°F develop from egg to adult in 50 to 60 days. At 86°F, development time is reduced to 36 days.

The warmer temperatures that we have experienced this spring and summer have greatly speeded up the development of insects. Two ways are commonly used to determine development rate in insects--degree days and phenology. Degree days is a mathematical method for measuring the amount of time that an insect experiences temperature above its base temperature. Degree days are calculated by adding the daily high temperature to the low temperature and dividing by two to obtain the average daily temperature. The base temperature is subtracted from the average daily

temperature to obtain the amount of insect degree days for that day. (Use 50° if the exact base temperature isn't known.) Negative degree days are considered as zeros. By adding up the number of degree days, you can determine when an insect will be at a stage of development that is susceptible to a particular control method.

Phenology is the use of plant development as a gauge for determining insect development. Because plants are exposed to essentially the same temperatures and other seasonal factors as insects, they also develop quicker in a "warm" spring than in a "cold" spring. If a susceptible stage of an insect can be associated with an obvious change in a plant, such as leaf expansion, bloom, or seed set, these plant changes accurately indicate when control measures should be used against an insect pest--without doing the mathematics required with degree days. Because plants develop at temperatures between freezing and 50°F (whereas most insects do not) prolonged periods at these temperatures during the spring can cause phenology to be somewhat inaccurate. The chances of having a spring with an excessively large number of days in this temperature range is very remote.

Since Donald Orton's book *Coincide* was published by Plantsmen's Publications of Flossmoor, Illinois, in 1989, we have used some of the phenology recommendations from that book in this newsletter. As we have in the past, we again recommend that you consider purchasing this book through the Illinois Arborists Association, c/o Morton Arboretum, Lisle, IL 60532, or the Illinois Nurserymen's Association, 1717 South Fifth Street, Springfield, IL 62703. The cost of the book is \$18.95 plus \$3.00 for shipping and handling.

PLANT DISEASES

Plant Clinic Closes for Season

The Plant Clinic staff would like to thank you for your support in 1991. Despite drought conditions, samples continued to arrive. We received over 2600 samples by mid-August.

The Clinic has been, and continues to be, funded for only the growing season. We will close September 13, 1991, and reopen May 1, 1992. Any sample received by the the closing date, September 13, will be completed. All samples after the 13th must be sent directly to the department applicable and will be handled as time permits. Do not send samples to the Plant Clinic because the mail service cannot return them to the sender and no one is at the

clinic to receive them. If you are in doubt as to where to send your samples, please contact your local Cooperative Extension Service office or call Nancy Pataky at (217)333-0519.

PLANT CLINIC HIGHLIGHTS

August 9 to 22, 1991

PLANT	DIAGNOSIS	COUNTY
Black cherry tree	Cherry leaf spot (<i>Coccomyces</i>)	Champaign
Coralbells	Pythium root rot	Calhoun
Evergreen	Cytospora canker	Jersey
Hackberry tree	Galls/psyllid insect	Champaign
Hosta	Fungal crown rot	Peoria
Maple	Thrips	Peoria
	Anthraxnose	Schuyler
	Eriophyid mites	
Oak, pin	Iron chlorosis	Edgar
	Actinopelte leaf spot	
Peony	Cladosporium leaf spot	Cook
Pine, red	Pine needle scale	Carroll
Pine, scotch	Pine nematodes	Macon
Pine, white	Pine needle scale	Carroll
Raspberries	Root rot	JoDavies
Raspberry, heritage	Phytophthora root rot	Will
Spruce	Spider mites	Champaign
Turf	Helminthosporium leaf	Piatt
	Crown and root disease	
	Summer patch	

Potato: Common Scab

This very common and unsightly disease is caused by a soil-inhabiting bacterium, *Streptomyces scabies*. Small, circular, brownish specks or spots form on the young tubers. These soon enlarge, darken, and become corky. Certain lesions may merge to form large, irregular scabby areas. Some may be slightly raised, others may be somewhat sunken. If the lesions are numerous, the entire tuber has a russeted appearance. On very susceptible cultivars, the scab lesions may become quite deep and dark brown to black. When scabby potatoes are stored, they tend to shrink and are often invaded by secondary, soft-rotting bacteria and fungi.

Control: Plant certified, disease-free seed potatoes of scab-resistant varieties. Russet types are generally much less resistant than are smooth-skinned varieties. Do *NOT* apply barnyard manure, wood ashes, other organic matter, lime, coarsely ground limestone, nitrate of soda, or other alkaline materials just before potatoes are planted. Adding sulfur (300 to 3,000 pounds per acre) or an acid-forming nitrogen fertilizer, such as ammonium sulfate or diammonium phosphate, to bring the soil reaction down to a pH of 4.8 to 5.2 is not generally worthwhile unless acid-tolerant crops can be grown in rotation with potatoes. It is best to reduce soil alkalinity *gradually* over several years. Make annual soil tests to prevent the soil from becoming too acid. Turning over a green manure crop just before planting potatoes is beneficial, especially when coupled with liberal amounts of a high-analysis fertilizer based on a soil test. Keep down weeds, especially fleshy root types such as pigweed. Where possible, irrigate heavily when the tubers are just forming and keep the soil moist (not wet) for 4 to 6 weeks. For more information, read Report on Plant Diseases 909, *Common Scab of Potato*.

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Extension Specialist
Entomology

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