UNIVERSITY OF ILLINOIS EXTENSION
HOME, YARD & GARDEN PEST NEWSLETTER
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Apology to Our Print Subscribers

Due to a glitch in our electronic production of the newsletter last week, most of the punctuation marks dropped out of the text in the print master. We're sorry for the inconvenience. The PDF and articles for the Web version were fine. *(Mary Overmier)*

PLANT DISEASES

Oak Wilt

Generally when your red, black, or pin oak tree has oak wilt, you know something is terribly wrong. Branches quickly progress from green to brown in a scattered pattern throughout the tree or from the top down. The tree does not recover. This disease has begun to appear in 2003 in Illinois.

Oak wilt is caused by a fungus *(Ceratocystis fagacearum)* that enters the water-conducting vessels of the sapwood and causes them to become plugged. Symptoms vary depending on the oak species involved. Generally, oaks in the red–black group develop discolored and wilted leaves at the top of the tree or at the tips of the lateral branches in late spring and early summer (now). Leaves curl slightly and turn a dull, pale green, bronze, or tan, starting at the margins. Usually by late summer, an infected tree drops all its leaves. In some years, we see red oaks progress from scorched foliage to total defoliation in 3 weeks.

The white and bur oak group generally shows symptoms on scattered branches of the crown. The disease is often confused with general dieback and decline. Leaves on infected white oaks become light brown or straw-colored from the leaf tip, progressing toward the base. The leaves curl and remain attached to the branches. This tree group may die in one season but is likely to survive for years with many dead branches in the crown. Recent incidences of anthracnose on white oak have caused concern among many tree specialists who fear oak wilt. Anthracnose causes brown spotting scattered over the leaves and may cause slight leaf cupping.

Other problems can mimic oak wilt, including drought, construction damage, soil compaction, changes in the soil grade or water table, lightning damage, nutritional disorders, insect and animal injuries, chemical damage, cankers, and root decay. None, however, has the distinct vascular discoloration of oak wilt. To detect the discoloration, peel the bark back with a knife. Healthy sapwood is white or tan. An oak wilt suspect shows brown and white streaking of the wood. Samples without streaking do not yield the oak wilt fungus even if it is present elsewhere in the tree. Therefore, the disease can go undetected if not properly sampled. There is a slight brown streak to healthy wood as the air comes into contact with the sapwood. The distinct discoloration from oak wilt is visible as soon as the bark is peeled back and does not intensify as the wood dries. Sometimes, the discoloration is visible just under the bark; and other times, it is deeper in the wood and visible only when viewed from the end of a cut branch.

If you think your tree is infected with oak wilt, the Plant Clinic can prepare cultures from the wood to detect the fungus. Samples should be 8 to 10 inches long, about thumb thickness, alive but showing symptoms, and must contain vascular discoloration. It takes at least 7 days for the fungus to develop in the lab to the point that a positive confirmation can be made. Often, a 2-week incubation is needed. Submit samples on disposable ice packs. Temperatures in mail trucks are high enough to kill this fungus in wood samples, resulting in false negative tests.

Oak wilt is particularly threatening because an infected tree cannot be saved and because it is difficult to keep the fungus from spreading to nearby oaks. The fungus infects through fresh wounds via a beetle vector. It can also spread through root grafts between trees. An infected tree cannot be saved; but there is hope for surrounding trees, so a positive diagnosis may be important. Pruning of oaks should be done only in the dormant season if at all possible. Pruning now causes wounding that may serve as an infection site to beetles carrying the fungus. Refer to *Report on Plant Disease (RPD)*, no. 618, for more on oak wilt—on the Extension VISTA Web site or from your local Extension office. *(Nancy Pataky)*

Dothistroma or Brown Spot?

The Plant Clinic sees these two diseases on pine fairly regularly. The two fungal needle diseases are very similar. Even with aid of a microscope, we find it

difficult to distinguish the spores of the causal fungi. Symptom expression is also similar. Infected pines may appear yellowed and sparsely foliated, especially near the bottom. Needles may have brown spots with yellow borders, and pinhead-sized fungal fruiting structures may appear embedded in the brown spots. Infection occurred last summer or fall, and fungal fruiting bodies were formed at that time. This spring, as weather warms, the spores will be released and the infection cycle continue. Fungicides are available to use in managing these diseases, but only in a protective mode. You need to identify the disease now and plan to apply the fungicides to newly emerging needles next spring to help manage the diseases. Meanwhile, concentrate on cultural controls. Here are some tips on identification.

Dothistroma needle blight occurs most often on Austrian and Ponderosa pine. Both Scotch and red pine are resistant. The disease causes spots and bands on needles, especially on the lower part of the tree. The problem is more intense in a monoculture, such as a nursery or plantation, than in a landscaped area; but we have seen a fair amount of this needle blight the last several years in landscaped areas.

Symptoms of Dothistroma first occur in the fall but may go unnoticed. Look closely at the needles now for yellow to brown bands or individual spots. If the disease is a problem, you won't have any trouble finding these lesions. Laboratory confirmation relies on finding the diagnostic fruiting bodies and spores within the spots. The fruiting bodies are pinhead-sized, black specks in the needle lesions. You can see them with a hand lens. If you just see brown needles —without spots, bands, or fruiting bodies—then Dothistroma blight and/or brown spot are not present. In that case, I would suspect root injury or moisture extremes. As Dothistroma progresses, needle tips turn brown and fall, leaving green needle bases. Early drop of entire needles is not uncommon.

Brown spot needle blight symptoms are nearly identical to those of Dothistroma blight. Scotch pine is the major host, and we generally make the distinction based on the presence of spores and the host species. Brown spot may begin in July with yellowing of needles, development of brown spots in the yellowed areas, and sometimes the presence of a drop of resin on each spot. Brown bands with yellow halos are more often observed in the fall.

Management of these diseases may involve pruning surrounding plants for better air flow, thus allowing more rapid needle drying after rain, weed control, and proper plant spacing for the same reason; using resistant varieties where available; working with trees in dry weather; and using registered fungicides. Consult the *2003 Illinois Commercial Landscape & Turfgrass Pest Management Handbook* or the *Illinois Homeowner's Guide to Pest Management* for chemical options. Read carefully the label of the product you choose. Generally, applications are made twice; and generally, the label says to spray when needles are half grown and again 30 days later. Still, each product differs slightly in timing of sprays. Also, there are more chemical options for preventing brown spot than for Dothistroma. Copper fungicides work for both.

Keeping disease names straight can be a problem. Dothistroma is most common on Austrian pine, while brown spot is most common on Scotch pine. I like to remember that the long disease name goes with the long host name. One master gardener shared his method of remembering this information. He simply remembers that scotch is brown (the drink, that is).

For more information, consult *Report on Plant Disease (RPD)*, no. 624, "Needle Blights and Needle Casts of Pine," available in Extension offices and on the Extension VISTA Web site. *(Nancy Pataky)*

INSECTS

Bagworms

It is time to be thinking about dealing with bagworms *(Thyridopteryx ephemeraeformis)* in southern and central Illinois. Bagworms attack a wide range of evergreen and deciduous trees and shrubs (128 plant species), including arborvitae, juniper, eastern red cedar, spruce, fir, pine, maple, box elder, linden, crabapple, hackberry, oak, and black locust. The young caterpillars or larvae emerge from overwintering eggs in June and start feeding on plant foliage.

Female bags hanging on the trees from last year contain 500 to 1,000 eggs. Newly hatched larvae emerge from the bottom of the bags in June. They form tiny silk bags covered by whatever host they are eating. The young larvae are difficult to see because they blend in with plant foliage. The larvae climb high into a tree and dangle on 1- to 3-foot strands of silk. These strands are caught in the wind and detach, becoming a streamer that keeps the larvae aloft. Bagworms can float for long distances until the silk catches on an object. Many land on inhospitable places, such as roads or buildings, where they are likely to be killed. The rest catch onto trees and shrubs, then climb to the top of a plant and repeat the ballooning process or settle down to feed. Bagworms typically start feeding at the top of plants.

The young caterpillars are 1/8 to 1/4 inch long and initially feed on the epidermal tissue on one side and

the mesophyll, leaving other epidermal tissue intact. Leaves appear whitish before turning brown. The young caterpillars create a cone-shaped bag, or case, that they carry with them for the rest of their life.

Older larvae (3/4 to 1 inch long) consume entire needles or leaves, mainly stripping the branches at the top of the tree. As they age and the food source declines, the larvae and their damage move down the plant canopy. Stripped conifer branches usually die. A severe infestation of bagworms can completely defoliate plants, which may result in death of branches or entire plants. This is especially likely for evergreens, which don't normally put out a flush of growth following defoliation by bagworms. Deciduous plants that have been attacked generally produce a new flush of leaves and survive. Bagworm caterpillars feed for about 3 months. On some plants, female bags are mainly found at the top, male bags at the bottom, which may make it easier for females to effectively disperse the pheromone to attract males.

In late summer, around mid-August, bagworms pupate inside the cases. It takes about 7 to 10 days for bagworms to change from pupa to adult, depending on the temperature. The males are ugly, black moths with clear wings, emerging through the bottom of the bag. Males fly off to mate with females. Females never develop into winged moths and lack eyes, wings, legs, and antennae; they remain inside the bag made during the larval stage, producing eggs before dying. The eggs are the overwintering stage. There is one generation a year in Illinois.

Handpicking and destroying the bags from fall through midspring is effective in removing the overwintering eggs before they hatch. Bags should be placed in a plastic container and disposed of. It is important to note that larvae are likely to balloon in the spring from nearby or even distant trees.

Insecticides recommended for controlling bagworms include *Bacillus thuringiensis kurstaki* (Dipel or Thuricide), cyfluthrin (Tempo), trichlorfon (Dylox), and spinosad (Conserve). Insecticide sprays are effective against the young larvae. Larvae, in which the bags are 3/4 inch long, are very difficult to control. The bacterium *Bacillus thuringiensis* is effective on young caterpillars, but the material must be ingested—so thorough coverage of all plant parts is essential. Spinosad works by contact and ingestion, and is very effective in controlling bagworms. Larger bagworms are more difficult to control, and the females feed less as they prepare for reproduction. Cyfluthrin and trichlorfon are recommended for larger larvae. Again, thorough coverage of all plant parts is essential, especially the tops of trees.

Insecticides should be applied about 2 weeks after hatching starts, to allow all bagworms to hatch and blow around, allowing the larvae to complete the ballooning process. Treating too early typically requires a second treatment to control larvae that later balloon onto trees and shrubs. Wait until mid-June in southern Illinois and late June to early July in central Illinois to treat. It is best to scout trees and shrubs a week or two after treatment to be sure that more bagworms have not blown in and to evaluate control.

Actively feeding bagworms always have small pieces of green foliage around the bag's top, and these pieces eventually dry and turn brown within a couple of days. Older larvae with no green foliage around the top have most likely pupated, and the use of insecticides is not warranted. Even after treatment, bagworms hang on the plant. In addition to the recommended insecticides, research has shown the certain species of entomopathogenic nematodes *(Steinernema carpocapse)* attack bagworms. When the nematodes are sprayed onto the bags, they infect the female bagworms inside. The bags provide a humid environment conducive to nematode activity. It is important to apply the nematodes before females lay eggs.

A sex pheromone, used in traps to lure male moths, may be used to interfere with mating behavior, reducing fertilization. Unfertilized eggs do not hatch.

Bagworms are susceptible to natural enemies, including the ichneumon parasitic wasps *(Itoplectis conquisitor* and *Chirotica thryrifopteryx).* Both wasps attack the pupae; however, bagworms are generally present at damaging levels before the wasps are effective. Parasitism of male bagworms is generally greater than of females, as parasitic wasps tend to locate on the bottom of trees. *(Raymond A. Cloyd)*

Periodical Cicada

Periodical cicadas emerged in large numbers in northeastern Illinois on June 6. Typically, this insect emerges in the Chicago area around May 27. The unseasonably cool weather this year, particularly in northern Illinois, may be the cause of the later emergence. Another unusual feature is that the males have not been singing much. Typically, the males do not sing for a couple of days after they emerge, but the longer period this year also may be due to the cold weather. As a general rule, insects are not active at temperatures much below 50°F and are sluggish when temperatures in the 60s. With the warmer temperatures predicted during the week of June 15, there probably will be plenty of singing.

Egg-laying is unlikely to start until a week or so after the males start singing, so there is still time to

protect young tree trunks under 2 to 3 inches in diameter with screening or other protective materials.

I appreciate the heavy response to my request for locations of this year's emergence. I have had reports of cicadas in the Beverly area of Chicago, Chicago Heights, Downers Grove, Elmhurst, Elmwood Park, Flossmoor, Glen Ellyn, Hinsdale, Homewood, LaGrange, LaGrange Park, Lake Forest, Libertyville, Lisle, Lombard, Marseilles, North Riverside, Olympia Fields, Palos Heights, Palos Hills, Western Springs, and Westmont. If you see periodical cicada in areas other than those listed, please let me know—pnixon@uiuc.edu or (217)333-6650. *(Phil Nixon)*

Fletcher Scale

Fletcher scale *(Parthenolecanium fletcheri)* is a common pest in nurseries and on sheared hedges in landscapes. This scale feeds on arborvitae *(Thuja* spp.) and yews *(Taxus* spp.) and has been known to feed on *Pachysandra*. On yews, they are generally located deep within the plant canopy. The female scales are about 1/4 inch long, round, and deep brown when mature. In Illinois, eggs hatch between May and early July into oval, flat, yellowish crawlers. Females lay around 500 to 600 eggs and are capable of producing up to 1,000. Crawlers are active from mid-June to mid-July. They tend to congregate and feed on twigs and stems deep within the plant canopy. Fletcher scale–feeding weakens plants, causing foliage to drop. They produce copious amounts of honeydew, an excellent growing medium for black sooty mold fungi. There is one generation a year in Illinois.

Insecticides recommended for Fletcher scale include acephate (Orthene), insecticidal soap, and summer oil. Apply in mid- to late June when crawlers are active or when hills of snow hydrangea are in full bloom—because the early crawlers are most susceptible to insecticides. Be sure the sprays penetrate the entire plant canopy.

Natural enemies may cause rapid decline in Fletcher scale populations because many predators are effective in controlling crawlers. As a result, use insecticides that are less harmful to natural enemies. Avoid broad-spectrum insecticides (that is, acephate) that may kill natural enemies. *(Raymond A. Cloyd)*

Home, Yard, and Garden Pest Newsletter is prepared by Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey. Information for this newsletter is gathered with the help of staff members, Extension field staff, and others. Karel Jacobs and Donna Danielson of The Morton Arboretum also provide information and articles.

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