UNIVERSITY OF ILLINOIS EXTENSION
HOME, YARD & GARDEN PEST NEWSLETTER
College of Agricultural, Consumer and Environmental Sciences, University of Illinois at Urbana-Champaign
Illinois Natural History Survey, Champaign

No. 7 • June 6, 2007

PLANT DISEASES

Oak Wilt Testing

Oak wilt is a vascular disease caused by a fungus that plugs up the vascular system of the tree. The foliage of the infected tree may become scorched, or it may turn gray–green or tan. The effect will not go unnoticed, especially if the tree is a landscape tree; but it is important to notice symptoms as soon as possible to help surrounding oaks. The disease progresses quickly, killing mature trees in the red oak group in one season. The symptoms often start in the top of the tree, so don't neglect looking there for problems. Binoculars work well for large trees. Make it a habit to look at your plants often. That is part of enjoying your landscape. Vascular diseases such as oak wilt are more apparent now that other foliage is a deep green. If you see a problem on your oak, look at other tree species in the area. Oak wilt infects only oaks. If other trees are showing similar symptoms, then consider site or environmental stress.

Leaf symptoms vary depending on the oak species involved. Generally oaks in the red or black oak group (pointed leaf lobes) 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. The leaves curl slightly and turn a dull pale green, bronze, or tan, starting at the margins. Usually by late summer, an infected tree has dropped all its leaves. In some years, we have seen red oaks progress from scorched foliage to total defoliation in as little as 3 weeks.

The white and bur oak group (rounded leaf lobes) 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 toward the base. The leaves curl and remain attached to the branches. This tree group may die in one season but is much more likely to survive for many years with dieback and stressed appearance.

There is no cure for an infected tree. Trees with early infection may be treated to help contain the fungus. So why is accurate diagnosis such a concern? The oak wilt fungus spreads from an infected tree to healthy oaks. The cost of preventing this spread can be high. By accurately identifying the disease problem, we can be sure that the money spent to protect healthy oaks is well spent. The cost of testing at the University of Illinois Plant Clinic is only $12.50 per sample.

If you sample a tree for oak wilt testing, do so before any chemicals are applied. Look for vascular discoloration to help diagnose the presence of oak wilt. Samples should be 8 to 10 inches long, about thumb thickness, alive but showing symptoms, and must contain vascular discoloration. It takes 7 to 10 days for the fungus to develop in the lab to the point where a positive confirmation can be made from cultures. The processing time cannot be shortened. Oak samples submitted for oak wilt testing should be sent on disposable ice packs to prevent killing the fungus (in mail trucks) with high temperatures before it can be isolated in the lab.

If you have oak wilt in your area, do not prune oaks now. Pruning when trees are actively growing results in sap flow, attracting the beetles that may carry the fungal pathogen to your tree. Both the beetles and the fungus are now active. If oak wilt is present in your area, try to leave pruning of oaks at least until after midsummer. The dormant season would be an even better time for this task. For more information about oak wilt, consult *Report on Plant Disease,* no. 618, "Oak Wilt and Its Control," available on the Extension Web site http://www.ag.uiuc.edu/~vista/horticul.htm. *(Nancy Pataky)*

Phomopsis Twig Blight of Juniper

Phomopsis twig blight of juniper is caused by the fungus *Phomopsis juniperivora*. Economic damage to landscape plantings and nursery stock is largely restricted to species and cultivars of juniper *(Juniperus).* Species of arborvitae *(Thuja),* cypress *(Cupressus),* and false cedar *(Chamaecyparis)* are susceptible to various degrees. Other conifers are occasionally infected. The disease is mainly a needle and shoot problem found in young plants and on the new growth of older plants.

Yellow spots at the shoot tips of young needles are the first symptoms to appear. As the infection progresses into the stems, needles turn first to pale green and then to reddish brown. Cankers, visible as grayish bands, are present at the junction of healthy and diseased tissues. These cankers girdle small stems (less than 1/3 inch in diameter), causing tip death. Dead shoots remain on

the plant, eventually fading to an ash-gray color. Older branches (more than 1/3 inch in diameter) are more resistant to infection, and cankers that form on them usually heal. After 3 to 4 weeks of infection, small black spots (the fungal fruiting bodies) can be seen with the unaided eye or with a magnifying glass on the dried, ash gray parts of stems and needles.

During prolonged wet, warm periods in spring and summer (April through early June) and again in late August and September, the fungus becomes particularly infectious. It is more damaging to plants in landscape and nursery settings than it is to plants growing in the wild. Young plants and seedlings are highly susceptible and are commonly killed by the blight. This disease becomes progressively less serious as trees and shrubs grow older; and even though new growth of older plants is still susceptible, death or serious damage to a plant over 5 years old is much less likely.

The spores can tolerate some drying and may remain viable within diseased tissue for as long as 2 years. Where practical, prune out and burn, bury, or remove all blighted parts as they appear. Restrict pruning to periods of dry weather within the dry season (late June through August), to minimize spore dispersal, and also so that susceptible new growth can emerge and develop with less chance of infection. General avoidance tactics include planting in well-drained soils and avoiding overhead irrigation. If overhead irrigation is necessary, water in the early part of the day so plants dry quickly.

Several other diseases and environmental stresses may cause similar symptoms to Phomopsis twig blight. For an exact diagnosis, samples should be submitted to the Plant Clinic (http://plantclinic.cropsci.uiuc.edu/). To help rule out other possible causes, look for (1) death of only this year's new growth (needles *and* stems); (2) a distinct line of demarcation between healthy and diseased tissue; (3) symptoms on plants that have not been subjected to injury, drought, or high salt levels (in soils, irrigation water, or spray from road salts).

For more information on Phomopsis twig blight of juniper, consult *Report on Plant Disease,* no. 622, "Phomopsis Twig Blight of Juniper," http://web.aces.uiuc.edu/vista/pdf_pubs/622.pdf. A print version of this report is also available in most Illinois Extension offices. See a photo gallery of symptoms at http://www.urbanext.uiuc.edu/hortanswers/detailProblem.cfm?PathogenID=14. *(Shanyn Siegel, Plant Clinic Diagnostician)*

Oak Leaf Blister

If you have been noticing some unsightly problems on oak leaves, the leaf tissue may be infected with *Taphrina caerulescens*. This pathogen is known to cause the disease known as oak leaf blister. There have been recent reports of this disease in northern Illinois. A cool, wet spring provides favorable conditions for this disease, and only isolated parts of the state experienced those conditions this year.

Oak leaf blister occurs worldwide. This disease has been reported on 10 oak species in the Midwest; however all oak species could be affected. Red oaks seem to be very susceptible, and white oaks have been reported to be more resistant (http://www.ext.colostate.edu/ptlk/1449.html). Still, damage is mostly aesthetic.

This pathogen infects only the leaf tissues. Symptoms of oak leaf blister begin as circular, raised spots on the upper surface of the leaf. Later, these lesions will merge and become wrinkled, brown, and curled. Some defoliation may result due to heavy infestation, but leaf drop is usually not significant. The pathogen *Taphrina caerulescens* can overwinter in bud scales and bark crevices.

The good news is there is no need to panic. This disease is not considered serious, and chemical control is not usually recommended or economically warranted. It is always a good practice to rake and destroy the infected, fallen leaves to help reduce the spread of disease. In addition, maintaining the health of trees by properly watering, pruning, and fertilizing helps to reduce the effect of this disease. If you are having problems with leaf curl and blisters and wish to use a fungicide control, you need to make a late-fall or winter fungicide application. Mark your calendar now as a reminder.

Fungicide options for homeowners are listed in the *Home, Yard, and Garden Pest Guide.* Fungicides available to commercial growers are listed in the *Commercial Landscape and Turfgrass Pest Management Handbook.* Both handbooks are available from https://PubsPlus.uiuc.edu/. For more on leaf curls and blisters, consult *Report on Plant Disease,* no. 805, "Peach Leaf Curl and Plum Pockets," or no. 663, "Oak Leaf Blister." Both are available in Illinois Extension offices or on the U of I Web site http://www.ag.uiuc.edu/%7Evista/horticul.htm. *(Stephanie Porter, Plant Clinic Diagnostician)*

INSECTS

Scouting Watch

Periodical cicada has emerged in northern Illinois. In the Chicago metropolitan area, high numbers have been reported in Downers Grove, Westmont, Glen Ellyn, Elmhurst, Lombard, Brookfield, Riverside, Hinsdale, LaGrange, Countryside, Palos Hills, Forest Hills, and Orland Park. Heavy emergence appeared to be several days later in Lake County, particularly within 1/2 mile of Lake Michigan. As of the end of May, broad estimates indicate that the numbers of cicadas present ranges from about one-tenth to one-third in the same areas in 1990, when this brood last emerged.

Spiny elm caterpillars have been reported on hackberry in northeastern Illinois. These black, spiny caterpillars grow to about 2 inches long. They have a

row of red blotches down the back. They tend to feed in groups, defoliating elm, hackberry, poplar, birch, linden, and willow. They are the larval stage of the mourning cloak butterfly. Because they are larval butterflies and attack trees that are vigorous and easily recover, small infestations are usually tolerated. Because they feed in groups, hand-removal of the larvae is an option, as well as sprays of *Bacillus thuringiensis kurstaki* (Dipel, Thuricide) and many other labeled insecticides.

Gypsy moth caterpillar infestations with very noticeable defoliation have been reported in northeastern Illinois. The larvae are nearing pupation, resulting in poor insecticidal control. *Bacillus thuringiensis kurstaki* must be ingested by the caterpillars to be effective. As a caterpillar nears pupation, it greatly reduces and eventually stops feeding, so an insecticide that requires ingestion is ineffective. At the same time, the caterpillars start to break down and absorb the inner layers of its exoskeleton before molting to the next larval stage or pupal stage. This results in reduced connections between the outside of the caterpillar and its internal organs, causing even contact insecticides such as pyrethroids to be less effective. In other words, mature caterpillars are almost impossible to control short of stomping on them.

Black vine weevil is treatable at this time throughout the state. They are in the adult stage and feeding on foliage. They must feed on yew, euonymus, and other host plants for about 2 weeks before they mature enough to lay eggs. Scout plants for the characteristic foliage notching before treatment. Spray foliage of attacked plants, allowing heavy runoff onto the debris below the shrubs and groundcovers. Acephate (Orthene), bifenthrin (Onyx, Talstar), and cyfluthrin (Tempo) are effective.

Mimosa webworm first generation is just starting in southern Illinois. Early damage by first generation will appear as two leaflets webbed together, with one or two caterpillars feeding on the leaves of honey locust and silk tree (mimosa). If there are large numbers of these scattered over the tree, spraying with *Bacillus thuringiensis kurstaki* (Dipel, Thuricide) or other labeled insecticide is recommended. Moths will lay eggs back into first-generation damage later in the season. The resulting second generation will web and damage several compound leaves, whereas only a few leaflets were damaged by the first generation. *(Phil Nixon, James Schuster, Susan Grupp, Morton Arboretum)*

Honeylocust Plant Bug

Honeylocust plant bugs are common this year in northern Illinois. They are common every year from about Peoria south but typically are not present in large numbers farther north except in an approximate 1/2-mile band along Lake Michigan where the lake effect moderates winter temperatures. They are being reported in noticeable numbers primarily in protected, warmer areas away from the Lake. They are more common in low-lying and downtown suburban areas and much less common in more open residential areas.

Eggs are inserted into first-year stems from late May through June. They remain there, unhatched, for the rest of the growing season and through the winter. About a week after honey locust budbreak in the spring, the eggs hatch into pale green, pinhead-sized nymphs. The nymphs go through five nymphal instars, getting larger and more active after each molt. Older nymphs have a small orange spot on the back in the middle of the abdomen where the scent gland opening is located.

Fifth-instar nymphs molt into adults in late April in southern Illinois, becoming adults progressively later through the state through the third week of May in northern Illinois. The adults are lime green, about 1/8 inch long, long-legged, and flattened across the back. They actively run on the leaves and branches, flying readily when disturbed. When very numerous, they become nuisance pests by flying onto passersby's hair, face, and clothes.

Nymphs and adults suck sap from the leaflets and leaf rachises of honey locust through the early spring. Feeding on the expanding and newly expanded leaflets causes them to be distorted and malformed. Heavily attacked leaflet areas turn brown. Heavy feeding can cause enough distortion that the leaflets drop from the tree, followed soon by the bare leaf rachises. Those trees will refoliate, the new leaflets sustaining no or little damage. Less severely damaged leaflets remain on the tree through the growing season, resulting in this early feeding being the cause of season-long aesthetic injury.

Damage from these bugs appears to be primarily due to sap removal, with little or no obvious toxin effects. Thus, higher numbers of young nymphs running up and down the leaf rachises and across the leaflet undersides translate to more subsequent damage. Even though most residential honey locust are thornless, cloned varieties that should have close to identical genes, there are considerable differences in the amount of damage sustained by adjacent trees of the same variety growing in apparently similar conditions. Recognize and record these differences to aid in management of this insect. Trees that consistently show little or no damage can be skipped during control activities.

Control these insects with a single application of acephate (Orthene), bifenthrin (Onyx, Talstar), cyfluthrin (Tempo), summer oil, or thiamethoxam (Flagship) about 2 weeks after bud break. Scout the trees before treatment to determine whether treatment is justified. Turning the branches over to inspect the leaf undersides causes the nymphs to run across the leaflets and along the leaf rachises, making it easier to determine their relative abundance. *(Phil Nixon)*

Insects Confused with EAB Adults

Adult emerald ash borers (EAB) are expected to emerge and be present over the next 6 weeks. Although these insects are distinctive, with their ½-inch-long, bullet-shaped, metallic emerald green bodies, several insects are commonly confused with them.

Tiger beetles are predators of insects, spiders, and other small animals. They are commonly found sitting on sidewalks and other open areas. The sixspotted green tiger beetle is about 1/2 inch long and bright metallic green, with small white spots on the wing covers. They actively fly in sunny conditions, always facing anyone nearby. Another species is about 3/4 inch long, a darker metallic green without spots. The light-colored larvae have large dark heads with huge jaws. The larvae lurk in holes in the soil, waiting for insects and other prey to pass by.

Ground beetles are predators of insects and other small animals, with the elongate larvae living in the soil and organic debris. Some specialize in feeding on snails. Many species are black with tan legs, but several are metallic green. The fiery searcher, *Calasoma*, is considerable longer and wider than the emerald ash borer, being about 1 inch long and 1/2 inch wide. The species that is metallic green was imported to control gypsy moths, as it climbs trees looking for caterpillars. As with other ground beetles, they are strongly attracted to lights at night, being commonly found in lighted parking lots in the morning. Another metallic emerald green ground beetle is about 1/2 inch long but with a considerable wider abdomen than emerald ash borer.

Sweat bees, also known as mining bees, live in soil, plant stems, or rotting wood, depending on the species. They raise their larvae in burrows on flower pollen and feed themselves on flower nectar. Thus, adults are important pollinators and are commonly seen on flower blossoms. Several species are metallic green, 3/8 to 1/2 inch long.

Cuckoo wasps, also known as cuckoo bees, are metallic blue to blue–green as adults. These 1/2-inch-long insects are commonly seen on flower blossoms. As with the sweat bees, they have the obviously separated body regions of head, thorax, and abdomen, as well as having clear, membranous wings. Even so, they are mistaken for emerald ash borers due to their metallic green color.

Bronze birch borers are in the same genus, *Agrilus*, as the emerald ash borer. These insects live as larvae in the cambium of declining birch trees, hastening their demise. Being closely related, the adults are the same size and shape as the emerald ash borer but, as the name indicates, are bronze-colored in sunlight rather than emerald green. In the shade, bronze birch borer adults appear blackish, whereas emerald ash borers are bright enough to appear green even in subdued light.

Honeylocust borers are also in the same genus as emerald ash borer. Its larvae are common in declining honey locust trees, feeding not only in the cambium but also tunneling deeper into the sapwood as well. The adults are the same size and shape as emerald ash borer but are black in color. The adults are commonly found on the foliage of honey locust when emerald ash borer adults are present. *(Phil Nixon)*

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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For subscription information, phone (217)333-2666 or (800)345-6087, or e-mail acesnews@uiuc.edu. Web subscriptions are available (http://www.ag.uiuc.edu/cespubs/hyg).

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