



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

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PLANT DISEASES

Bacterial Scorch

It's time to watch oaks for bacterial scorch. Other tree species can also become infected, but oaks seem to be the preferred host in Illinois.

“Scorch” generally mean that leaves are brown along the margins and sometimes between veins—caused by environmental stress such as flooding, hot temperatures, drought, or drying winds. When site stress such as clay soil, compaction, or construction injury is added, trees and shrubs can have significant scorching. Even so, those plants generally recover with adequate moisture and time. Trees infected with bacterial scorch decline and die in about 3 years.

Bacterial leaf scorch (BLS) is an infectious disease that spreads systemically and causes a slow decline and death of the tree. The disease is caused by the bacterium *Xylella fastidiosa*. Although BLS was mainly found in eastern and southern states, it is now now frequent in western Kentucky and Indiana. Last summer, we confirmed six cases on pin oaks in central Illinois. A case on shingle oak was also confirmed in Springfield. The bacterial pathogen cannot be isolated in the lab like most bacteria. It can be confirmed using serological techniques. Because our lab is not equipped for this test, we refer people to private labs. One nearby lab is AGDIA, Inc., in Elkhardt, Indiana.

Frequent hosts in the United States include elm, oak, sycamore, mulberry, sweetgum, sugar maple, and red maple. As stated, however, oak seems to be our most common host in Illinois. Look for scorch symptoms that occur in early summer to midsummer and then intensify in late summer.

The scorched leaf edges or tissue between veins may be bordered by a yellow or reddish brown. Symptoms occur first on one branch or section of branches and slowly spread in the tree from year to year. It is one of those situations that you hope will improve next year but that only gets worse. Symptoms often show on oldest leaves first, distinguishing this disease from environmental scorch, which first appears on newest leaves. Of course, diagnosis is never that simple, and oaks are an exception. We did

not observe this pattern on pin oaks in Illinois. In fact, most references say that oaks show symptoms on an entire branch at once. We saw symptoms on new leaves on some branches, on older leaves on others, and scattered throughout the tree. Bacterial scorch often allows infected leaves to remain on the tree until the fall. Oaks are again the exception, dropping leaves early. If you have seen a slow but progressive decline in your oak, leaf scorch symptoms showing each July to August, and fall leaf drop about a month ahead of healthy oaks, BLS may be present.

The bacterial pathogen is found only in xylem tissue. Xylem-feeding leafhoppers and spittlebugs are thought to spread the bacterium. It can also be transmitted between trees via root grafts. The transmission methods must not be effective, though, because we do not see rapid spread from tree to tree.

We recently sent a suspect sample to AGDIA and obtained a report that the sample was elevated above negative but not high enough to call positive. The folks at AGDIA are not trying to be difficult: Samples of BLS do not have high bacterial populations at this time of year. Watch your suspect tree. If conditions worsen by midAugust, try sending a sample.

AGDIA, Inc., has a serological (polyclonal antibody) test for the bacterium that can be done on young twigs and leaves. As of this writing, the fee was \$48.25 for one sample and \$6.25 for each additional using the same test. It is suggested that you call ahead to be certain you have prepared the correct sample and avoid resampling at your expense. Leaf petiole tissue is preferred, so leaves with green petioles are the usual request. Consult AGDIA at <http://www.agdia.com>, or call them at (219)264-2014 or (800)62-AGDIA. If you prefer to go through the Plant Clinic, we can test for other problems but would have to bill for AGDIA testing as well.

What can you do if bacterial scorch is present? First, probably nothing can keep the tree from dying. You can prune out dead wood as it appears. Start thinking of tree-replacement options, and plant something that is not known to host this disease. Pick a species that does well in the site. Investigate drainage pattern, soil type, amount of sunlight, and oddities about the location.

No fungicides, insecticides, or bactericides can be sprayed on a tree to effectively prevent or cure this

disease. There is an antibiotic (oxytetracycline) in some commercially available injectable products intended to combat *Xylella*. There is not much research in this area, but work shows that in some cases oxytetracycline suppresses *Xylella* and may provide temporary symptom suppression when injected into trees. Researchers in Kentucky have tried it and seen no benefit. National Park Service researchers have seen only short-term benefits. Injections may need to be repeated every year, can be costly, and afford no guarantees. (Nancy Pataky)

Botryosphaeria Canker

We tend to see canker diseases in periods of stressful weather when leaves wither and branch dieback is more apparent. The diseases did not just suddenly appear: Cankers develop slowly over months or years when fungi invade the plant following injury or stress. Cankers may be initiated by injuries (hail, mowers, insect feeding, etc.), environmental stress (cold, heat, scald, etc), chemicals, or pathogens.

A canker is a dead area on the stem or trunk of a tree or shrub. Vascular tissue under the canker is dead. Cankers also may appear on herbaceous plant material, usually as sunken (dead) areas on the stems. The term “canker” is a general one referring to a symptom on the plant but does not indicate cause. Cankers are common on a wide range of trees and shrubs, typically occurring on trunks, older branches, or injured plant areas on smaller twigs.

One common canker disease is *Botryosphaeria* canker. We see it on a wide range of ornamental plants and fruit crops. Oak, crabapple, sweetgum, dogwood, elm, and redbud lead the list at our clinic.

If the canker itself goes unnoticed, the newest leaves are usually the first clue to a problem. As the canker girdles the stem, leaves begin to wilt, turn yellow, and then brown. Look for these on drought-stressed trees now. Some young twigs may curl downward. Bark on younger twigs may lose color or blacken, depending on the canker or plant involved. When a canker girdles the stem, the twig dies from that point to the tip. If the stem is not girdled, it may show one-sided death, or some leaves are affected and others are green. *Botryosphaeria* cankers are usually cracked, dry, and discolored. Fruiting bodies of the fungus appear as pinhead-sized black specks embedded in the bark. Often, these fruiting bodies appear as small bumps covering the canker.

Botryosphaeria and other canker fungi infect only stressed trees; therefore, canker fungi are known as stress pathogens. Because stress is the predisposing factor, the first step toward disease management is identifying the source of stress. Try to correct or

modify the site, soil, or surrounding plants to make the conditions less conducive to cankers. This might involve diverting drainage away from the plant, pruning surrounding plants to allow better air flow, fertilizing the tree, providing water in drought, etc.

Reduce risk by using plants adapted to your area. Buy vigorous, healthy-looking plants. Plant at the proper depth. Space plants based on mature size. Grow plants in well-drained, fertile soils with the needed pH for best plant growth. In other words, follow good horticultural practices.

Once a canker problem is noticed, you have the option of leaving the canker alone or trying to remove the affected area. If it is on the trunk, you may opt to leave it alone or remove as much of the decayed wood as possible so the tree can more readily callous over the injury. Prune out stem cankers where possible to avoid entry of wood rot fungi into the trunk.

One last warning: In areas with oak wilt, we prefer to prune oaks in the dormant season to avoid attracting beetles that might bring the oak wilt fungus to the tree. It is probably safe to prune oaks after mid-July. A report on cankers and dieback diseases of trees is available in *Report on Plant Disease (RPD)*, no. 636. (Nancy Pataky)

Oak Leaf Blisters Changes

We discussed leaf blisters in issue no. 6. Lately, we have received several samples of oaks with large brown spots, usually about the size of a quarter. These spots give a slight bulge, or bubble, to the leaf blade. It is not a new fungal disease. All cases have been confirmed as advanced stages of oak leaf blisters. The disease has been prevalent in 2002 but is not significantly harming trees. The lesions are initially light green and not very noticeable. As summer progresses, these spots often turn brown and draw more attention. Do not be too alarmed. Read our earlier article about this disease and relax. (Nancy Pataky)

Sphaeropsis Clean Up Now

Sphaeropsis blight of pine is thriving because of the early season extended wet weather. (Refer to issue no. 4.) It is too late to spray fungicides to help the tree this year, but we have suggested pruning out dead stem tips in dry weather. Now is a good time to take care of that problem. Infection occurs in the spring, but getting rid of inoculum now will reduce infection later. Often we wait until spring to do this pruning, and infection has already occurred. There is less chance of spreading the fungus in hot, dry weather. Rake up fallen needles and cones if possible. If you can't do this now, mark your calendar to do this task in the fall. (Nancy Pataky)

INSECTS

Pest Watch

Bagworms cases are approaching 3/4 inch long in central Illinois—large enough that control may be inconsistent with *Bacillus thuringiensis kurstaki*; and little control is likely with carbaryl (Sevin), diazinon, and several other insecticides. For later-season bagworms, cyfluthrin (Tempo), trichlorfon (Dylox), spinosad (Conserve), or one of the other pyrethroids should provide excellent control.

Annual white grub eggs should all be laid, with hatching expected by the end of July in southern Illinois and early August in northern Illinois. Japanese beetle grubs hatch about the same time. Imidacloprid (Merit) and halofenozide (Mach 2) can be applied through the end of July to provide excellent control.

Green June beetle adults have been reported. These 1-inch-long, stout beetles have light green wing covers with yellow markings along the side. They fly during the day with reckless abandon—crashing into people, buildings, and everything else, and becoming a nuisance. The larvae look like other white grubs but are bigger, straighter and have short legs. They live on dried grass and other vegetation, being common in piles of grass clippings, livestock manure piles, and some lawns. Making the grass and manure piles into compost piles eliminates most larvae. Carbaryl (Sevin) watered into the turf controls the larvae in August and September. Other insecticides labeled for white grubs also provide control.

Twospotted spider mites are being found throughout Illinois, particularly on herbaceous perennials such as daylily and sunflower, as well as on shrubs and trees. Spider mites are susceptible to fungal attack in damp conditions, being able to become very numerous with low humidity and soil moisture. Probably, the dry weather in the last few weeks has been a major factor in this pest's buildup. Plants sprayed regularly with insecticides are also more susceptible to mite attacks. Insecticide kills off mite predators, allowing quicker buildup of mites. Several pesticides are effective against mites, including insecticidal soap, summer spray oil, abamectin (Avid), bifenthrin (Talstar), and hexythiazox (Hexygon). Usually two weekly applications are needed for control.

Peachtree borer flight is still heavy in northern Illinois, and insecticide application to control these insects attacking the base of purpleleaf plum, flowering cherry, and other *Prunus* should still be effective throughout the state. Permethrin (Astro, Ambush, Pounce) is recommended. (*Phil Nixon and Morton Arboretum*)

Potato Leafhopper

Potato leafhopper, *Empoasca fabae*, injury is being found on susceptible trees in many parts of Illinois. Potato leafhoppers attack many landscape trees, including maple, crabapple, birch, and ash. Red maples are extremely susceptible, whereas silver, sugar, and Norway maples are more tolerant if not stressed from improper watering, fertility, or mulching.

Potato leafhoppers have piercing-sucking mouthparts. Feeding within the vascular tissues of plants, they inject a toxic fluid. Feeding, especially on maples, results in stunted tree shoots and leaves that curl downward, with brown edges. Symptoms resemble phenoxy herbicide (for example, 2, 4-D or dicamba) injury. On other plants, such as ash, feeding by potato leafhoppers creates small, white or yellow spots on leaves, resulting in a stippled appearance because potato leafhoppers, like spider mites, remove the chlorophyll from leaves. Potato leafhoppers don't overwinter in Illinois because their eggs are sensitive to cold. They winter in the Gulf of Mexico and are blown into Illinois by prevailing winds from early May to early June.

Adults settle into alfalfa fields during early spring migration; after the first cutting of alfalfa, they migrate in large numbers onto ornamental plants. Adults are small (about 1/8-inch long), wedge-shaped, and pale green, with white eyes. Females lay eggs into the veins on the underside of leaves. The eggs hatch in 6 to 9 days into light green nymphs that are found on leaf undersides. The nymphs tend to move sideways when disturbed; they undergo five instars before molting into adults. Adults and nymphs are similar, except that adults are larger, have wings, and can fly. The wings are held rooflike over the body. Empty, white, cast skins on the underside of leaves provide evidence of potato leafhopper activity. There may be three to five generations per year in Illinois.

Pest-control materials must be applied before potato leafhoppers cause plant damage. Control can be obtained with pyrethroid-class pest-control materials, such as bifenthrin (Talstar), cyfluthrin (Tempo), lambda-cyhalothrin (Scimitar), and permethrin (Astro). If damage has already occurred, applying pest-control materials prevents further damage, and new growth will appear normal beyond the damaged leaves. Regular scouting helps minimize the potential for severe foliar damage. (*Raymond Cloyd*)

Sod Webworm

Sod webworm is likely to become a problem in nonirrigated turf during this dry weather. Larvae are attacked and controlled in moist turf with a naturally

occurring microsporidian—a small, funguslike organism. When turf stays dry, more sod webworm larvae survive to cause heavy damage.

Larvae live in silk-lined tunnels in the thatch, emerging at night to feed on grass blades. Damage appears initially as irregular, brownish turf areas. Continued feeding results in large, brown areas. On close inspection, the brown areas are due to the thatch showing because the grass blades have been eaten off at the crown. It is common to see small balls of green webworm feces at the base of the plants.

Positive identification of sod webworms involves using a disclosing solution. A teaspoon of 6% pyrethrin or tablespoon of dishwashing detergent is added to a gallon of water and then applied evenly over a square foot of turf. Within a minute or so, sod webworm larvae, black cutworm larvae, earthworms, rove beetles, and other insects come to the surface. Sod webworm larvae are elongate caterpillars up to 1 inch long, with dark brown spots. The background ranges from greenish to gray to tan. Two or more sod webworms per square foot are enough to cause damage.

Presence of large numbers of insectivorous birds such as starlings, cowbirds, and robins feeding on the turf for several days in succession also indicates sod webworms. Although the birds are eating the larvae, they are unlikely to eat enough to prevent webworm damage. Also, the birds create 1/2-inch-diameter holes through the thatch. Heavy webworm infestations may result in severe bird injury as well.

Finally, one can predict sod webworm infestation by observing the adult moths. The slender, 1-inch, tan moths sit on the turf and fly up when disturbed. They

typically fly less than 10 feet above the turf in a jerky, up-and-down motion. After flying only about 30 feet, they drop back to the turf, where they can be observed more closely. At rest, the wings fit tightly around the body, making the insect look more tubelike than other moths. If there are many moths and the turf stays dry, application about 2 weeks later should provide excellent control of hatching larvae.

Bifenthrin (Talstar), carbaryl (Sevin), diazinon, halofenozide (Mach 2), spinosad (Conserve), and trichlorfon (Dylox) should be effective in controlling larvae. Insecticidal nematodes such as *Steinernema carpocapsae* should also be effective. (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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