



UNIVERSITY OF ILLINOIS EXTENSION

HOME, YARD & GARDEN PEST

College of Agricultural, Consumer and Environmental Sciences, University of Illinois at Urbana-Champaign
Illinois Natural History Survey, Champaign

NEWSLETTER

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PLANT DISEASES

Watch for Oak Tatters

If your white oaks are looking a bit odd right now, be aware of this condition that typically appears in May in the Midwest. "Oak tatters" is a term coined for a condition that has occurred for about 15 to 20 years in Illinois. The foliage looks as though it has been "eaten" by an insect. Only the major veins and a bit of tissue around the veins remain intact. Soft tissues of the leaves appear to have been eaten by a starved insect. The foliage is not scorched or necrotic. What is left on the leaf is green. In fact, at first it may go unnoticed because there is no brown tissue. The foliage appears lacy, and the canopy appears thinned.

We have seen this problem on white oaks or trees in the white oak group in Illinois. Usually, other nearby oak species are not affected. Oak tatters has been reported in other states as well, including Iowa, Indiana, Ohio, Michigan, Wisconsin, Minnesota, and Missouri. There are other problems that might resemble oak tatters. Anthracnose causes spring leaf damage but causes brown lesions on the foliage. Some insects cause similar damage, so look for the insects (usually caterpillars) or evidence of insects, including frass or webbing.

We do not know the cause of this injury. No disease problem or insect has been implicated. The suspects at this time are environmental stress as leaves emerge, cold damage, and herbicide drift. One fact is known: The affected trees eventually produce healthy new leaves.

In 2004, U of I researchers did a preliminary study indicating that drift of chloroacetamide herbicides (possibly from applications onto corn and soybean fields) was a possible cause of the syndrome. This work of Jayesh Samtani, John Masiunas, and Jim Appleby is described in an article in *Plant Health Progress On-line Journal*, February 2005, at <http://www.plantmanagementnetwork.org/sub/php/brief/2005/tatters/>.

There has been some concern that a tree repeatedly attacked by oak tatters might decline and even die. No evidence confirms this theory, but the question merits investigation. You may help your trees by following good horticultural practices to promote tree health, especially watering in periods of drought stress.

For more information, visit the U.S. Forest Service pest alert on tatters at http://www.na.fs.fed.us/spfo/pubs/pest_al/oaktatters/oaktatters.htm. (Nancy Pataky)

Lower Needles Dying on Pine

We've seen several pine samples at the Plant Clinic recently with fairly severe cases of *Dothistroma* needle blight. A few cases at the clinic usually indicate many similar cases in the state. The *Dothistroma* fungus causes the lower needles in the tree to have bands of brown or yellow tissue. Often, the tissue beyond those bands dries out, resulting in death of the needle tips. The overall appearance is browning of the lower third to half of the tree. Because affected needles from past years can serve as a source of inoculum on new needles, now is the time to take action to protect the new growth. Spores are spread from infected needles by wind and water.

We see *Dothistroma* needle blight most often on Austrian pine in Illinois, but it may occur on many pine species. *Dothistroma* causes reddish brown spots and bands on the needles, with infection most intense in the lower part of the tree. As the disease progresses, needle tips turn brown and fall from the needles, leaving the live, green needle base. Early defoliation may occur in spring and summer. Do not confuse these symptoms with salt burn or scorch, which causes needle tips to turn brown on the exposed side of the tree. *Dothistroma* blight is worse in more humid areas of the tree and shows definite spots and bands on the needles, not just brown tips. The pattern of infection helps considerably in diagnosis. Salt injury appears on the side of the tree nearest the road where salt was applied. Scorching occurs on the south or west sides of trees, due to wind and sun exposure. *Dothistroma* blight appears near the bottom of the tree or on older needles on a branch.

Cultural controls to promote more rapid drying of foliage may help. Suggestions are to prune overgrown plants in the area, control weeds, and use proper spacing of plants. Fungicides may be used to prevent infection of new growth, especially on trees with a chronic needle blight problem. Choices are listed in the Illinois pest management guides. Remember to look at the end of the disease chapters in those guides for information on mobility of the chemicals listed. Applications of fungicides are made when needles begin to expand (now)

and again 30 days later. Commercial options include Camelot, Junction, Kocide, or Phyton 27.

In the home landscape, some control of *Dothistroma* blight may be attained by removing fallen needles and helping tree vitality through fertilization and watering practices. Control measures are most successful when cultural controls are begun as soon as the disease is identified, with chemical controls started the following spring. You can also get more information from *Report on Plant Disease*, no. 624, "Needle Blights and Needle Casts of Pines." This report is available on the Web at <http://www.ag.uiuc.edu/%7Evista/horticul.htm> or in your local Extension office. (Nancy Pataky)

Ash Leaf Drop Now

Most readers are aware of the current concern over emerald ash borer (EAB) and its movement into Illinois. This insect kills ash trees but starts with crown dieback. Currently, a rather harmless fungal disease has infected some ash trees, as it often does in the spring in Illinois. The disease is ash anthracnose. It often causes sudden and rather heavy leaf drop, which of course causes concern. This is not EAB injury.

Anthracnose of shade trees appears in cool, wet spring weather. It tends to be worse at the bottom of the tree, where the canopy stays wet longer. Spots of various shapes appear on the leaves and twigs. The lesions on ash leaves occur along the margin of the leaves but in a scattered pattern. Spots are water-soaked at first and turn green-brown. As tissues dry, lesions turn tan. If you see uniform browning of all leaf edges, suspect scorching from environmental stress, root injury, or a vascular problem. Anthracnose may appear on other species, including maple, oak, sycamore, and dogwood; but different fungal species are to blame and symptoms differ slightly. Ash anthracnose is not a major problem.

The anthracnose fungus can also infect the leaf petioles. In some years, we see leaf drop with no apparent infection of the leaf blades. Closer inspection usually reveals anthracnose on the petioles. It is this infection that has probably prompted current concerns with leaf drop from ash. If you are concerned that your tree has EAB, keep in mind that EAB causes branch death. Ash anthracnose may cause leaf drop, but the twigs are still alive. An easy diagnostic tip is to bend the affected branch. Dead branches snap off. Live wood bends. Use a fingernail to scrape the stem tissue. Live branches are green or white internally. Dead branches are brown.

Ash trees recover quickly from ash anthracnose. The next flush of leaves emerges in warmer or drier weather, so additional infection is unlikely. We generally see ash anthracnose in mid-spring. Leaf drop may follow, but ash trees quickly develop new leaves as temperatures rise. The disease may contribute to tree stress, but it is not known to kill trees. Provide water in periods of drought,

possibly mark your calendar to fertilize in the fall, and otherwise follow sound horticultural practices. Fungicides are not needed. For more information on anthracnose, consult *Report on Plant Disease*, no. 621, "Anthracnose Diseases of Shade Trees." This report is available in extension offices or on the Web at <http://www.ag.uiuc.edu/%7Evista/horticul.htm>. (Nancy Pataky)

INSECTS

Gypsy Moth

Gypsy moth eggs have hatched in northeastern Illinois. Egg masses are about 1-1/2 inches long by 3/4 inch wide. They are buff-colored, due to hairs from the female's abdomen. Egg masses are typically laid on tree trunks and larger-diameter branches, although they may be laid on objects near infested trees. The larvae are black when they hatch and tend to sit on the egg masses for a few days. This, coupled with the eggs hatching over a period of a couple weeks, allows many caterpillars and eggs to be controlled by physically removing the egg masses or by coating them with a petroleum oil spray or soybean oil spray (Golden Natur'l).

Once they leave the egg mass, gypsy moth larvae climb to the tops of trees, spin out strands of silk, and float on them to new hosts. After a couple of weeks, they settle down to feed. As they grow and molt, they develop a double row of blue followed by red balls down the back, making them easy to identify. In young larvae, these balls are brightly colored, becoming less bright and obvious in older, hairier larvae. Larvae feed through much of June, with some not pupating until early July.

Gypsy moths have a wide host-range, including oak, crabapple, linden, poplar, beech, willow, birch, sweet gum, serviceberry, and hawthorn. Trees less susceptible to attack are ash, sycamore, catalpa, honey locust, dogwood, junipers, yew, lilac, arborvitae, viburnum, and tulip tree. Conifers are more susceptible to death than deciduous trees because they don't produce another flush of growth once defoliated. As a result, conifers, such as pine and spruce, can die after one severe defoliation.

Gypsy moth larvae can be controlled with sprays of *Bacillus thuringiensis kurstaki* (Dipel, Thuricide), spinosad (Conserve), diflubenzuron (Dimilin), and tebufenozide (Mimic). Application can be made as soon as emerging leaves on oak are large enough to intercept most of the spray. At this time, gypsy moth is established only in northern Illinois. (Phil Nixon)

Buffalo Gnats

We have received reports of buffalo gnats, also known as black flies, attacking people and poultry, particularly in the Springfield area. We have also had reports this spring from Champaign, Edgar, Montgomery, Mason, and Calhoun counties. Although new to central and south

central Illinois, buffalo gnats have been common in some areas of northern Illinois for a couple of decades. They are small, 1/16- to 1/8-inch-long, humpbacked black flies. They bite exposed skin, typically leaving a small red welt. When the gnats are numerous, the toxins from their bites can kill poultry, which has happened this spring in the Springfield area.

Buffalo gnats live as larvae in clear, fast-moving streams and feed by filtering food from the water. With the federal Clean Water Act and various other pollution-reducing measures, the streams, rivers, lakes, and ponds of Illinois are becoming clean enough to support life that has been much reduced since the 1930s.

Adult buffalo gnats can fly from 7 to 15 miles from their source; but generally, Illinois residents that are bothered live within a half mile of the stream producing the flies. Although there are reports of DEET-containing insect repellents of not being effective, scientific literature reports that DEET repellents provide the most effective protection. In areas with high populations of buffalo gnats, people commonly wear head nets, hats with insect protective netting that covers the head down to the shoulders. These are sold in sporting goods stores. Unlike mosquitoes, buffalo gnats do not bite through clothing, so only exposed skin is susceptible to attack. They also do not enter buildings.

Controlling the buffalo gnats as larvae is generally not an option. *Bacillus thuringiensis israeliensis* (Bti) is effective against the larvae but is covered by extensive regulation before it can be applied to running water. Other insecticide application would not only be in violation of federal and state laws but would likely kill fish and other wildlife. Running water is extensively protected by law because most running water eventually is used as human drinking water. The buffalo gnats should be a problem for only 2 to 3 weeks and are not likely to return until next year. (Phil Nixon)

Granulate Ambrosia Beetle

Granulate ambrosia beetle, *Xylosandrus crassiusculus*, has been reported in several southern Illinois locations. Native to tropical and subtropical Asia, this insect is also found in Africa and South Pacific Islands. It was first detected in the United States in Charleston, S.C., in 1974. It reached Illinois shortly after the turn of the century.

Adult females are cylindrical, dark brown beetles about 1/10 inch long. They tunnel in living and dead twigs, branches, or small trunks up to 1 foot in diameter of many trees and shrubs, including azalea, Bradford pear, Chinese elm, dogwood, golden rain tree, magnolia, ornamental cherry, peach, pecan, persimmon, plum, redbud, red maple, Shumard oak, sycamore, and sweetgum. They typically attack living trees at ground level and around wounds. As they tunnel deeply into the wood and pith, they push frass (mix of wood fibers and feces)

out of their entry hole. This frass sticks out of the tree, looking like toothpicks protruding from the branch.

The females lay eggs along the tunnels and inoculate the wood with an ambrosia fungus that attacks the wood. Developing white, C-shaped larvae feed on the ambrosia fungus growing in the tunnels, and pupation also occurs there. Adults emerge from the pupae, and females mate with the smaller, wingless adult males in the tunnels.

Damage appears as wilting foliage and “toothpicks” of frass protruding from the tree. Heavy attack causes death of the tree. Control involves the removal and burning of infested trees, both living and dead. Maintain good sanitation in nurseries because insect numbers can build up in brush piles. Spraying the trees with pyrethroid insecticides is effective in the spring before frass plugs the entry holes made by the females. Once the “toothpicks” appear, it is too late for spraying to be effective. Observe when the “toothpicks” appear, and plan to spray about 3 weeks earlier next year. (Phil Nixon)

Oak Galls

Insect-caused oak galls appear as unusual growths or deformities on leaves, twigs, flower buds, bark, stems, and even acorns and roots. Most galls are harmless to trees. However, in Illinois, both the horned and gouty oak galls can be debilitating and even kill younger trees. In recent years, these two types of galls have been increasingly present in the southern third of Illinois.

Oak galls are caused by a group of small insects known as gall akers. Galls are a part of the insect’s reproductive cycle and provide a protected enclosure for development of offspring (larvae). The gall is formed by the tree in reaction to insect-released chemicals or other stimulus, which incite plant hormones to form the gall. The inside of the gall is rich with protein and provides a source of concentrated food for the developing larvae.

The types of galls and the insects causing them are specific to various types of oak. Some galls are round or lumpy, some spiny, other flattened and dish-shaped. Sizes can range from a fraction of an inch to several inches in diameter. Often the larger galls grow together on stems, forming large masses that weigh the branch down.

The majority of gall makers are tiny wasps, though some are fly species. There have been over 700 species of gall wasps documented in North America. However, proper identification of these species has been challenging for insect taxonomists. The wasp gall makers are unique in that they can have different body structures depending on the generation, which along with a complex life cycle has confused their identification. Each species causes a distinctive type of gall on a specific plant part. Interestingly, for some species, this habit skips a generation, with the offspring forming a differently shaped gall on a different plant part, similar to its grandparents and not like its parent.

The gall maker life cycle involves egg laying on the plant and larvae development occurring within the confines of the gall. Compared to that of other insects, the life cycle is complicated. For example, with horned oak gall, an all-female generation emerges in the spring from old galls, and they lay eggs on leaves. A leaf gall is formed; the larvae develop; and within a few months, male and female adults emerge and mate. The females then lay eggs on twigs, the larvae hatch and bore into the stem. By the next spring, small, new galls of this generation appear, and the galls grow slowly as the larvae develop. Two or more years are required for this all-female generation to hatch and begin the cycle again.

In southern Illinois, the most noticeable and important oak galls are the horned and gouty oak gall, caused by two closely related wasp species (*Callirhytis spp.*). These galls are also seen more sporadically in central and northern Illinois, being most common on newly transplanted trees from more southern sources. Horned oak gall occurs on pin, black, and water oak, while gouty oak gall occurs on pin, scarlet, red, and black oak species.

Approaches to managing these two oak galls are limited at best. For younger trees, it is possible to trim the affected twigs and branches out. This is more difficult on larger trees unless done by a commercial arborist with a lift truck. Affected trees can be fertilized to encourage healthy growth, with mid to late fall being the best time to apply.

Keep in mind that the galls are live tissue and are part of the twig. Larvae within the galls cannot be reached by insecticides or oil sprays, even systemics. Because adults emerge at various times in the spring and midsummer to lay eggs on leaves or twigs, it is difficult to effectively time sprays, which may also have limited residual effect. In addition, because these are wasp species, many insecticides are not effective or labeled for them. Thus, using chemical insecticides that target eggs, larvae, and adults is a limited

control approach. Systemic insecticides with the active ingredient imidacloprid (Merit) may affect feeding larvae before galls are fully formed, though research is inconclusive. We would be interested in reports of any observed or measured results of insecticide application for gall control.

Some of the earlier botanists in North America believed galls were simply a typical structure of a normal plant. To many, these galls are unsightly, but they are a part of the natural system associated with oak species that we have in the landscape. As part of the natural system, there will be high and low population cycles of gall-maker insects; and perhaps in a few years, these galls will be less prevalent than they are now.

An excellent reference from which this article was adapted is *Insects that Feed on Trees and Shrubs* by Johnson and Lyon (Cornell University Press). To identify galls, probably the best references are *Plant Galls and Gall-Makers* by E.P. Felt (Hafner Press) and *The Plant-Feeding Gall Midges of North America* by R.J. Gagne (Cornell University Press). Unfortunately, Felt's book has been out of print for at least 25 years, and almost all oak galls are caused by gall wasps, not midges. (*Tony Bratsch, Extension Educator, Horticulture; and Phil Nixon*)

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