Home, Yard, and Garden Pest Newsletter

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Fall Webworm

Fall webworms (*Hyphantria cunea*) are communal caterpillars that spin silk into a tent-like structure at the tip of branches. These webs are often built around the leaves they feed on. Fall webworms feeds on a wide range of deciduous trees and shrubs including, crabapple, redbud, sweet gum, maple and oak. As the caterpillars consume the leaves within the web, they will expand the web every week or so to include more leaves. The web of mature caterpillars can be 2 to 3 feet long.

There are two races of fall webworm. The northern race caterpillars have yellow-gray bodies with red heads and all white moths. The southern race caterpillars have yellow-green bodies with black heads and adults are white with small black spots on the wings. Their distributions overlap, so they are both found throughout the species range but one is more frequently encountered in the northern and the other more frequently encountered in the southern portions of their range.

Southern fall webworm mature larva, Phil Nixon, University of Illinois.

Left, Fall webworm tent-like webs on crabapple Phil Nixon, University of Illinois
Right, visible larvae, Travis Cleveland, University of Illinois

Adults emerge from late spring to midsummer and begin to deposit hairy egg masses on the underside of leaves. A few days later, the larvae hatch and begin to build silken webs over the ends of branches. You may begin to see their tent-like webs when PeeGee Hydrangea (*Hydrangea paniculata* Grandiflora) is blooming. Fall webworms usually build webs in the understory of the trees, fence-row shrubs and ornamental shrubs. Young larvae feed on the upper surfaces of leaves and larger larvae feed on whole leaves, leaving the large veins or midribs behind. While fall webworms are capable of causing significant aesthetic damage, the defoliation usually does not threaten overall plant health. This is, in part, because their populations can be well controlled by natural enemies.

Since fall webworms are unlikely to cause enough damage to harm the plant, some aesthetic damage may be tolerated and treatment may not be required. When aesthetic damage cannot be tolerated, there are a number of options for fall webworm control.

Pruning back branches to remove the web is a mechanical control method that can be implemented at any time and can be effective in reducing caterpillar populations quickly.

Chemical and Bt (*Bacillus thuringiensis*) treatments can be applied as a spray application when webs appear on trees. The webs are water resistance, so a gentle spray will not penetrate the surface. The spray pressure must be great enough to damage the web so the insecticide can coat the leaves inside the web, where caterpillars are feeding. A stick or other tool can also be used to tear open the web before application.

Bacillus thuringiensis kurstaki treatments (Dipel, Thuricide, etc.) target caterpillars. They are more effective on caterpillars and have no impact on adult moths. Effective chemical insecticides include carbaryl (Sevin), pyrethroids and other products that are labeled to treat fall webworm.

Sarah Hughson

Tree-of-heaven

Tree-of-heaven *(Ailanthus altissima)* has gained some attention with the pending threat of invasive Spotted Lanternfly (SLF) making its way to Illinois. Currently, populations have been identified in neighboring states, so it really is just a matter of time before it settles in Illinois. Tree-of-heaven is the preferred host species for SLF. Controlling tree-of-heaven is important in keeping SLF at bay.

Tree-of-heaven plants, Chris Evans, University of Illinois, Bugwood.org

Tree-of-heaven is a rapidly growing deciduous tree reaching up to 70 ft. tall. The leaves, stems, and some flowers emit a strong, unique odor when crushed or broken. Think cat urine or rancid or burnt peanut butter. The leaves are alternate, pinnately compound with 10-40 smaller leaflets, and large

(1 to 4 ft. long). Overall, leaf margins are smooth or "entire". However, leaflets have 1 to 2 rounded teeth near the base. The bark is light grey to brown and resembles cantaloupe skin. It darkens with age. Twigs are greenish brown and contain a spongy, brown pith. The flowers are large, showy, yellowish-green clusters that appear in June. Single-seeded winged fruits (samaras) then develop and may persist on female trees for a long time. Look for the seed located in middle, which can help with proper identification. It is estimated that individual trees may produce 325,000 seeds per year so it can establish quickly, and the spread can be aggressive. It forms dense thickets crowding out native species and is allelopathic, preventing the growth of other plants. It grows best in full sun and is highly adaptable to disturbance. It grows well in poor soils and is often found in urban settings. Tree-of-heaven is commonly confused with black walnut, hickory, and staghorn sumac due to the compound leaves. However, the leaf margins of these species are serrated with teeth and the fruits are different. For more help with identification, check out PennState Extension's video.

Tree-of-heaven leaves and fruit, Chuck Bargeron, University of Georgia, Bugwood.org

Tree-of-heaven can be difficult to kill. If plants are small, repeated mowing can be used to exhaust the root system. Hand pulling may be possible but wear gloves as extensive contact with sap should be avoided due to possible health concerns. Cutting is not advised for larger plants and hand pulling may not be possible due to clonal growth. Damaging the trunk can stimulate heavy sucker growth which can further increase the size of the infestation. Prescribed fire may be used on seedlings, but this method is not recommended for larger plants because of resultant suckering. For larger plants, the use of glyphosate or triclopyr herbicides is recommended. Plants should be actively growing if a foliar application is to be used. Basal bark applications and cut surface applications can also be effective using triclopyr ester. For more control information, refer to, "Management of Invasive Plants and Pests of Illinois". Always carefully read and follow all label directions.

For more information about Spotted Lanternfly, check out the Home, Yard, and Garden article, "Be on the Lookout for Spotted Lanternfly"

Michelle Wiesbrook

Oak Wilt

Northern red oak killed by oak wilt, Travis Cleveland, University of Illinois.

Oak wilt is a serious fungal disease that continues to kill oak trees in residential areas, parks, farm woodlots, and forests throughout Illinois. The disease was first detected in Wisconsin in 1944 and has slowly spread throughout the central and eastern United States. I recently had an opportunity to attend an oak wilt management workshop hosted by US Forest Service. The workshop was geared towards managing the disease in woodlots and forested areas, but many of the disease management principles and

goals also apply to landscapes. Though, land managers in forested areas often contend with site accessibility and difficult terrain.

Symptoms

Oaks trees within the red and black group are more susceptible than oaks in the white oak group.

Red and black oak group (pointed leaf lobes)

- Symptoms first appear at the top of the tree or at the tips of the lateral branches in late spring and early summer.
- Symptomatic leaves curl slightly and turn a dull pale green, bronze, or tan, starting at the leaf margins.
- Infected trees rapidly defoliate. By late summer, an infected tree is often bare of leaves.
- A brown or black discoloration usually develops in the sapwood of wilting branches.
- Once infected, oaks in the red and black group do not recover.

White oak group (rounded leaf lobes)

- Symptoms usually appear on scattered branches of the crown, and may be confused with general dieback and decline.
- Leaves on infected white oaks become light brown or straw-colored from the leaf tip toward the base. Leaves curl, but often remain attached to the branches.
- The trees may die in one year, but usually die slowly over a period of several years or more.

Oak wilt foliar symptoms on northern red oak, Travis Cleveland, University of Illinois.

Pathogen

Oak wilt is caused by the fungal pathogen *Bretziella fagacearum,* formerly known as *Ceratocystis fagacearum*. The pathogen moves from diseased to healthy trees in two ways, through root grafts formed naturally between oak trees of the same group and via sap-feeding insect vectors that transmit the fungus' spores as they feed fresh tree wounds. Within a few days of infection, balloon-like tyloses and gums begin to plug the water-conducting tissues within the tree, blocking the flow of water and nutrients from the roots to the foliage. As the supply of water becomes restricted, leaves wilt and die.

Diagnosis

The leaf symptoms associated with oak wilt can easily be confused with other oak pests and disorders. Ideally, a plant diagnostic laboratory should confirm suspected oak wilt infections.

What to collect for a sample:

- Fresh samples, taken from living, symptomatic branches with the leaves still attached. The pathogen will not survive in dead or dry branches.
- Look for branches with symptoms of vascular streaking. The U of I Plant Clinic is most likely to isolate the pathogen from branches with vascular streaking.
- Sample 1-2 inches in diameter branches. Plant clinic staff are less likely to isolate the pathogen from small twigs or larger branches.

How to submit a sample to the University of Illinois Plant Clinic:

- The oak wilt pathogen is intolerant of temperatures above 90°F and is also sensitive to drying and other competing fungi. Exposure to these conditions during shipping may result in an inconclusive diagnosis.
- Mail samples the same day they are collected, or refrigerate and mail them as soon as possible.
- When shipping samples, we recommend using an inexpensive cooler with a disposable ice pack.

- Ship via overnight or next-day delivery, and avoid shipping late in the week. This will help to prevent samples from being held over the weekend in a hot mail truck.

Clinic results for oak wilt testing often take 7-14 days to complete. The Plant Clinic will send a detailed report with recommendations when the results are available.

When possible, send suspected oak wilt samples in an inexpensive cooler with a disposable ice pack.

Management

No complete control or cure for oak wilt exists. However, proper tree care, in addition to mechanical and chemical control measures, can keep the disease from spreading to nearby healthy trees.

Cultural Management

Avoid pruning oak trees in spring and early summer. The sap-feeding beetles that act as vectors for the oak wilt fungus are attracted to fresh wounds, which also act as a pathway for the pathogen to enter the tree. In Illinois, beetle activity and the highest risk of spreading oak wilt occur during April, May, and June. While the risk of infections via pruning wounds may decrease by mid-July, those erring on the side of caution should postpone any pruning until dormancy. If you cannot delay pruning, wound dressings and latex-based paints have shown some effectiveness in reducing the potential for oak wilt transmission when applied immediately to a fresh wound. These products are believed to reduce the attractiveness of the wound to the insect vector and/or prevent the entry of oak wilt fungal spores into the vascular system of the wounded tree.

Chemical Management

Fungicide injections with propiconazole can be used to protect high-value, healthy trees. Tree injections should only be made by trained arborists or others trained in injection techniques. Fungicides should be used in combination with the other strategies discussed in this article. Therapeutic injections can be effective on species within the white oak group when used early in the infection (less than 30% crown affected). Researchers and practitioners tend to agree that it is rarely worth the expense to inject members of the red oak group that are infected with oak wilt.

Removal and Disposal of Infected Trees

Trees killed by oak wilt should be removed as soon as possible. Timely removal and proper disposal of diseased oak trees are critical for preventing the spread of the pathogen. Examine nearby trees, and determine if the diseased oak tree was likely to have formed root grafts with any nearby oak trees, especially those within the same group. The zone should be trenched at least four, and

preferably five feet deep to sever potential root grafts before or just after removing the infected tree. Trenching may not be feasible in urban settings with underground utilities and infrastructure.

Diseased oaks should not use for firewood unless they have been debarked, cut to length, split, stacked off of the ground, and protected from moisture. Properly stored firewood is not a source of infection. Moist, improperly stored wood will produce fungal spore mats that attract the beetle vectors.

Additional Resources

- University of Illinois Plant Clinic http://web.extension.illinois.edu/plantclinic
- Plant Clinic Report: Oak Problems http://web.extension.illinois.edu/plantclinic/downloads/Plant%20Clinic%20Report%20Oak%20LO.pdf
- First Detector Webinar on Oak Wilt. Presented by Brett Arenz, University of Minnesota.

Travis Cleveland

Bacterial Leaf Scorch of Shade Trees

Bacterial leaf scorch (BLS) symptoms are evident on many oaks in central Illinois. This disease causes a slow, multiyear decline and eventually death of the host tree. BLS is caused by the bacterium *Xylella fastidiosa*, which is also responsible for Pierce's Disease in grapes and is currently causing widespread damage to the Italian olive industry.

Bacterial leaf scorch affects a wide variety of Illinois tree species. The most common hosts in our state are oak (red oak group), elm, sycamore, London plane, sweetgum, hackberry, ginkgo, and maple (sugar and red). Many other woody and herbaceous plants can be susceptible to the pathogen. The bacteria is found only in the xylem (water-conducting) tissue of the plants and is spread from host to host xylem-feeding leafhoppers, treehoppers, and spittlebugs. *X. fastidiosa* is known to pass between certain host species through root grafts. However, root grafts do not appear to be an important transmission route between shade trees.

Scorch symptoms appear on leaves in mid to late summer and gradually intensify as the season progresses. Affected leaves may turn a yellow/green color before turning brown, usually from the margin of the leaf inwards. Older leaves are often affected first, and an individual branch or section of branches usually becomes discolored at the same time. Symptoms are generally not scattered throughout the crown. Branches will leaf out the following spring, but symptoms will re-appear and slowly spread through the canopy over subsequent seasons. Except in oaks, leaves generally do not drop until autumn.

It's important to note that BLS symptoms can easily be confused with drought stress, cultural problems, cankers, and, in oak trees, oak wilt. They can also be confused with Verticillium wilt in some trees. Submitting a sample to a plant diagnostic laboratory is the only way to diagnose the disease definitively.

Shingle oak tree infected with BLS year-to-year comparison. August 2021, August 2022, and July 2023, Travis Cleveland, University of Illinois.

Red oak leaves from a tree infected with BLS. Note the yellow band between green and scorched tissues. Travis Cleveland, University of Illinois

The University of Illinois Plant Clinic uses an antibody test to determine the presence of *X. fastidiosa* in symptomatic tissue. The test requires a high population of bacteria to be effective. Thus, the plant clinic offers BLS testing in late August or early September when populations are high enough for detection. BLS tests conducted in spring or early summer may result in a false negative due to the population of bacteria being too low.

If you suspect that a tree or shrub is affected by BLS, you may submit a sample to the University of Illinois Plant Clinic. **Samples should consist of symptomatic leaves complete with the petiole** (the structure that attaches the leaf to the branch). Ideally, at least a few of the leaves would be transitioning from green to brown. There is a $25 fee for this test. To download a sample submission form, visit the Plant Clinic's website at https://extension.illinois.edu/plant-clinic and click on the "Download Forms" tab. Please indicate that you wish the sample to be tested for BLS.

Management for trees affected with BLS consists of increasing tree vitality by mulching the base of the tree to retain moisture, watering during periods of dryness lasting more than two weeks, pruning out dead branches, and fertilizing when appropriate. While trunk injections with antibiotics have been shown to be effective at delaying symptom development, they do not cure the tree, and the injection sites open new paths of entry for organisms that decay wood. Over time, repeated treatments can severely weaken the tree. Choosing non-susceptible hosts to plant near affected trees is also recommended to prevent the spread of disease.

Diane Plewa and Travis Cleveland

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