COOPERATIVE EXTENSION SERVICE
HOME, YARD & GARDEN PEST NEWSLETTER
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Whiteflies

In the coming weeks, you may notice a cloud of tiny white specks emerge from plants in your yard. These tiny insects are whiteflies. While they have the word "fly" in their name, they are more closely related to aphids, scales and mealybugs. Like aphids and scales, they suck fluids from plants with straw-like mouthparts and produce sugary, liquid droppings called honeydew. In large populations, they can become pests of vegetables, ornamentals and greenhouses.

Greenhouse whitefly (*Trialeurodes vaporarorium*)*, Whitney Cranshaw, Colorado State University, Bugwood.org*

Adult whiteflies are tiny winged insects, about 1/16 of an inch long. They are white with powdery white wings held over their body like the roof of a house. Females leave their mouthpart inserted into the plant and move their abdomen while laying eggs. As a result, eggs are deposited in a circular pattern of 30 - 40 eggs.

Nymphs, called crawlers, hatch from the eggs and walk on the surface of plants before inserting their mouthparts on the underside of a leaf, where they molt to become stationary nymphs. During the last instar, the nymph ceases feeding and undergoes physiological changes, making this life stage functionally similar to the pupal stage in insects that go through complete metamorphosis. During this stage, they are flat discs, often with pale, waxy fringe. When adults emerge, they can live for about a month.

Bandedwinged whitefly (Trialeurodes abutiloneus), Nancy Gregory, University of Delaware, Bugwood.org.

Three common species of whiteflies in Illinois are the greenhouse whitefly (*Trialeurodes vaporarorium*), silverleaf whitefly (*Bemisia tabci*; also called sweet potato whitefly) and bandedwinged whitefly (*Trialeurodes abutiloneus*). Bandedwinged whitefly is the most common species in Illinois. It can be identified by the two dark bands on each of its forewings. They feed primarily on velvetleaf but move to alternate hosts later in the season. They do not reproduce heavily on alternate host plants and usually do not require control. In some cases, control may be warranted on velvetleaf and flowering maple in the genus *Abutilon*.

Greenhouse whitefly and silverleaf whitefly lack the dark banding and are completely white. They are unable to overwinter in Illinois but can survive in greenhouses and are moved outdoors with plants in the spring. Because they have multiple generations throughout the growing season, their populations can become quite large by late summer and fall and have the potential to damage ornamental plants.

Damage appears as wrinkled, curled or cupped leaves. Large populations can also produce large quantities of honeydew making the surface of plants sticky and prone to sooty mold growth.

If whitefly populations are high late in the growing season, they are unlikely to cause significant damage and do not require treatment. However, if both significant aesthetic damage and nymphs are present on the plants, greenhouse whitefly or silverleaf whitefly may warrant control. Treatment should target

nymphs. Insecticidal soap and summer oils are effective treatments for whiteflies. Apply them according to the product label, which may require a weekly application for two to four weeks. Chemical insecticides like pyrethroids are also effective when treatment is warranted.

(Sarah Hughson)

Hover Flies

Hover flies (aka syrphid flies or flower flies) are likely buzzing about any nectar-producing flower in your garden this summer. They are excellent fliers, capable of flying backwards, forwards and hovering over their beloved flowers. They were abundant on my recent camping trip, likely because our camping site was near agriculture fields. They annoyed us as they constantly swarmed and landed on us, presumably looking for moisture and salts on our skin.

Hover flies are yellow and black, and commonly mistaken for bees. They mimic bees and or wasps for protection against predators such as birds. They can be easily distinguished from bees because they are shiny, and bees are fuzzy. They can be distinguished from wasps in that they have two wings, while wasps have four.

Hover fly *Photo Credit: Phil Nixon*

Hover flies are one of the most prolific pollinators in Illinois gardens. They feed on pollen, nectar, and honeydew (frass of phloem feeders like aphids). In addition to their pollinator services, their larvae are voracious meat-eaters, feeding on aphids, thrips, scale, caterpillars, and mealy bugs.

Hover fly larva

With many generations per growing season, hover flies are here to stay. The female hover fly will usually lay her eggs on or near aphid colonies. The larvae, which are technically maggots, hatch within two to three days. The larvae are muted green, legless, worm-like, and can be found on the undersides of leaves. These larvae are great garden warriors and can be put in the same category as ladybugs and lacewing larvae in terms of the effectiveness in demolishing an aphid population. The larvae grasp the prey with their jaws, hold them up in the air, suck out their body contents and toss the exoskeleton aside. According to Cornell University, the larvae can eat up to 400 aphids. The larvae feed for about seven to ten days before they pupate, which takes about 10 days. Therefore, if you see an aphid or mealybug infestation in your garden, be sure to turn over the leaves to look for these beneficial maggots before you spray.

(Kelly Allsup)

Fall Broadleaf Weed Control in Turf

Cooler temperatures are finally here. Winter annual weeds and cool season perennial weeds will soon be preparing for the long, cold months ahead. Now is the ideal time to control these broadleaf weeds in turfgrass.

As its temperatures are more conducive to good turf growth, September is an excellent time for overseeding and establishment. Now that lawns are starting to green up again, core aerification can be used to alleviate compaction. Those areas in the lawn that are primarily broadleaf plantain and knotweed may be prime target candidates for core aerification. With cooler temperatures, comes germination of cool-season annual weeds such as chickweed and henbit. Take a scouting trip to see what is growing where.

Proper turfgrass management is the first step in minimizing weed invasions. When selecting an appropriate turfgrass, consider use, site, and budget. Then follow with appropriate mowing, watering, fertilizing, and cultivating; all can lead to a dense, healthy turf. Weeds have difficulty establishing themselves in healthy, competitive turf. Therefore, weed populations will decrease.

In areas where broadleaf weeds are particularly a problem, mow frequently to prevent seed-head production; and after properly identifying the problem weed species, initiate controls. For assistance with identification, consult with your local University of Illinois Extension office or the booklet, "Identifying Weeds in Midwestern Turf and Landscapes" available at: https://pubsplus.illinois.edu/product/identifying-weeds-in-midwestern-turf-and-landscapes. Learning the weed's life cycle and preferred growing conditions can greatly assist with control efforts. Perhaps growing conditions can be altered to be less favorable. Mechanical removal of weeds by hand-pulling or hoeing can eliminate small numbers of weeds easily. Be sure to remove as much of the root system as possible to reduce regrowth of perennials. Persistence may be needed but will be rewarded.

A dense population of broadleaf plantain and white clover in turf. Credit: Michelle Wiesbrook

Proper cultural practices can greatly reduce weed populations. However, if weed problems persist, herbicides can be used. Postemergence herbicides can provide effective control now that many broadleaf weeds are actively growing again. Individual herbicides or combinations of herbicides are available. Be sure to read, understand, and follow the label directions for proper use of these chemicals. If mishandled or misapplied, these herbicides may damage or kill many desirable ornamental or edible plants in the landscape or nearby garden. Check the label for specific guidance on where the product can or cannot be applied and for rain-free period (rain-fast) information. Follow these general recommendations when using postemergence broadleaf products.

1. Apply these herbicides when environmental conditions are appropriate for control.

   a. Watch wind speeds to avoid drift. Often, early mornings are less windy than later in the day. A gentle, blowing breeze of 3 to 10 mph is recommended. Be sure the wind is blowing away from sensitive areas.
   b. Apply these herbicides when air temperatures are between 55 degrees and 85 degrees F.
   c. Adequate soil moisture is important to maintain growth and translocation of herbicides throughout the entire weed.
   d. Do not apply when precipitation is expected within 24 hours.
2. Don't mow for a few days before or after application, thereby allowing maximum leaf surface for interception and absorption of the herbicides.
3. When possible, to reduce unnecessary pesticide use, make spot applications rather than treating large areas.
4. Apply these herbicides to new turfgrass seedlings only after they have been mowed three or four times unless label directions read otherwise. Wait at least 30 days after application before seeding into areas treated with postemergence broadleaf herbicides.
5. Many broadleaf weeds such as dandelion and ground ivy are busy preparing for winter by moving excess carbohydrates to the roots. This can aid translocation of a postemergent herbicide. The cooler temperatures of autumn allow for use of ester formulations because there is less risk of vapor drift. Amine formulations should be used instead when air temperatures are warmer. Finally, cool season turfgrasses are actively growing in autumn and more quickly fill in bare areas left by dying weeds.

In research conducted over several years at the University of Illinois Landscape Horticulture Research Center, several herbicides provided effective postemergence control of common broadleaf weeds such as white clover, dandelions, and plantains. These herbicides are 2,4-D + MCPP + dicamba; triclopyr + clopyralid; and 2,4-D + triclopyr. For additional information regarding other chemical weed controls or other weeds, see the *2014 Commercial Landscape and Turfgrass Pest Management Handbook*. While this publication has not been revised in a while, it still contains relevant information. Another excellent resource is *Turfgrass Weed Control for Professionals* available from Purdue Extension. University of Illinois contributes to this publication with expertise and research information.

Information about common postemergence herbicides follows. Trade names are given as examples only and should not be considered endorsements of any kind. This list is not all inclusive.

2,4-D; MCPP (mecoprop); MCPA; and 2,4-DP (dichlorprop): These herbicides are in the phenoxy acid family. In this group, 2,4-D is the oldest and most widely used. It is effective on taprooted weeds such as dandelion and broadleaf plantain; but, by itself, 2,4-D does not control white clover, chickweed, purslane, ground ivy, or violets very well. Ester forms of 2,4-D are recommended for wild garlic and onion control. MCPA is very similar to 2,4-D but does not control the broad spectrum of weeds that 2,4 D controls. If chickweed or white clover is a problem, MCPP is a recommended control. Dichlorprop is combined with other broadleaf herbicides; control of henbit, knotweed, and spurge is usually improved when it is combined with 2,4-D.

dicamba (Banvel, Vanquish): Dicamba, a benzoic acid, works similarly to the phenoxy acid group and is effective against knotweed, purslane, and spurge but does not control buckhorn or broadleaf plantains well. Dicamba is relatively mobile in the soil.

triclopyr (Turflon Ester Ultra): Less broad-spectrum than the commonly used combination of 2,4-D + MCPP + dicamba, triclopyr is very active against ground ivy and oxalis.

fluroxypyr (Tailspin, Vista XRT): Similar in activity to triclopyr. Can be effective on ground ivy, dandelion, and white clover.

clopyralid (Lontrel): For use on non-residential turf, clopyralid is very active against white clover and thistle.

quinclorac (Drive XLR8): An unusual product, as quinclorac is active against white clover, veronica, dandelion, and crabgrass.

chlorsulfuron (Telar XP): Labeled for use on unimproved industrial turf, this formulation is not to be used on lawns. It controls a broad spectrum of weeds.

carfentrazone-ethyl (Quicksilver T&O, Speed Zone, Power Zone): With 2,4-D + MCPP + dicamba in Speed Zone; with MCPA + MCPP + dicamba in Power Zone; labeled a "reduced risk" herbicide by EPA; disrupts chlorophyll synthesis; increases speed of activity compared to traditional postemergence broadleaf herbicides.

pyraflufen (Octane): Controls chickweed, dandelion, and white clover. It can be used in newly seeded areas that are not under stress.

topramezone (Pylex): This product has a bleaching effect on susceptible species such as carpetweed, chickweed, and clover.

penoxsulam (LockUp, Sapphire): This low use product can be used to control many broadleaf weeds including white clover.

Many postemergence combination products are manufactured to increase the spectrum of weed control. Included in this group are

2,4-D + MCPP + dicamba (Trimec, Triplet, others)

2,4-D + MCPP + 2,4-DP (Triamine)

MCPA + MCPP + dicamba (Tri-Power)

Chickweed seedlings. Credit: Michelle Wiesbrook

Several preemergence herbicides can be applied to control broadleaf weeds in turf. As mentioned previously, chickweed and henbit will be germinating soon. Keep in mind that these herbicides must be applied prior to germination to be effective. Existing weeds can be controlled using the methods previously discussed. General recommendations can be made when using these products in turf.

1. Conduct any cultivation practices based on label directions; when in doubt, core-aerify or dethatch before herbicide application.

2. Water following application according to the herbicide label direction.

3. To lengthen the period of weed control, make a second application of the herbicide at a later date. Follow the specific label directions for rates and timing.

4. Consult individual preemergence herbicide labels for the specific waiting period between herbicide application and overseeding or reestablishment. Avoid applying a preemergence herbicide immediately before installing sod.

Various preemergence herbicides are available for controlling broadleaf weeds:

dithiopyr (Dimension): According to the label, this herbicide controls chickweed, henbit, purslane, spurges, and yellow woodsorrel when applied before weed emergence.

isoxaben (Gallery): According to the label, this herbicide controls many weeds, including dandelion (see label for recommendations). It has no postemergence activity, so control existing weeds with post

emergence spray. Prostrate knotweed germinates very early in the spring and late fall (November even December) applications can be effective.

pendimethalin (Pendulum): According to the label, this herbicide controls chickweed, henbit, knotweed, prostrate spurge, purslane, and yellow woodsorrel when applied before weed emergence.

prodiamine (Barricade): According to the label, this herbicide controls common chickweed, henbit, knotweed, prostrate spurge, purslane, and yellow woodsorrel when applied before weed emergence.

(Michelle Wiesbrook, adapted from a previous article by the same author and Tom Voigt)

Tubakia Leaf Spot

I received several reports of tubakia leaf spot on oak. This is a fungal disease caused by the pathogen *Tubakia dryina*. It is a common sight on oak trees late in the summer. All oak species are susceptible to this disease, but those within the red oak group are more commonly affected. This leaf spot is often associated with stressed trees, especially Pin oaks affected by iron chlorosis. Other potential hosts include maple, hickory, chestnut, redbud, ash, black tupelo, sourwood, sassafras and elm.

Tubakia leaf spot that appears late in the season. The symptoms are similar to and are often confused with those of anthracnose. As a rule of thumb, oak anthracnose symptoms usually appear late spring to early summer (May-June), while tubakia leaf spot occurs late summer with symptoms appearing in July and August. Tubakia leaf spot lesions will vary with host susceptibility and environmental conditions. The lesions start as small water soak areas. They become evident as they enlarge and transition to a reddish-brown color (Photo 1). Severe infections may cause premature leaf drop, which can be alarming to those scouting for oak wilt. The Tubakia pathogen is fairly easy to confirm in a diagnostic laboratory with the aid of a microscope. It produces a distinctive disc-shaped fruiting body that is composed of mycelia and spores (Photo 2). Symptoms tend to be most severe on the lower branches where moisture accumulates and remains for longer periods (Photo 3).

Tubakia leaf spot is more prevelant in years with abundant rainy weather and moderate temperatures. These conditions promote infections and to allow the spread of this fungus. The disease is much less common during years with predominately dry weather.

While the symptoms may appear alarming, the disease develops late enough in the season that there are no long-term adverse effects on tree health. As a result, treatment with fungicides is not usually recommended. Raking and removing fallen leaves may reduce inoculum in the surrounding area, thus limiting disease occurrence the following growing season. Promoting tree vigor and alleviating any potential stresses to the tree is also recommended.

Photo 1. Northern red oak leaf with numerous Tubakia Leaf Spot lesions

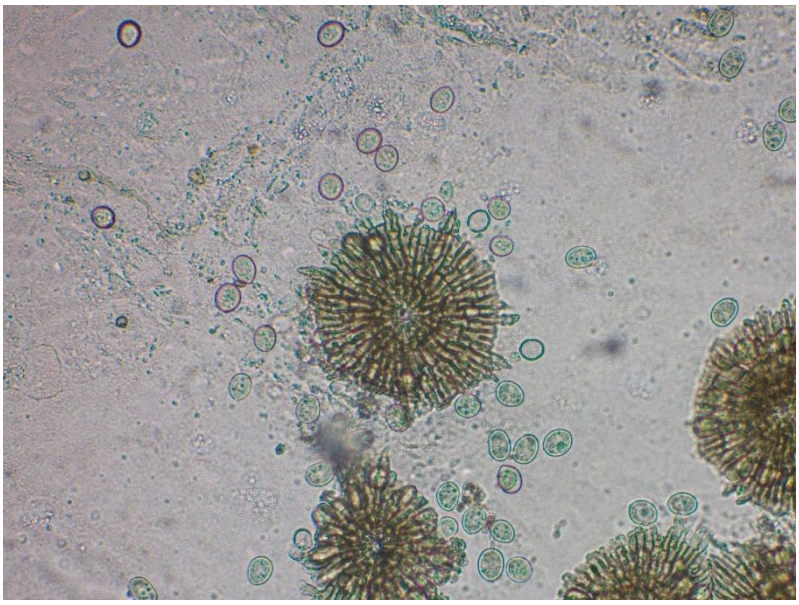

Photo 2. Tubakia's disk-like fruiting structures (pycnothyrium)

Photo 3. Lower branches of an oak infected with Tubakia leaf spot (Urbana, IL. Sept. 2016)

(Travis Cleveland)

Laurel Wilt

Laurel wilt is a disease caused by the fungal pathogen (*Raffaelea lauricola*) that is vectored by the redbay ambrosia beetle (*Xyleborus glabratus*). This exotic disease was first detected near Port Wentworth, Georgia in the early 2000s. Since then, it has killed millions of redbay and swampbay trees as well as caused extensive damage to agricultural avocado groves. To date, Laurel wilt has not been detected in Illinois. However, laurel wilt has been detected in Kentucky, and has it the potential to infect two plant species utilized in our landscapes. You can view a laurel wilt distribution map via the following link: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd669956.pdf

As the name suggests, laurel wilt is a disease of trees and shrubs within the Lauracea family. Potential hosts in Illinois include sassafras (*Sassafras albidum*) and spicebush (*Lindera benzoin*). Both are susceptible to the fungus. However, the relatively small stems of spicebush may not be as attractive to the ambrosia beetle that vectors the fungus.

The fungus enters the tree as the female redbay ambrosia beetle bores into the host tree. Once in the tree, the fungus infects the xylem and restricts the tree's vascular system. Leaves initially wilt, turn a reddish-brown color, and then drop from the tree, leaving bare branches. The disease progresses rapidly, often killing the tree within weeks of being infected. Infected trees have a characteristic dark streaking of the sapwood.

Redbay tree with dark streaking of the sapwood caused by laurel wilt. Photo Credit: Ronald F. Billings, Texas A&M Forest Service, Bugwood.org

Redbay tree with vascular discoloration caused by laurel wilt. Photo Credit Albert (Bud) Mayfield, USDA Forest Service, Bugwood.org

Our current goal is to avoid introducing this disease to Illinois. Redbay ambrosia beetles can spread naturally through flight, but they can also be moved to new locations via infested wood. Do not transport dead laurel species, including firewood or other untreated wood products, to areas where the disease has not been detected.

Early detection will be essential for managing any new introductions to the state. If you see sassafras trees with symptoms matching those described above, please alert the University of Illinois Plant Clinic

Additional Resources:

USDA Forest Service Pest Alert: Laurel Wilt
https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd673152.pdf

How Cold Is Too Cold for Redbay Ambrosia Beetles?
https://www.srs.fs.usda.gov/compass/2018/01/18/how-cold-is-too-cold-for-redbay-ambrosia-beetles/

(Travis Cleveland)