

Number 10 - June 28, 2013

Last Weekly Issue

This is the last weekly issue of the Home, Yard, and Garden Pest Newsletter for this year. During the summer, there are fewer pests and management timing is less critical than in the spring. Issues will be published every other week during July, August, and September. We will publish a final issue in mid-October that will include an index to articles published during the year.

(Phil Nixon)

Leafminers

We have had several reports of columbine and other leafminers around the state. They appear to be more numerous this year, probably due to the heavy and frequent rains this spring. Most full grown leafminer larvae burrow out of the leaf and drop to the soil to pupate. Dropping onto moist soil increases their survival, resulting in the next generation being more numerous. I don't remember seeing entire leaves covered with columbine leafminer mines previously, as in the accompanying photo.

Leafminer larvae live inside the leaves of many trees, shrubs, vines, and herbaceous plants. This environment within the leaf provides a moist area that is protected from at least some predators and parasites. As a result, many insect species have adapted to this lifestyle, including flies, moths, wasps, and beetles.

The adult fly, wasp, moth, or beetle inserts its eggs into or onto the leaf tissue. Many leafminer adults also lay down a pheromone, a hormone produced outside of

the body, that lets other leafminer adults know that this leaf or part of the leaf is already taken. As a result, a leaf commonly contains only a single leafminer, or the leafminers tend to be located at a distance from each other in the same leaf.

The hatching larva tunnels through the leaf tissue, feeding on the mesophyll cells. In a leaf, chlorophyll is contained primarily in the mesophyll cells, causing leaves to be green. As these cells are eaten by the leafminer larva, whitish or light-colored areas appear because the remaining epidermal cells tend to be mostly transparent. With these epidermal cells being exposed to drying as the mesophyll cells are eaten away, they soon turn brown and die. Thus, recent mines are whitish and older mines are brownish, making it easy to tell whether the leafminer is still actively feeding.

Holding a mined leaf up to the light makes it easier to see the entire mine, including smaller areas that were eaten when the larva was newly hatched. If the larva is still present, one can frequently see the silhouette of the feeding larva. Also obvious will be the fecal material deposited by the larva.

Fully grown larvae chew their way through the leaf epidermis to the leaf surface and typically drop to the soil to pupate, although some moth larvae spin a cocoon and pupate on the leaf surface. With the diversity of insects that live as leafminers, the size and appearance of emerging, full-grown larvae vary. Those of flies and wasps are typically legless and usually 1/16 to 1/8 inch long. Many fly larvae are bright yellow, pink, or

red when they emerge to pupate. Moth and beetle emerging leafminer larvae are typically legless as well, but are commonly 1/4 to 1/2 inch long. The adult emerges from the pupa to attack more leaves. Leafminers typically have more than one generation per year. Some leafminer flies, including columbine leafminer, have several generations per year.

Because newly hatched leafminer larvae are very small, they tend to make small, narrow tunnels through the mesophyll. Some leafminer larvae continue to make narrow tunnels that meander through the leaf; they are referred to as serpentine leafminers. Their narrow, winding tunnels appear somewhat serpentlike, that is, snakelike. Columbine and honeysuckle leafminers are serpentine leafminers.

Other leafminers may form slender, snakelike tunnels initially but soon turn to feeding on the mesophyll cells in a broad area, resulting in what is called a blotch mine. Birch and holly leafminers are blotch leafminers. Blotch mines are commonly bounded by leaf veins, resulting in straight-sided mines. Other blotch mines cross leaf veins and become more rounded in shape.

Although leafminer damage is obvious, it usually has little effect on plant health. Although the mesophyll that is eaten does not produce sugars for the plant, the undamaged cells in the leaf continue to produce. An exception to that is when the leafmining is so extensive that it causes leaf drop. Birch leafminer is the only one that causes leaf drop in Illinois and only in the northernmost row of counties. Farther south, the damage is noticeable but not severely damaging. Holly leafminer may produce enough aesthetic damage in southern, particularly southeastern, Illinois to warrant control but rarely causes leaf drop. In states to the east and south, holly leafminer damage can be very severe. Systemic insecticides are recommended for control of both leafminers.

Because leafminers typically have several generations per year, removing and destroying mined leaves while the larvae are still inside can reduce the number of mined leaves later in the season. Leaves that still have whitish mines should still contain the larvae; the larvae have usually already left the mines if the mines are brown.
(Phil Nixon)

Japanese Beetle

Thanks to a variety of readers that responded to the article last week on Japanese beetle. I can now report that they have been present in southern and central Illinois since the third week of June and were seen in LaSalle and Will Counties on June 24. With the warm temperatures of the past week, they should have emerged in the rest of northern Illinois by now.

Typical emergence pattern for most insects is that the males emerge a few days before the females. About a week after the adult Japanese beetles become numerous, "balling" is likely to occur. When a female Japanese beetle is emerging from the soil, males gather at the location. As she emerges, they are attracted to her, crawling on top of each other. The result is a ball of 25 to 200 Japanese beetles, frequently about the size of a golf ball. They are most noticeable on closely mowed turf, so most reports come from golf courses.

Beetles mate, and the females tunnel into the turf to lay eggs. These eggs hatch into white grubs that feed on the turf's roots, resulting in browning and dieback of the turf in late summer and fall. Female beetles are strongly attracted to moist, actively growing turf, so stopping or reducing irrigation during July results in reduced egg-laying, with fewer grubs. The beetles go to the neighbors' moister, greener lawns to lay their eggs. Typically, unwatered lawns do

not have enough white grubs to warrant insecticide application.

Male and female beetles are similar in appearance, being stocky, 3/8- to 1/2-inch-long, metallic green beetles with copper-colored wing covers. They are present in high numbers for about 6 weeks. They feed on the foliage and flowers of a wide range of plants, being most common on smartweed, crabapple, linden, birch, willow, rose, grape, apple, peach, and brambles. They do not feed heavily on needled evergreens, ashes, magnolias, oaks, and maples other than Japanese maple. They feed during the day at the top of the plant on the leaf's upperside-- they appear to like sunshine. Individuals typically fly to another food plant every 3 days. These flights tend to be long, from 3/4 to 1-1/2 miles.

The adults feed through the upper epidermis and mesophyll, leaving the lower epidermis intact. Initially, damaged leaves are whitish but soon turn brown as the exposed lower epidermis dries and turn brown. This type of damage is called window feeding. Heavy feeding results in holes in the leaves and can progress on favored hosts to skeletonization, with only the major leaf veins remaining.

Beetles are attracted to previously attacked plants. Homeowners can greatly reduce damage by handpicking, particularly for the first week or two after beetle emergence. Use a wide-mouthed jar (such as a peanut butter jar) containing rubbing alcohol or a detergent and water mixture. Hold the jar under a beetle, poke it, and the beetle will fold its legs and fall into the jar, being killed by the alcohol or drowning in the soapy water. Doing this daily or every other day for the first couple of weeks results in plants with little damage compared to the neighbors' plants. Throughout the rest of the season, beetles will be more attracted to the plants next door.

Heavily attacked ornamental plants in obvious locations in the landscape can be sprayed with carbaryl (Sevin), cyfluthrin (Tempo), or other pyrethroid. An application typically controls the beetles for about 2 weeks. Because the beetles are out for about 6 weeks, three applications are needed. Due to the repeated applications and large plants that are commonly attacked, the use of insecticide can be reduced by spraying only plants where the damage is very noticeable. Plants in less obvious parts of the landscape and large trees can go untreated because the damage will be less noticeable. The beetles are so numerous and mobile that the beetles on the untreated plants make little difference in the number of beetles attacking treated plants or the amount of turf injury by the subsequent white grubs.

Systemic insecticide application is also effective, with imidacloprid (Merit, Xytect, Optrol) applied as a soil injection or soil drench being the most common method of application. The insecticide will move into the foliage within a couple of weeks. Imidacloprid does not typically move into the flowers of rosaceous plants such as rose, crabapple, and hawthorn, but can be found in linden flowers. Imidacloprid has been linked in some studies to colony collapse disorder (CCD) in honey bees, so avoid use on trees and shrubs where the insecticide enters the flowers. As the imidacloprid remains in the plant for almost one year, one cannot avoid movement into the flowers through application timing.
(Phil Nixon)

Bagworm

Bagworms have hatched throughout the state and appear to be a little early than normal. Treatment is recommended in southern and central Illinois at this time as they have completed their ballooning and are settling down to feed in earnest. They will still be ballooning in northern Illinois,

so treatment should be effective after the fourth of July.

Bagworm overwinters as eggs in the female bag. They hatch in late spring, exiting the bottom of the bag. The tiny caterpillars climb to the top of the tree where they each spin out a silk strand 1 to 3 feet long. This catches in the wind and carries the tiny larva wherever the wind blows. This is called ballooning. The bagworm population continues this process for about 2 weeks. They are most common on spruce, eastern red cedar, other junipers, arborvitae, white pine, crabapple, and pin oak but are found on many other species of trees and shrubs. They are more common on deciduous hosts in southern Illinois than farther north.

Bagworm larvae feed on the edges of broadleaf foliage, sometimes to the midvein. Leaves of needled evergreens are eaten back to the base until nothing remains. Defoliated needled evergreen branches or entire trees frequently die. Because bagworms start at the top of the tree and work their way downward, it is common to see the top third of evergreens dead due to defoliation. Deciduous trees will refoliate, with the damage being primarily aesthetic.

Bagworms spin individual silk tents and cover them with host foliage. The bagworms feed through the summer. As the caterpillars grow, they increase the size of the spindle-shaped bags up to 1-1/2 inches long. Pupation ranges from mid-August to very early September. As long as the caterpillar is feeding, it places bits of host foliage around the top of the bag. Once it has pupated or died, this practice stops and the top of the bags turn from green to brown. This is useful in scouting because pupated bagworms are not susceptible to insecticide sprays, and killed bagworms do not fall from the tree.

After mating with male bagworm moths, the female bagworms fill their bodies with fertilized eggs and die in the bag. Each

female bag contains 300 to 1,000 eggs. Because bagworm eggs overwinter in the old bags, an effective control measure on shrubs and smaller trees is to handpick the bags from September into spring and destroy them.

Bacillus thuringiensis kurstaki (Dipel, Thuricide), spinosad (Conserve), cyfluthrin (Tempo), permethrin (Astro), and other pyrethroids are effective even on older larvae. Even so, they are more effective on younger larvae, so treatment soon after they stop ballooning is recommended. In addition, controlling younger larvae prevents the damage that would be caused by the larvae through the season. (Phil Nixon)

What Does Plant Disease Sanitation Really Mean?

A plant pathologist's goal is to properly identify and manage plant disease to reduce the economic and aesthetic damage to plants. Unfortunately, many still think that our goal is to control plant disease by spraying fungicides. We focus on an integrated disease management approach, which includes exclusion, eradication, protection, and resistance. But, what do all of these really big words mean? When it comes to managing plant disease, utilizing prevention and suppression of plant pathogens is recommended. Some ways to suppress a plant disease are rotation, resistant varieties, sanitation, leaving land idle, or weed control. Sanitation is one of the many ways to achieve "eradication", when practicing integrated disease management and is defined as the elimination of plant disease pathogens. How do you think that plant pathogens survive from year to year? They survive on plant debris and infected plant parts after each growing season. Here are some recommended sanitation practices:

Tillage

Plant pathogens are less likely to survive if organic matter is quickly decomposed. In addition, tillage can help eliminate plant roots that linger after harvest in the soil and can harbor plant pathogens.

Weed control

In some cases, weeds can be a source of plant pathogens and it is suggested that weeds be controlled. If you believe weeds are diseased, they should be buried, burned, or removed, and not composted. In other cases, numerous weeds can increase humidity, which could make conditions more favorable for plant disease.

Insect control

Some insects may need to be controlled because they could be vectors of plant pathogens and transmit plant pathogens such as viruses or bacteria to plants. Plant disease vectors include aphids, leaf hoppers, and cucumber beetles.

Pruning limbs

This year, the U of I Plant Clinic will be recommending more pruning of trees, thanks to the development of fungal cankers after drought stress and the increase of the bacterial disease, fire blight. If you notice branches are dead or have sunken, dark cankers, with foliage that is yellow, brown, wilted or absent, you may need to prune. If you fear further plant pathogen spread during the growing season, pruning should be done in dry weather. Ideally, pruning usually should be done in late winter or early spring, when trees are dormant. The key is to prune PROPERLY! Pruning cuts should be made in healthy bark and wood, several inches below the diseased or dead area. Pruning tools should be sharp and used in a manner that promotes a smooth cut to help with wound closure. Remember, when pruning an entire branch, wood should be removed before it meets the collar. The branch collar should not be removed.

For additional information on pruning, please refer to the following fact sheet:

<http://www.ag.ndsu.edu/pubs/plantsci/trees/h1036.pdf>

Does covering wounds on trees help? We do not recommend that you cover a wound, because recent research indicates that this practice is of no value and might even accelerate wood decay.

Removing dead plant material

In most cases, plant parts should be removed as soon as you notice they are diseased or dead during the growing season. Raking leaves, removing dead fruit, or digging up entire plants (including roots) are all examples of sanitation. The dead plant material could contain bacterial, fungal, or even viral pathogens. The next question is always what do we do with this diseased plant material? The diseased plant material should be buried, burned, or properly disposed away from your healthy plants! It is not recommended that you pile this material near the garden. There are conflicting opinions, when it comes to composting diseased plants. Ultimately, death of plant pathogens will depend on the effectiveness of your composting system. Generally, composting of diseased plants is not recommended because the composting heat may not entirely (100%) kill all of the disease organisms. As you use and spread compost, you could also be spreading plant pathogens. Most plant pathogens are host specific; therefore, using compost consisting of leaves, grass clippings, or shrubs in the vegetable garden can be done, because these plant pathogens most likely will not affect the garden plants. However, some research institutions recommend destroying diseased leaves and needles.

Avoid movement or destroy soil pathogens

Don't forget that plant pathogens can be present in the soil; therefore be sure not to move contaminated soil to other areas. Remember to disinfect or destroy boots, stakes, cages, pots, saucers or anything else that has come into contact with the soil. Soil within pots should not be reused from year to year. It is recommended that dead plants

and soil in pots be placed in the trash. Root rot pathogens such as *Pythium*, *Phytophthora*, and *Rhizoctonia* as well as wilting plant pathogens such as *Verticillium* can all affect a wide array of plants, so proper disease identification is needed and replanting with the same host plant is not recommended. I am often asked if there is a way to remove plant pathogens from the soil. Fumigation can be costly, but is used in commercial situations. Soil removal can be attempted; however, it is difficult to completely remove plant pathogens from the soil. If replanting, in an infested area, we often recommend a cultivar with some resistance or a non-susceptible host plant. We also encourage good cultural practices (proper planting, proper site, watering/not overwatering, pruning, or fertilization), to keep the plant in good health to avoid future plant disease infection.

Disinfect machinery, tools, pots, equipment, and even HANDS

It is very important that you disinfect machinery or tools after use to prevent plant pathogen spread to other plants. Disinfecting can be done with steam, hot water under pressure, or a 10% (1 part bleach to 9 parts water) or 10% soak for 30 minutes). Some research institutions even recommend soap and water or rubbing alcohol for disinfection. No matter the disinfecting method, whatever you are cleaning should be allowed to dry. Remember that bleach can discolor metal or clothing. Corrosion of cutting tools due to disinfection via bleach is also a common complaint. One tip might be to rinse with water and treat the cutting tool with a light spray of cooking oil after it has come into contact with a bleach solution. I have recently come across some new research compiled into a fact sheet that discusses other alternative options for the disinfection of cutting tools and can be found at the following link:

<http://puyallup.wsu.edu/~linda%20chalke>
[r-](#)

scott/horticultural%20myths_files/Myths/Pruning%20tools.pdf

(Stephanie Porter)

Recommendations for sending suspected oak wilt samples to the U of I Plant Clinic

Summer has arrived. Along with the new season, comes days with extreme temperatures. High temperatures have the potential to kill plant pathogens and thwart diagnostic efforts before the samples arrive at the Plant Clinic. The pathogen responsible for oak wilt is a good example. This fungal pathogen is intolerant of temperatures above 90°F. It is also thought to be sensitive to drying and other competing fungi. Exposure to these conditions during shipping may result in inconclusive test results. Properly packaging and shipping samples will greatly help reduce the potential for an inconclusive diagnosis. When sending an oak wilt sample, start by selecting a branch showing early symptoms of the disease. Oak wilt symptoms will vary by host. In general, oaks in the red group 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. Leaves curl slightly and turn a dull, pale green, bronze, or tan, starting at the margins. The infection progresses rapidly. Usually, an infected tree will drop all its leaves by late summer.

Infection of hosts within the white oak group, tend to progress slowly, over several years. Leaves on infected white oaks become light brown or straw colored from the leaf tip, progressing toward the base. The leaves curl and remain attached to the branches. The disease is often confused with general dieback, decline, or anthracnose. Infected branches from both oak groups should show symptoms of vascular streaking. Peeling back the bark of an infected branch will reveal sap wood with streaks of brown discoloration.

Sample Collection and Submission Tips

- Collect suspected oak wilt samples from a living branch showing early symptoms of the disease. The pathogen will not survive in dead or dry branches.
- Try to send branches with symptoms of vascular streaking. Our best chance of isolating the pathogen occurs when culturing tissues with vascular streaking.
- Mail samples the same day they are collected, or refrigerate and mail them soon after.
- Send samples early in the week. This will help to prevent samples from being held over the weekend in a hot mail truck.
- Higher rates of successful isolation occur with samples that's were kept cool. When possible, send samples in an inexpensive cooler with a disposable ice pack.
- 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.

(Travis Cleveland)

Asiatic Dayflower – The Little Beauty that Caused So Much Confliction

The jury is out on Asiatic dayflower. Half of them are out enjoying how their gardens have been graced with this plant's pretty blue flowers. The other half is (and likely has been for quite some time) waging war on this invasive weed. How can we be so divided when it comes to this escaped ornamental?

I stumbled across an interesting discussion online about Asiatic dayflower (*Commelina communis*), also known as common dayflower and blue dayflower. Here are some direct quotes from that discussion. Naturally, it could leave one a little conflicted:

- "This plant is gorgeous in early to mid-Summer!"
- "Invasive as they get--one of my biggest pests!"
- "They are the most pleasing shade of blue in my gardens!"
- "I finally have a name for this little beastie. I called it Hitler-weed because it invaded everything around it. I'll be pulling this until the day I die. Once established just try to get rid of it. I dare you.

I too have battled Asiatic dayflower for admittedly many years now. It always returns to the same spot. According to weed scientists at Iowa State University and University of Nebraska Lincoln¹, seed dormancy is an important adaptive characteristic of this genus. They and others who have researched this weed report that more than 80% of the seeds can germinate even after four and a half years in the soil seed bank. That's fairly high. Additionally, seeds can germinate throughout the growing season. This creates steady work for weeders. I can understand why many have decided to simply live with this weed.

Recently I found it in a new area – in the windbreak bordering the south end of my property – and the thought actually crossed my mind, "Do I really want to fight it here? The blue flowers *are* stunning though a little small." The realist in me says, "no, I'm tired of fighting" but the stubborn perfectionist in me says "hell yes". I'm conflicted.

This windbreak borders a field. I trust my farmer neighbor would rather I control it before it spreads to his field. Asiatic dayflower is becoming a troublesome weed for farmers because it is difficult to manage and can easily survive applications of glyphosate (Roundup and others). Just to clarify, its survival is NOT a result of the increased use of glyphosate. However, we are seeing more of this plant in agricultural production fields *because* of the increased use of glyphosate. Other competitive weeds

are killed while this one is left to survive and take over. And it will.

Research by weed scientists in Connecticut² found that flumioxazin (BroadStar, SureGuard, Chateau and others) provided excellent season-long control of Asiatic dayflower. There are additional reports that triclopyr (Turflon and others) is effective against this weed. Remember to carefully read and follow all label directions. Hand pulling can be effective if the soil is moist. Often however, stems will simply break off. Stems are capable of rooting at the nodes. Be sure to discard pulled plants. Prevention of seed development is also highly recommended. It cannot tolerate mowing, so it is not commonly found in lawns. It prefers moist, rich soil and shade. Cultivation may be used.

Many are surprised to learn that this somewhat creeping or ascending plant is an annual monocot – even though its leaves are up to 1.5 inch wide, much wider than that of most grasses. The seedlings look grassy with parallel veins. It is a member of the spiderwort family. The stems & leaves are thick and fleshy. Stems can reach 1 to 3 feet in length and the nodes are swollen or bumpy. Leaves have smooth margins and no petiole; they are 2-4 inches long. There is a sheath at the base of each leaf that clasps the stem. The flowers are pretty with 2 large petals above one smaller white petal. They are found July through September in small clusters in the leaf axils. Look quick, because they only last a day (its name should have tipped you off) and they aren't very big.

If you are feeling adventurous (and hungry), this plant is edible according to my Peterson Field Guide. This 2 minute video (<http://www.youtube.com/watch?v=4D5MsCkl1FM>) shows the many uses that one person has found for it. I think the blue flowers make her dishes quite attractive. Eating this weed can aid in revenge seeking. I'll share with you one last comment I read

that gave me a chuckle. "I like the idea of dropping the little shoots in butter and watching them wilt....I really do not like this plant."

1. Response of Asiatic Dayflower (*Commelina communis*) to Glyphosate and Alternatives in Soybean. Santiago M. Ulloa and Micheal D.K. Owen. *Weed Science*, Vol. 57, No. 1 (January-February 2009), pp. 74-80; <http://www.jstor.org/stable/40586977>

2. Effective Herbicides for Asiatic Dayflower Control in Conifer Beds. Mervosh, T.L. and J.F. Ahrens. Connecticut Agric. Exp. Stn., Windsor. Proceedings, Northeastern Weed Science Society, Vol. 57, p. 38 (2003); http://www.newss.org/proceedings/proceedings_2003_vol57.pdf

(Michelle Wiesbrook)

Modified Growing Degree Days (Base 50° F, March 1 through June 27)

Station Location	Actual Temp.	Historical Average (11 year)	One-Week Projection	Two-Week Projection
Freeport	983	961	1138	1293
St. Charles	985	907	1134	1282
DeKalb	1016	1024	1173	1327
Monmouth	1131	1087	1290	1149
Peoria	1152	1143	1321	1492
Champaign	1219	1181	1393	1569
Springfield	1304	1274	1487	1673
Brownstown	1292	1350	1478	1667
Belleville	1367	1363	1551	1739
Rend Lake	1470	1475	1663	1857
Carbondale	1425	1392	1605	1791
Dixon Springs	1443	1465	1626	1814

Insect development is temperature dependent. We can use [degree days](#) to help predict insect emergence and activity. Home, Yard, and Garden readers can use the links below with the degree day accumulations above to determine what insect pests could be active in their area. [GDD of Landscape Pests](#)

[GDD of Conifer Pests](#)

Degree day accumulations calculated using the [Illinois IPM Degree-Day](#) Calculator (a project by the University Of Illinois Department Of Crop Sciences and the Illinois Water Survey).

(Kelly Estes)