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Billbugs

Adult billbugs are small weevils, about 3/8 of an inch long, and brown or black in coloration. They have the distinct long snout and hard wing covers that are characteristic of the weevil family. Adult billbugs spend much of their time in the soil making them difficult to locate for identification. When adults are above ground, they are usually flightless and may be seen walking along driveways and sidewalks. The inability to fly prevents billbugs from traveling as far as some other pest species and means that billbug injury usually does not spread to cover large areas.

Adults chew holes into grass stems where they lay eggs. After hatching, billbug larvae begin to tunnel and feed within the grass stems and rhizomes. As the larvae mature, they emerge from the plants into the soil where they feed on the roots (this occurs prior to pupation). Billbug larvae are white and C-shaped. They are easily differentiated from white grubs because they are legless and much smaller, measuring up to ½ an inch. They may be difficult to locate because of their cryptic tunneling behavior.

Adult billbugs usually do not cause noticeable injury to turfgrass but the larvae can cause significant feeding damage. Billbug injury can be identified by browning, straw-like turf in two to three inch round patches. To differentiate billbug injury from that of other insects, you can use the "tug test." If the injured turf is pulled, it will break away easily. The grass plants will have holes in the stems and small brown pellets of frass may be found around the stems of the grass plants. If 10 or more billbug larvae are found per square foot of turfgrass, action can be taken to control the insect and prevent further injury.

Chemical controls for billbugs include chlorantroniliprole (Acelepryn) and trichlorfon (Dylox) which provide control within a few days of application. Chlorantroniliprole poses a lower risk to pollinators than many other chemical controls and trichlorfon can be used in areas where pesticides that breakdown quickly are preferred. Longer-acting, systemic insecticides, including imidacloprid (Merit), clothianidin (Arena) and thiamethoxam (Meridian), may take a couple of weeks to control the insects and will persist within the plants for some time. It is important to avoid applying neonicotinoid insecticides to lawns that have a mix of turfgrass and clover, to protect the bees and other pollinators that visit clover flowers.

If a non-chemical control is preferred, entomopathogenic nematodes can be used. Nematodes, such as *Heterohabditis bacteriophora*, attack larvae and can provide good protection within a few days of application. They may also be

more effective in treating mature larvae. Nematodes will provide about 60% control while chemical controls may provide 95% control. However, both options provide good protection against further injury. (*Sarah Hughson*)

Guignardia Leaf Blotch

Guignardia leaf blotch is a fungal disease that affects many *Aesculus* species. In Illinois, this disease is commonly seen on the common horsechestnut (*Aesculus hippocastanum*). Symptoms begin as rapidly enlarging, irregularly shaped, water-soaked areas. Affected areas eventually turn red-brown with a yellow halo that merges with the surrounding healthy green tissue. Small lesions will initially be limited by veins, but can enlarge, coalesce and lead to distortion and partial shriveling of leaflets. Tiny black fruiting bodies appear within lesions, which help to distinguish from environmental scorch. These black fruiting bodies produce spores which contribute to secondary infections. In more severe cases, premature defoliation can occur. Fortunately, severe symptoms do not develop until late in the season when annual growth has nearly finished, so tree health is not greatly impacted.

Guignardia leaf blotch pathogen overwinters as fruiting bodies in fallen leaves. In the springtime, fruiting structures will release spores into the air, some of which will land on developing *Aesculus* leaves. An extended period of leaf wetness following spore landing will initiate germination and infection. About 10-20 days after infection, infected leaves can produce new fruiting structures and initiate secondary infection cycles.

Damage from this disease is mostly aesthetic. Disease management should focus on cultural practices. Damage will be most severe when canopies remain wet for an extended period of time. Properly spacing trees as well as pruning a tree to maintain an open, well aerated canopy is an easy first step to managing this disease. In addition to this, fallen leaves should be collected and disposed of at the end of the season to help reduce available inoculum for the following season. Fungicide sprays can also be applied beginning at bud-break. They will help maintain the appearance of the tree, but are unnecessary to maintain tree health. Additionally, chemical controls may be cost prohibitive, due to the size of affected trees. (*Travis Cleveland*)

Test Now for Bacterial Leaf Scorch

Bacterial Leaf Scorch (BLS) is a serious infectious disease with a wide host range of trees and shrubs. The disease causes the slow decline of the host, resulting in host death. It 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.

In Illinois, it affects a wide number of trees. The most common hosts in our state are oak (red oak group), elm, sycamore, London plane, sweet gum, 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 by root grafts. Xylem-feeding leafhoppers, treehoppers, and spittlebugs are

also thought to act as vectors for the pathogen. The disease does not spread quickly between hosts.

Scorch symptoms appear on leaves in early to midsummer, and gradually intensify as the season progresses. Affected leaves may turn a yellow/green color and then turn brown, usually from the margin of the leaf inwards (see picture). Older leaves are often affected first, and an individual branch or section of branches usually become 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 crown of the tree over the course of subsequent seasons. Except in oaks, leaves generally do not drop until autumn.

The symptoms are easily confused with drought stress, cultural problems, cankers, and, in oak trees, oak wilt. It can also be confused with Verticillium wilt in some trees. Submitting a sample to a plant diagnostic laboratory is the only way to definitively diagnose the disease. At the University of Illinois Plant Clinic, we use an antibody test to determine the presence or absence of the pathogen in symptomatic tissue. Testing is performed once a year, in late August or early September. This is because the population of bacteria within the affected tissue increases as the season progresses, so testing in late summer is most accurate due to the increased pathogen numbers. A test 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 starting in August. We will store the samples until we perform the test. **Samples should consist of symptomatic leaves complete with 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, please visit the Plant Clinic's website at www.web.extension.illinois.edu/plantclinic and click on the "Sample 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 2 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*)

Aerating Lawns

As we are nearing fall, it is time to start looking at strategies prepare our lawns for the next growing season. Right now, you should be able to notice areas in lawns that received more traffic, unfavorable grass species, nutrient deficiencies, subtle ponding or even bare spots. This time of the year is perfect for aerat-

ing your lawns to help them repair, recover and reestablish for the next growing season.

Aerating the soil is a process of creating openings in the lawn to help water infiltration, thatch removal, nutrient absorption and air movement into the root zone. This will also alleviate compaction and the issues that follow. It will allow the roots to grow deeper allowing the lawn to become thicker as well as more drought tolerant.

There are different types of aeration; Core aeration- uses a hollow tine to remove cores of soil and deposit them on the surface of the lawn, Spiking- uses solid spikes to create holes, splitting the thatch and cutting slits into the soil, slicing- uses rotating blades to cut narrow slits into the soil. Core Aeration is the most effective and the most visible of the three methods. It physically removes the soil and creates channels for water, air and nutrients to enter back into the soil. The cores that are left onto the top of the soil are typically watered back in and add nutrients once decomposed. The other two methods are less noticeable on the lawns but are not as effective.

When you aerate, you want to make sure that the turf is actively growing and not under heat or drought stress. Aerators work best if the soil is moist. This will allow the machine to penetrate the lawn more precisely and evenly. For the best coverage of aeration, making a double pass across the lawn is recommended. This means making a pass to the east, and then west or north then south. This way you will get optimum coverage.

Allow a day or two to pass to allow the cores to dry before mowing them over. The mower will help to pulverize them back into to some of the holes and also spread the soil out evenly. You can also water after mowing that will help to disintegrate any remaining clods. For the best timing, be sure to allow enough time for the grasses to reestablish before a frost, so be sure to check the frost map for your region. Fertilization is typically recommended just after aeration as it will promote root and shoot growth.

Aeration is essential in heavy clay soils that are comprised in most suburban yards. Spring and fall aeration is recommended for heavily compacted soils. A reminder that when aerating in the spring there is the potential to increase weed production as the soils have been opened up, so weed control might be necessary. If the lawn looks good, then aerating every 3-5 years is recommended. (*Maria Turner*)

Applicators for Hire Must be Licensed

There is some confusion surrounding the issue of when a pesticide applicator license is required. Whether you need a license or not depends on two things: what you are going to apply and where you are going to apply it.

I have been asked in the past if there is a list of pesticides that require a license. Although lists of pesticides exist in one form or another online and in recommendation guides, there is no specific list of pesticides in which the application of such would require a person to be licensed. One exception could be for fumigants however; those all require certification. Another exception could be for RUP's (Restricted Use Pesticides). A license is required to apply any RUP.

Another related question I get is who needs to have a license and why don't homeowners need to be licensed? For those applying pesticides to their own land, the only time a license is required is for RUP's. For commercial applications (meaning that the land is not owned by the individual making the application), a license is required for ALL pesticides, even general use pesticides like Roundup. For example, you can spray Roundup license-free if you are treating your own property, but, if you apply Roundup as part of your employment, a license is then needed.

When applying pesticides commercially, each business will need at least one applicator. Persons working under the applicator's direct supervision to use pesticides must also be licensed -- even when applying general use pesticides. Confusion lies with the fact that homeowners can apply these GUP products without being licensed. Again, when you are applying these products on land you do not own, you are required to have a pesticide license. This of course is to demonstrate to the public that you are knowledgeable concerning the safe and proper use of pesticides.

Additionally, if a product makes pesticidal claims, it needs to be registered with the EPA and it will have a registration number on the label. Remember that pesticides include not only those that kill or suppress living organisms but also repellents, attractants, and those which affect growth such as growth regulators/hormones. Some have been fooled into thinking that a license is not required for a commercial application of say rooting compounds because nothing is being killed. These products are still chemicals and technically (legally) they are pesticides. For safety reasons, it is in our best interest that the use of these chemicals be regulated. (*Michelle Wiesbrook*)