COOPERATIVE EXTENSION SERVICE
HOME, YARD & GARDEN PEST NEWSLETTER
College of Agricultural, Consumer and Environmental Sciences, University of Illinois at Urbana - Champaign
Illinois Natural History Survey, Champaign

Number 11 - July 2, 2012

Last Weekly Issue

This is the last weekly issue of the Home, Yard, and Garden Pest Newsletter for this year. It will be published every other week through July, August, and September. We finish the year with a single issue in mid-October. As we proceed through the summer, weed, disease, and insect pest management timing is less critical, making frequent newsletter publication less important. (*Phil Nixon*)

Billbugs

We have had reports of bluegrass billbug injury in northern Illinois turf. Damage is appearing as two-to three inch roughly circular areas of browning turf. Tugging on the damaged turf causes it to break loose easily, revealing chewed, frayed ends at the base of the stems. Close examination will find holes at the stem bases where the young billbugs emerged after tunneling in the stems. Sawdust-like frass is usually present at the turf crowns. Dig in the soil to uncover the mature, one-half inch long, legless, fat, slightly curved larvae that are feeding on the roots.

Adult billbugs are cylindrical, 3/8-inch-long, hard-shelled, blackish beetles with elongated snouts like elephants. These beetles are generally flightless, so they have to walk everywhere. This lack of long-distance movement usually confines damaged areas somewhat. Because adults are very long-lived, they may be found at any time of year. They will be found walking through the grass or along the edge of sidewalks. Because the adults lay eggs at various times through the year, grubs in all sizes also are found throughout the year. The adult has a tiny mandible (jaw) at the end of the "snout" that it uses to chew a hole in the stem of a grass plant. It then turns around and lays an egg in that hole.

The resulting larva tunnels down through the stem of the grass plant and continues through the rhizome until it gets too big to fit inside the stem. It then emerges into the soil to feed on the grass roots, as do other white grubs. Although larvae can be found at any time of the year in all sizes, they are most numerous at this time of year, making it an ideal time to apply controls. The damage threshold for billbugs is similar to that for grubs. Expect damage at 10 or more per square foot.

Control is the same as for other grubs. Chlorantroniliprole (Acelepryn) and trichlorfon (Dylox) provide control within a few days, whereas imidacloprid (Merit), clothianidin (Arena) and thiamethoxam (Meridian) take a couple of weeks. Insecticidal nematodes, particularly Heterorhabditis bacteriophora, also provide control within a few days. Insecticidal nematodes typically provide

about 60% control, whereas chemical insecticides should provide about 95% control on younger larvae. However, insecticidal nematodes will provide better control on large, mature larvae. (*Phil Nixon with photos from Derek Settle*)

Masked Chafers

Masked chafer adults have been numerous throughout Illinois. They are one-half inch long, tan, stocky beetles with a black band across the head, giving them the name of masked chafers. They are also called June bugs. Two species occur throughout Illinois, the southern and northern masked chafers.

The adults hide in the thatch during the day, emerging in the evening to mate and lay eggs. These insects do not feed, so they run out of stored food and die after about two weeks. After mating, females tunnel into the soil to lay their eggs. The resulting larvae are some of the white grubs that cause severe turf damage in late summer and fall. Getting a rough idea of adult numbers helps one decide whether an insecticide treatment will be needed to prevent grub damage.

The two species are out at different hours of the night. Southern masked chafer is more active between 9 and 11 p.m., whereas northern masked chafer is more active from midnight to 4 a.m. Between 10:30 and 11:00 p.m. is a good time to check on their numbers, because some of each species will be active at that time. Shining a light, such as car headlights, across the turf will reveal them flying over the turf. They are also strongly attracted to lights at night, and can be monitored by checking porch and street lights. (*Phil Nixon*)

White Grubs

We are set up to have large numbers of white grubs in turf this year. Adult beetles of Japanese beetle and the two masked chafer species are numerous throughout most of the state. Corresponding hot, dry weather will concentrate egg-laying in irrigated turf, resulting in high numbers of white grubs.

For the third year in a row, Japanese beetle adults are relatively few in central Illinois east of Mahomet. This phenomenon extends across central Indiana and central Ohio. Although weather conditions have been conducive to high numbers of beetles, they have not appeared. It is thought that there may be an undiscovered disease reducing population numbers. Inspections of various life stages have not revealed increased incidence of known parasite infestation or disease infection.

Adult Japanese beetles and masked chafers appear to be attracted to green, healthy grass to lay their eggs. All three species tunnel into the soil to lay their eggs. Obviously, irrigated moist, soft soil is easier to dig into than unwatered, hot, dry soil. Research on southern masked chafer eggs has determined that they do not hatch at soil temperatures above 87 degrees F with soil moisture of 12.2% or below. As the soil temperature increases, the required soil moisture for hatch increases. In comparison, at 87 degrees F soil temperature and 18% moisture, over 70% of eggs hatch. The resulting white grubs survive better under moister soil. In hot, dry soil at 93 degrees F and 13.3% soil moisture, only 1.7% of southern masked chafer grubs survive. In hot, moist soil at 85.6 degrees F but 22.4% moisture, 56.7% of the

grubs survive. These are additional reasons why adult beetles avoid dry soil when laying eggs.

Application of a long-lasting white grub insecticide is recommended during July to irrigated turf in areas where beetles are numerous. This includes chlorantroniliprole (Acelepryn), clothianidin (Arena), imidacloprid (Merit), or thiamethoxam (Meridian). In recent years, we have also recommended halofenozide (Mach 2) for this application. However, widespread failures of this product across the U.S. have been reported, possibly due to microbial degradation. In microbial degradation, microbes adapt to eat the pesticide. If you have had good results with Mach 2 in the past, feel free to continue using it but rotation with at least one other of the above insecticides on a yearly basis is recommended. (*Phil Nixon*)

Cedar-Apple Rust

Cedar rust comes in three different forms and can infect apple, hawthorn, and quince trees wherever cedars exist across the country. Cedar rust of apple is probably the most important of all apple rusts in the eastern United States. If a susceptible cultivar is grown, it will cause severe (almost total!) defoliation and a huge loss in crop quantity and fruit quality.

Cedar Apple Rust is most easily identified by the appearance of small yellow to orange lesions that will appear on the top of leaves, petioles, and even on young fruits. Depending on host susceptibility, these lesions can increase in size at varying rates, with faster enlargement on more susceptible cultivars. These lesions can occasionally be surrounded by a red band, but this is not the standard. After this, small brown pustules will develop that are no larger than 1mm in diameter. These will produce watery, orange drops. Next up (well, after several weeks) comes yellow brown lesions up to 15mm in diameter on the underside of leaves. From these, dark tubular structures are produced; these will release red brown spores.

As for management of this all too common pathogen, it is recommended as with nearly everything to plant a resistant cultivar. Resistant varieties have been developed for a very long time, and are easily available. If a rust resistant cultivar is chosen, it makes all other management techniques superfluous. There are, of course, many non-resistant cultivars planted around the country, and there are a number of management practices to help these as well. The easiest (or maybe just most successful) practice would be to remove all the galls from Eastern red cedar trees in the surrounding areas. This rust does not overwinter on any of the hosts mentioned in this article, and instead overwinters on nearby cedar. Midway through the growing season, the yellow orange spots release spores that will infect cedar to ensure the pathogens winter survival. The cedar galls are bright orange in color, and look like strange masses of jelly tendrils. These should be removed in early spring to prevent summer infection, and then removed once again in the three to four week blooming period. If a fungicide is deemed to be necessary it should be applied every seven to ten days from just before blooming until about three weeks after petals have dropped. (*Stephanie Porter and Sean Mullahy*)

Iron Chlorosis

Are the leaves on your tree a little more yellow than you remember from previous years? They may be chlorotic, a condition in which leaves turn yellow as a result of destruction of chlorophyll or lack of chlorophyll production. In most cases, chlorosis is the result of a nutrient deficiency caused either by a lack of available nutrients or the inability of the plant to uptake the nutrients.

This year, I have seen many trees with symptoms of Iron Chlorosis. From a distance, the affected trees appear a light green to yellow-green, or in severe cases bright yellow. Chlorotic foliage is especially pronounced when the trees are grown near unaffected trees. Up-close inspection of the leaves shows yellowing along the leaf margin and between the leaf veins while the leaf veins remain a normal green color. Affected leaves may be stunted and/or have browning margins. Because iron is a relatively immobile nutrient within plants, we are most likely to see chlorosis on the youngest shoots.

What causes iron chlorosis?

Iron is an essential micronutrient; meaning it is required for plant growth, but it is only used in small amounts. Among its important roles, iron is required for the formation of chlorophyll, the green pigments that capture light to produce food for the plant. When deficient in iron, chlorophyll production is reduced, resulting in chlorosis.

Iron chlorosis can develop under conditions that reduce the availability of iron to the plant, such as those found in high pH soils. A soil pH above 6.5 produces a form of iron unusable to trees. In Illinois, high soil pH is the primary cause for iron chlorosis. Affected trees are commonly found near sidewalks and drive ways constructed with limestone bases.

Cultural and environmental growing conditions can also influence iron deficiency and chlorosis by creating an environment unfavorable for root growth. Compacted soils, poor drainage, root damage and drought all can affect root growth. Last summer's drought may have contributed to many of the trees currently showing iron chlorosis. Currently, most of the state is abnormally dry or in some degree of drought. Unfortunately, this means we may continue to see iron chlorosis develop.

Options for Treating Iron Chlorosis

1. Avoid planting susceptible trees. A soil test can verify whether or not the pH is correct and if adequate nutrients are present.
2. Correct poor soil drainage and compaction. Avoid saturating soils with excessive irrigation.
3. Fertilize the tree with an available form of iron. The iron may be sprayed onto the foliage, injected into the trunk, or added to the soil. Foliar fertilization provides temporary results and will need to be reapplied as new leaves develop. Trunk injections can last several years but may injure the tree's trunk. Soil injections get to the root of the problem. The results can last several years. Unfortunately they can be labor intensive and expensive.

4. More detailed information on iron chlorosis and control strategies can be found within the links below.

http://web.aces.uiuc.edu/vista/pdf_pubs/ironchl.pdf

http://forestry.usu.edu/htm/city-and-town/tree-care/what-is-iron-chlorosis-and-what-causes-it

http://forestry.usu.edu/htm/city-and-town/tree-care/preventing-and-treating-iron-chlorosis-in-trees-and-shrubs

(*Travis Cleveland*)