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White Grubs

Preventative treatment for white grubs is recommended to watered turf in those areas of the state where rainfall has been slight and non-irrigated turf is dry and dormant. In these dry areas, Japanese beetle and masked chafers will concentrate their egg-laying in irrigated areas, where the turf is green and actively growing and the soil is moist and easy for them to burrow into to lay eggs. This egg-laying is likely to result in population numbers that will be high enough to cause severe turf damage later this summer and fall.

Rainfall has been spotty in Illinois over the last two weeks. Some areas have continued to benefit from periodic rains, but even nearby areas have been dry. A good example is that Champaign, IL has received 1.25 inches of rain over the past week, but I have received 5.0 inches during the past week at my house, which is 15 miles away.

If high grub populations are expected, apply chlorantroniliprole (Acelepryn), clothianidin (Arena), imidacloprid (Merit), or thiamethoxam (Meridian). Irrigate with at least one-half inch of water to move the insecticide down into the root zone where the grubs are located.--*Phil Nixon*

Sod Webworms

High numbers of sod webworm adults have been noticed around lights and in light traps. There are several species of sod webworms that are damaging to turf, but the adult moths look similar. They have light tan wings that are held tight against the body, giving the body a tube-like appearance. Their mouthparts have long palps that protrude beyond the front of the head, giving their taxonomic family the common name, snout moths. The species vary in size from one-half inch to about one inch long, and some species have whitish or brown stripes on their wings.

When these moths are disturbed during the day in turf, they fly low to the ground, no higher than your head, in a jerky fashion. They do not fly very far, settling back down onto the turf within about 30 feet of where they were disturbed. The most common species, the larger sod webworm, tends to sit crosswise on the grass blade when at rest. Other species sit lengthwise on the grass blades.

Eggs are dropped into the turf as the adult moths fly across it. The resulting larvae live in a silk-lined tunnel in the thatch during the day, coming out at night to clip off and eat the grass blades.

Small balls of green fecal pellets are common around the crowns of infested turf. The larvae are slender with dark brown spots. Their base color varies from whitish to gray to tan to green depending on the species and the larval feeding activity. Fully-grown larvae of the larger sod webworm are about one inch long. Other species are similar in size or smaller.

Damage will first appear as indistinct brown patches of turf. Close examination will reveal that most of the grass blades are missing with the thatch causing the brown appearance. The turf will be firmly rooted. As infestations progress, entire lawns can turn brown.

Sod webworm caterpillars are controlled naturally by microsporidia, microscopic one-celled organisms somewhat similar to bacteria and fungi. Like fungi, microsporidia are more active when there is plenty of moisture. The microsporia typically keep the sod webworm numbers too low to cause significant damage in irrigated turf and in years with periodic, adequate rainfall.

Unwatered turf in areas with drought are likely to experience high amounts of sod webworm larval damage. If unattended, large turf areas are likely to die. If infestations are noticed early and promptly treated, the intact root system will quickly replace the eaten grass blades, resulting in quick recovery of the turf's appearance.

Sod webworms are easily controlled with a large number of insecticides. Effective, labeled products include bifenthrin (Onyx, Talstar), carbaryl (Sevin), chlorantroniliprole (Acelepryn), clothianidin (Arena), deltamethrin (Delta Gard), indoxacarb (Provaunt), lambda-cyhalothrin (Scimitar), trichlorfon (Dylox), spinosad (Conserve), and *Steinernema carpocapsae* (Biosafe). The last two are considered to be organic. Allow the spray to dry on the grass blades.--*Phil Nixon*

Cicada Killer and Velvet Ant

Cicada killers are becoming numerous in turf areas. Adult cicada killers are large wasps, about 2 inches long and black, with yellow band-like marks. The head and transparent wings are brownish red. Females dig burrows that are one-fourth to one-half inch in diameter with loose soil next to the hole. They tend to prefer sandy and bare soil areas.

Application of permethrin or other labeled insecticide to the burrowed area should kill the female cicada killers in golf course sand traps. Individual burrows in dry areas can be treated by applying carbaryl (Sevin Dust) alongside burrows where the female wasp will track through it. She will be killed after ingesting the dust while grooming. If sand boxes, volleyball courts, and other infested areas can be covered with a tarp during many of the daylight hours, the cicada killers will leave without the need for insecticide use. When the females are killed or leave, the similar-appearing males will leave.

Most velvet ant species are brightly colored. Females of the most obvious species in Illinois are about 1 inch long, wingless, and bright orange-red with black bands. They run quickly and nervously about in dry, sandy areas and on sidewalks, where they are easily noticed. The males are colored similarly

to the females but have transparent, black wings. As with cicada killers, male velvet ants cannot sting, as the stinger is a modified egg-laying device.
Velvet ants are parasites of cicada killer and bumblebee nests. Mated female velvet ants enter host nests to lay their eggs. The resulting larvae eat the young of the cicada killers or bumblebees, spend the winter as pupae in the nest, and emerge during the following growing season.--*Phil Nixon*

Peony Powdery Mildew

I have grown peony plants in my gardens for nearly 20 years and have not seen powdery mildew as a problem on those plants. I have read about it from time to time but have not seen it on Plant Clinic samples. A recent peony sample at the University of Illinois Plant Clinic was covered with powdery mildew, as can be seen in the first image. The disease can be identified by its white, powdery growth covering the foliage. If you have access to a microscope you can see the *Oidium* spore stage like those in the second picture, courtesy of Horacio Lopez Nicora, one of the clinic diagnosticians. The spores are easily dislodged and moved from leaf to leaf by wind or water. Finding fruiting bodies of the overwintering stage of the fungus would clinch the species identification, but these had not yet formed on the sample. The fungus is *Erysiphe polygoni*.

According to the literature, this disease is becoming more common in landscapes. It is something to scout for on peonies. Preventive fungicides are available and usually recommended at the first sign of mildew. Registered fungicides include myclobutanil (Eagle, Myclobutanil, Spectracide Immunox Multipurpose Fungicide), propiconazole (Banner MAXX, ProPensity, Fertilome Systemic), thiophanate-methyl (Cleary 3336, SysTec, Fertilome Halt), potassium bicarbonate (Armicarb, Bonide Remedy), triadimefon (Bayleton, Bayer Advance Fungus Control), or sulfur. A note about sulfur: It may cause plant injury if applied in high heat (greater than 85 degrees F.).

A University of Illinois fact sheet on Powdery Mildews of Ornamentals is available at http://www.aces.uiuc.edu/~vista/abstracts/a617.html. Another reference on powdery mildews is one found on the Oregon State University web site, http://plant-disease.ippc.orst.edu/articles.cfm?article_id=30. One author, Dr. Dean Glawe, is world renowned for his work with powdery mildews. He has many articles about powdery mildews in the scientific literature.--*Nancy Pataky*

Cherry Leaf Spot

A current problem on edible and ornamental cherries in Illinois is cherry leaf spot, caused by the fungus, *Blumeriella jaapii*. I know the pathogen as one of its synonyms, *Coccomyces hiemalis*. Regardless of what name you use, the disease begins as small reddish/purple spots on the upper leaf surface. These spots turn brown and may merge together. The leaves often turn yellow. The spots themselves may drop out, giving the leaves a shot-hole appearance. The first image, courtesy of diagnostician Travis Cleveland, shows the disease in the field on some ornamental cherry trees. Early

defoliation from this disease is common and greatly weakens the tree, predisposing it to winter injury.

The fungal pathogen is produced in an acervulus on the lower leaf surface. An acervulus is an open fruiting body, exposing spores to splashing rain and wind which may move spores to new infection sites. The second image (also courtesy of Mr. Cleveland) shows a mass of spores (conidia) on the leaf surface. We usually see this disease in early to mid-summer. Unlike many disease scenarios, leaves are resistant to infection while in the bud stage. They become susceptible once leaves unfold.

Cherry leaf spot of ornamental trees can be controlled with fungicides, including chlorothalonil with or without thiophanate-methyl, mancozeb with or without copper, myclobutanil, or propiconazole. Applications begin at petal fall and are repeated at 7 to 10 day intervals depending on the fungicide used. Since the fungus survives the winter on fallen leaves, raking and removing leaves in the autumn may help reduce infection the following year. For more on this disease, consult University of Illinois report on plant disease 800, Cherry Leaf Spot, available at http://www.aces.uiuc.edu/~vista/abstracts/a800.html. Chemical recommendations are listed in the *2010 Illinois Commercial Landscape and Turfgrass Pest Management Handbook* and the *Illinois Home, Yard, and Garden Pest Guide*.--*Nancy Pataky*

Foliar Nematode of Hosta

We see this nematode problem at the Plant Clinic from time to time on hostas. It is probably missed, overlooked, or disregarded as due to other causes in the landscape. Especially in areas where rains have been frequent this summer, know and scout for the symptoms of foliar nematodes. Look for them on weak or struggling hosta or herbaceous perennials.

The foliar nematode is a pathogen in the genus *Aphelenchoides*. It lives in the plant foliage, not in the roots or soil. Nematodes are microscopic round worms. They are pathogens much like fungi or bacteria but foliar nematodes have specific needs. They require moisture to infect; they live within the plant; and they are thought to overwinter in the crown. These nematodes move in and out of the leaves when moisture is present, so they can be splashed from leaf to leaf with rain or overhead irrigation. The first image shows a foliar nematode next to the edge of a hosta leaf, as observed with a dissecting microscope at a magnification of about 40 times normal size. If you see "worms" in the soil, they are not nematodes. You will not be able to view these nematodes without a microscope.

Symptoms of foliar nematodes on hosta include yellowing and necrosis of leaf tissues between veins. Infected plants are often weak and have yellow/brown stripes of tissue as seen in the second image.

Control of foliar nematodes is not easy. Inspect new plants for symptoms; and do not buy plants with questionable necrotic tissue. Avoid close plantings, excessively wet foliage, and overhead irrigation of symptomatic plants. Discard contaminated stock. These nematodes can survive even the cold

temperatures of Minnesota, so Illinois winters are not a threat to nematode survival. Once they become established, plant removal is usually necessary. There are no chemicals that will kill the nematode and not the plant.

Foliar nematodes also appear on other herbaceous perennial hosts including anemone, creeping phlox, ground ivy, ferns, windflower, heuchera, and others. On these plants the brown areas in the foliage may take on other shapes, usually limited by veins. This nematode will not cross veins like fungal leaf pathogens or environmental scorch. Consult a plant lab if you are uncertain of the diagnosis. Do not share plants that may be infected.

A University of Illinois report on plant diseases, number 1102, Foliar Nematodes of Ornamentals, is available at http://www.aces.uiuc.edu/~vista/abstracts/a1102.html. --*Nancy Pataky*

Highway Invasives: Road Spread Weeds

We discussed in past articles several invasive insects that make their way from location to location with help of unsuspecting citizens. One such method includes traveling our highway and interstate system. But did you know that along these same highways and interstates lurk many invasive plants? Roadways and highways are becoming one of the major pathways by which invasive plants spread. Wind and air movement from passing vehicles help disperse seeds. Cutting and mowing, and regular road maintenance activities can aid in the spread of these invasives.

The purpose of this article is to increase awareness of invasive species in Illinois, particularly those you may notice while traveling on roads you may routinely use. There are more invasive plants than just listed here; and remember, there are many native species along Illinois roadsides as well.

Common Teasel - Common Teasel was discussed in the previous issue of the *Home, Yard and Garden Pest Newsletter*. This purple flowering plant may reach 6 to 7 feet in height. While beautiful to look at, it also becomes established quickly and can exclude all native vegetation.

Spotted Knapweed - This plant has a very deep tap root that may aid in soil erosion and surface runoff. It releases toxins that prevent native plants from growing, making restoration difficult.

Autumn Olive - Autumn olive can be identified by the underside of its leaves that are silvery and dotted; it produces yellow flowers and red fruits. This plant was introduced to control erosion but tends to crowd out natives plants.

Tree-of-Heaven - Tree-of-Heaven grows rapidly and establishes in dense stands (like autumn olive). It overruns native vegetation and produces toxins that prevent native growth.

Poison Hemlock - This common invasive plant forms dense stands along roadways and in ditches. While it grows quickly and displaces native plants like the plants listed above, it also can harm people. All parts of the plant are poisonous and the plant sap can also irritate the skin, causing rashes.
--*Stephanie McLaughlin and Kelly Estes*

Brown Marmorated Stink Bug: Know This Invasive!

The Brown Marmorated Stink Bug (*Halyomorpha halys*) is native to Asia but has been transported to the United States and found in many states in the eastern U.S. Its presence in Illinois is unknown. The presence of these bugs is a concern because they can cause injury to a variety of crops and ornamentals including but not limited to pear, peach, mulberry, persimmon and apple trees, as well as soybeans and various shade trees. This stink bug will pierce and feed on plant stems and fruit leaving wounds that destroy commercial and aesthetic value of the plants. Another concern is that this stink bug will often infest buildings in the fall in order to overwinter, becoming a nuisance to home and business owners.

The Brown Marmorated Stink Bug mates in the spring; and females will lay multiple clusters of eggs. Each cluster has 20-30 eggs, and the total number of eggs laid per female, per season, is about 400 eggs. These egg clusters are deposited on host plants such as the aforementioned crops, fruit trees, and ornamentals. After the eggs are laid, it only takes 4 or 5 days for the nymphs to emerge. Adults will feed on host plants before seeking overwintering locations in the fall (usually houses or other buildings) where they will remain until the spring when mating once again occurs.

The Brown Marmorated Stink bug is similar in shape and size to a variety of native insects including the brown stink bug, assassin bug, and squash bug. Like many of these insects, this stink bug grows to just over half an inch in length and its body has a flattened shield shape. The characteristics that set it apart from other insects are the white banding on the antennae, the distinctive pattern on the edge of its wings, and its red eyes. For a more detailed comparison of the brown marmorated stink bug and look-alikes, you can check out this fact sheet: http://www.inhs.uiuc.edu/research/CAPS/docs/BMSB.pdf.

-Irenka Carney and Kelly Estes