

Number 8 - June 12, 2009

Scouting Watch

Emerald ash borer has been out and flying in Chenoa, IL in McLean County since June 8, so new emergence holes will be present in ash. With the flight season lasting for the next couple of months, be extra careful transporting ash logs and wood debris. Remember that there are extra quarantine restrictions on ash movement during this time. Those regulations can be reviewed on the Illinois Department of Agriculture EAB web site at:
<http://www.agr.state.il.us/eab/?pg=28>.

Bagworm will have hatched in southern Illinois. Hatching should be occurring in central Illinois at this time, but limited scouting in the Champaign area indicates that there are few or no eggs that have successfully overwintered. Eggs overwinter inside the female's body inside last year's bag. I have checked a dozen or so bags and have yet to find any viable eggs or hatched larvae. Probably the cold winter temperatures in central and northern Illinois greatly reduced the number of bagworms that will be present this year. Be sure to scout for young larvae before you spray. We recommend waiting to spray for a couple of weeks past egg hatch to allow the larvae to finish ballooning from tree to tree. So even in southern Illinois, sprays will be more efficient later this month.

Spruce spidermite is still present in central and northern Illinois but numbers appear to be declining. Generally, we expect spruce spidermite to switch to over-summering eggs on the foliage in central Illinois around mid-May. Probably the cooler and possibly rainy weather has delayed this, resulting in a longer feeding and damage period than normal. In northern Illinois, feeding usually ceases for the summer around early June. Be watchful for damage to continue, particularly if the weather stays cool.

Twospotted spidermite and its relatives including honeylocust mite and oak mite are likely to be slow in building populations. These warm season mites prefer hot, dry weather as they are very susceptible to fungal disease. These fungal diseases are not the same ones that cause damage to plants, but they do better under the cool, wet conditions that the plant fungi prosper under. It is unlikely that these mites will become a problem until it turns warmer and drier.
--Phil Nixon, Marion Shier, Greg Smith

Japanese Beetle

Japanese beetle adults were picked up in a trap in Massac County on June 7 by Ron Hines of Growmark. Based on that, we are expecting adults to emerge in central Illinois by about June 21 and around July 5 in northern Illinois.

In central and northern Illinois, it is likely that numbers will be reduced to about one-third of those of last year. The reason for this is that most Japanese beetle grubs only migrate about eleven inches deep to spend the winter, and they can only tolerate freezing temperatures for about three weeks. Last winter, the ground froze to about 18 inches deep in central Illinois and stayed that way for about five weeks. In northern Illinois, the soil froze about two feet deep in most areas and remained frozen for six to eight weeks.

Based on the high numbers experienced in southern Illinois last year, we are expecting numbers to be high again this year. The other major mortality factor for Japanese beetle in Illinois besides frozen soil is dry soil during the summer and fall because eggs and young larvae are more vulnerable to those conditions. Because there were no droughts in Illinois last year and the soil did not freeze deeply in southern Illinois, we are expecting high numbers there.

Japanese beetle adults are three-eighths to one-half inch long stocky beetles. They are metallic green with coppery wing covers. There is a row of white spots on the side of the abdomen just below the wing covers and two more white spots on the posterior end of the abdomen. These white spots consist of patches of white hairs.

The adults emerge from pupae in turf areas where the larval white grubs fed on the turf roots late last summer into fall and then again this spring. Males emerge first and hang out on the turf waiting for females to emerge from the soil. Emerging females are immediately

attacked by large numbers of males trying to mate with her. Enough males will try this that they form a ball of male beetles with a female in the center. These balls of beetles are about the size of a ping pong ball and the process is called "balling." This occurs for several days until most of the females have emerged. Females and males then fly from the turf to adult feeding plants.

Adult Japanese beetles feed on a variety of trees and shrubs, being most common on linden, birch, willow, crabapple, and rose. Probably their favorite adult feeding plant is smartweed, and many scout that plant to detect the first beetle emergences. The beetles will be most numerous on the upper, sunlit leaves of the plant, eating through the upper leaf epidermis and eating the mesophyll. The lower epidermis is left intact, causing attacked leaves to initially appear whitish. These leaves turn brown as the exposed epidermal cells die. The beetles also eat holes through the leaves.

Japanese beetles switch hosts every three days, flying as much as a mile and a half to a new host. They are attracted to leaves and blossoms that have already been fed upon by Japanese beetles. They feed on plants in this way for about six weeks.

Handpicking every other day or so is an effective control method for homeowners and others. A wide-mouthed jar, such as a peanut butter jar, with an inch or two of rubbing alcohol or soapy water makes an effective collector. Hold the jar under the beetle and poke at the beetle. In the afternoon and evening, the Japanese beetle will fold its legs and drop off of the leaf into the jar where it will be killed. In the

morning or early afternoon, disturbed beetles tend to fly up into your face.

Insecticide sprays are also effective against Japanese beetle adults. Spray the foliage of attacked plants with carbaryl (Sevin) or cyfluthrin (Tempo, Bayer Advanced Multiinsect Killer), permethrin (Astro, Eight Insect Spray), or other labeled pyrethroid every two weeks for the six weeks that feeding damage is heavy.

If you are limited to only one spray or handpicking for only a week or so, it is better to do this soon after the beetles emerge and fly to host plants. Because the beetles fly to previously attacked plants when changing hosts, preventing early feeding damage will usually result in less damage through the season even if pest control efforts are limited.--*Phil Nixon*

Crayfish

The heavy rains throughout much of Illinois have created ideal conditions for crayfish to be more of a problem in turf. Crayfish have gills that require constant moisture. Rainy nights and standing water allow the migration of these insect relatives across land to new locations.

Crayfish become a nuisance in turfgrass when they burrow in high moisture soil, creating chimneys at the burrow openings. These chimneys, made of balls of clay soil that bake in the sun, become very hard. Hitting them with a mower dulls the blades and may even kill the mower's engine. The crayfish commonly emerge at night to roam about the turf. It must be common for residents of

northeastern Illinois to walk barefoot on the lawn at night. I have received numerous calls over the years from that area of the state with complaints about stepping on them barefoot at night and getting their toes pinched. Occasionally, one of these roaming crayfish will crawl up on a porch and be unable to find its way out, causing consternation to the human residents and family dog the next morning.

Crayfish are 10-legged crustaceans in the order Decapoda. Lobsters, shrimp, and crabs are in the same order. Crayfish are frequently referred to as crawfish and crawdads. In northeastern Illinois, they are frequently called land crabs. Mud bug is a common name for them in the southern U.S. Crayfish have 10 legs with the front pair enlarged into chela, or pincers, at the end. The chela are used for prey capture, feeding, mating, and defense. Crayfish are scavengers, feeding on decaying organic matter, but they are also opportunistic and will capture and eat fish, worms, and other animals that they catch off guard. The other four pairs of legs are used primarily for walking and food handling.

Crayfish are elongate with the front half covered along the top and sides by a carapace. Their gills are beneath the sides of the posterior half of the carapace. The front half encloses the head and is pointed at the front. Near the front are two obvious spherical black eyes. There are two pairs of antennae. One pair is very short, whereas the other is long and obvious. The abdomen makes up the back half of the crayfish. It is elongate and made up of several segments. At the end of the abdomen is a flattened, widened telson.

The underside of the abdomen has a series of elongate, paired, finger-like pleopods. A female carries her eggs under the abdomen and is referred to as being "in berry" during this time. After hatching, the young crayfish cling to the pleopods and abdomen underside for several days before dropping off to fend for themselves. Most crayfish live for three years.

Of the 21 species of crayfish that occur in Illinois, only *Procambarus gracilis* and *Cambarus diogenes* commonly occur in turf. *P. gracilis* is reddish brown when young but is red when adult and about 4 inches long. This crayfish occurs in turf areas and along roadside ditches. Its burrow commonly extends 6 feet or more to an enlarged chamber within the groundwater. On rainy nights, young of this species are commonly found on the turf surface. Adults occasionally occur on the surface on warm, rainy, summer nights. Reproduction occurs in open water, frequently in standing water after a rain. This species does not occur in southern Illinois.

C. diogenes can approach 5 inches when fully grown. It is reddish brown with a red carapace, although it may be green with red edging. This species lives along streams in a burrow that extends about 3 feet below the turf surface. At this point, there is usually an enlarged chamber. Another burrow runs laterally from this chamber to the nearby stream, opening below the water surface. Reproduction occurs in the stream.

Turf-living crayfish and their burrows and chimneys are numerous along streams and in low-lying areas. Golf superintendents commonly cope with crayfish by allowing these areas to

revert to marsh and other wetland areas. This avoids fighting a losing battle against the crayfish and adds a different and natural hazard to the golf game. Commercial landscapes may similarly retain these areas as wetlands, occasionally mowing them at a high setting.

To eliminate crayfish, the area usually must be tilled and drained. Solid wood or stone fences that fit tight against the ground have been used to reduce the migration of crayfish to fine turf areas.

Pesticides are not a factor in crayfish management. Not only are there no labeled pesticides but any chemical put into a crayfish burrow will pollute the groundwater and possibly the adjoining stream.--*Phil Nixon*

Oak Tatters

Possibly you have seen this odd condition on your oaks. Sometimes the symptoms are very severe. Other times only one side of the tree is affected. Regardless, it usually causes some grower concern.

"Oak tatters" is a term coined for a condition that has occurred for at least 20 years in Illinois. The foliage appears to have been eaten by an insect, leaving only the major veins and a bit of tissue around the veins remaining intact. All soft tissues of the leaves are missing. The foliage is not scorched or necrotic. What remains of the leaf is usually green. In fact, the condition may go unnoticed because there is no brown tissue. The foliage appears lacey and green, and the canopy thinned. The image shows a typical case of oak tatters

on white oak. Leaves on the left side of the image are normal. Leaves in the middle of the image, and those on the right, show “tatters” symptoms.

We have seen this problem in Illinois on white oaks or trees in the white oak group. Other oak species (not white oak group) located nearby are often unaffected.

“Oak tatters” has been reported in Illinois and other states as well, including Iowa, Indiana, Ohio, Michigan, Wisconsin, Minnesota, and Missouri. There are other problems that might resemble oak tatters. Anthracnose causes spring leaf damage but includes brown lesions on the foliage. Some insects will cause similar damage, so look for the insects (usually caterpillars) or evidence of insects, including frass or webbing.

No disease problem has been implicated. Likewise insects are not the cause. The suspects at this time are environmental stress and chemical injury. The affected trees eventually produce healthy new leaves. Recent work points strongly to herbicides as the cause of oak tatters.

In 2004, three researchers at the University of Illinois did a preliminary study that indicated that drift of chloroacetamide herbicides (possibly from applications onto corn and soybean fields) was a possible cause of the leaf tatters syndrome. The researchers were Dr. Jayesh Samtani, Dr. John Masiunas, and Dr. James Appleby. An article describing their work can be found in *Plant Health Progress*, an on-line journal. Look at February 2005, available at <http://www.apsnet.org/pmnabstracts/>

[php/4589.htm](http://www.apsnet.org/pmnabstracts/php/4589.htm). This work was repeated and once more reported in scientific literature. The second article appears in *HortScience*, December 2008, available at <http://hortsci.ashspublications.org/cgi/content/abstract/43/7/2076>.

There has been some concern that a tree repeatedly affected by oak tatters might decline and even die. No evidence has been found to confirm this theory, but the question merits investigation. You may help your trees by following good horticultural practices to promote health, especially watering in periods of drought stress. For pictures of oak tatters, visit the US Forest Service pest alert on tatters at

<http://www.na.fs.fed.us/spfo/pubs/pestal/oaktatters/oaktatters.htm>. The herbicide research listed above was performed after this US Forest Service pest alert was produced. --Nancy Pataky

Cankers – Botryosphaeria and Others

Cankers are dead areas on plant stems. They may appear sunken, shriveled, off-color, bumpy, or even wet. Pathologists can tell you the fungus (or bacterium in some cases) associated with a particular canker, but the canker would not occur without a mechanical injury or some form of plant stress. Many hosts have a regular group of canker fungi associated with the genus. For example, oaks are commonly affected with *Botryosphaeria* canker, spruce with *Cytospora* canker, and stressed pines with *Diplodia* canker. The literature refers to the fungi or bacteria associated with the cankers as secondary invaders, opportunistic pathogens, or stress pathogens. Obviously, some canker fungi are more aggressive than others.

The University of Illinois Plant Clinic has seen quite a few cases of cankered wood on tree samples submitted so far this season. That is to be expected, especially considering the flooding and drought stressed areas of the state over the past two years. Additionally, in the winters of 2007-8 and 2008-9 woody plants have been brought out of winter dormancy only to be affected with a late freeze. So, without even considering site stress, environmental stress has predisposed plants to canker problems.

The images show cankers on the stem (left) and trunk (right) of a viburnum plant. Images were taken by arborist, Judy Markowski, to accompany a sample sent to the Plant Clinic. Often we receive the peripheral stems and leaves in such a case because large cankers cannot be sent. Sometimes the images and part of the face of the canker will help with the diagnosis. Without the images we would be left to speculate or provide an inaccurate diagnosis. Interestingly, these images also pointed out something we could not detect with the sample. When entomologist, Phil Nixon, examined the images, he stated that the damage was typical of viburnum borer. This insect causes damage below the soil line. Evidently the fungal canker we found had followed insect damage.

Often cankered wood is removed from the tree or shrub as a means of preventing spread within the plant. Other times, as with the canker at the base of this viburnum, it is not possible to remove the cankered area without removing the plant itself. Since canker diseases require stress, management should focus on identifying, alleviating, or removing the sources of stress. In this

case, the tree can be treated for borers. A healthy tree may develop callous tissue to stop the infection or wall it off internally. Stressed trees are not able to stop the invasion as quickly. Some stress factors that may lead to canker disease include drought, flooding, compaction, root or trunk injury, transplant shock, nutrient extremes, and insect attack.

More information can be found in *Report on Plant Disease number 636, Canker and Dieback Disease of Woody Plants*, available in Illinois extension offices or on the web at

<http://www.ag.uiuc.edu/%7Evista/horticul.htm>.--Nancy Pataky

Is Verticillium Wilt Killing My Tree?

Verticillium wilt is a name that is associated with sudden death of mature trees, shrubs, perennials, and vegetables. In Illinois, this fungal disease may be caused by either *Verticillium dahliae* or *Verticillium albo-atrum*. Sometimes plants wilt, but more often foliage turns brown and dies over a period of weeks or months as shown in this dated picture of Verticillium wilt on maple. Once the causal fungus enters the vascular tissues of the host plant, it is likely to spread quickly, block the water conducting vessels, and cause plant death. Generally, infected plants do not recover.

Clients often submit tree samples to the University of Illinois to be tested for the presence of *Verticillium*. Maple, redbud, and smoketree have been the most common hosts. In recent years magnolia has joined the list of commonly infected species. If your magnolia tree shows branch by branch decline or an overall

thinning of the branches, cut into a few finger sized branches and look for staining of the wood.

A diagnostic clue for detecting Verticillium wilt is the presence of vascular streaking or vascular discoloration as shown in the maple wood in the image. Bark has been removed to expose the staining. A healthy branch would be white or tan in color. In maple the stain is dark green to brown and usually found in a circular pattern when the stem is viewed in cross section. Most species exhibit brown streaks. Ash may be infected but does not usually exhibit vascular streaking. Sometimes staining of the wood around cankers may be mistaken for Verticillium infection. Stain from *Verticillium*, however, will be found up and down an infected stem. Staining from cankers is more localized around the cankered area.

Since *Verticillium* lives in the soil for many years, even without a host plant, the replacement plant needs to be resistant to this fungus. The list of plants not yet known to be infected by *Verticillium* is a short list. Therefore, if you plan to replace the dying plant, it is important to confirm a case of

Verticillium wilt. Confirmation is made by a diagnostic lab. Live, symptomatic wood is grown on cultures of potato dextrose agar for 7-10 days until the *Verticillium* fungus can be positively identified. Samples should include live wood, taken from branches of approximately finger diameter, 8-10" long, and exhibiting vascular streaking. The University of Illinois Plant Clinic data form should be completed and mailed with the sample. You can find it at

<http://plantclinic.cropsci.illinois.edu/>.

For additional information about Verticillium wilt, refer to the Report on Plant Disease no. 1010, *Verticillium Wilt Disease*. It is available in Illinois Extension offices or at

<http://www.aces.uiuc.edu/~vista/abstracts/a1010.html> .--Nancy Pataky