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

No. 16 • August 30, 2006

PLANT DISEASES

Bacterial Leaf Scorch Testing

The U of I Plant Clinic will be testing trees for *Xylella,* the pathogen that causes bacterial leaf scorch (BLS) of trees. Common lab procedures to detect bacteria, such as sectioning and culturing, do not work with this one. We need to assay with ELISA (enzyme-linked immunosorbant assay). The clinic runs this particular ELISA only in the fall. If you have a suspect tree, send a sample in for testing. We will run assays the last week in August and the first week of September at the normal clinic fee of $12.50. We can accept only Illinois samples at this time.

How do you know if your tree may be infected? Refer to issue no. 14 of this newsletter, "Scorched Trees, a Closer Look." Large trees that have healthy leaves each spring, develop scorched foliage by midsummer, and seem to be getting worse each year are most suspect. Infected trees show scorching weeks before surrounding trees begin to dry down in the fall. Careful examination of the trunk a few inches below-ground does not reveal girdling roots. Some possible tree hosts include pin, red, scarlet, bur, white, willow, and shingle oaks; silver, sugar, and red maples; sweetgum; sycamore; planetree; hackberry; American elm; and red mulberry. For more information on symptoms, as well as plenty of images, go to this site by the National Arboretum: http://www.usna.usda.gov/Research/BacterialLeafScorch.html.

How do I prepare a sample for testing? We are going to grind the sample and extract plant sap. For this reason, we need live plant material showing symptoms. Send three branch tips, each about 3 inches long, with all the leaves attached. Flatten and place these in a zip-lock plastic bag, labeled with the tree species and the words "for BLS testing." Enclose a completed specimen data form (http://plantclinic.cropsci.uiuc.edu/hortdf.pdf) and your check payable to the University of Illinois for $12.50. Send by overnight express or one-day service to Plant Clinic, 1401 W. St. Mary's Rd, Urbana, IL 61802. Call (217)333-0519 if you have questions. *(Nancy Pataky)*

Persistent Pine Problem

Sphaeropsis blight of pine is a fungal disease that commonly infects Scotch, Austrian, and mugo pines in Illinois. This disease is easily found in most towns and persists to cause a slow, nagging dieback. Details and photos were in issue no. 7 of this newsletter, when we advised to "Watch for Sphaeropsis Blight of Pine." Tip blight and infection of current-season needles are this season's infection. Look at the base of the newest needles for diagnostic fruiting structures.

Until a few years ago, we saw infected stem tips die, with brown, withered needles remaining attached throughout the season. The disease was only a tip blight. Unfortunately, a new pathotype of this fungus "invaded" a few years ago. It causes a damaging, sap-oozing canker on affected limbs. Often, the branch dies beyond the canker, resulting in a very-unpleasant-looking tree. The fungus can overwinter on these cankers, adding to the persistent nature of the disease.

Management of this disease is difficult. Some of the most intense infection takes place in the spring as new growth emerges. This tender growth is very susceptible to infection, especially in wet weather, until about mid-June. We know that it helps to remove dead wood and needles to reduce the fungus in the area. Do this when the tissue is dry so you don't spread disease. It helps to get rid of cones. On an infected tree, the cones are usually full of fruiting bodies of the fungus. Often, homeowners wait until spring to do pruning and cleanup, but infection has already occurred by then. There is less chance of spreading the fungus in hot, dry weather. Rake up fallen needles and cones now, or as soon as weather is dry again.

As you have probably observed, this disease has steadily increased in incidence and intensity over the last decade. Extended periods of wetness in spring allow a long window of opportunity to infect new shoots; and researchers have shown that drought-stressed trees are more susceptible to canker infection. The drought of the past two summers provided additional stress, predisposing trees to cankers.

You will find chemical options available to control this disease. The recommendation is to use a systemic and to apply it three times, following label directions: usually, as buds begin to swell, as new needles emerge

from the sheath, and 10 to 14 days later. Recent research in Kentucky has shown that even symptom-free foliage is often infected. That research questions the use of preventive chemicals. In summary, it is still recommended to follow the cultural controls discussed above. Use of chemicals may still be of benefit but should be in addition to cultural controls. Choose a systemic product listed in the Illinois pest management handbooks and follow label timing precisely.

For details about this disease, the fungus, and diagnosis, consult *Report on Plant Disease,* no. 625, "Sphaeropsis Blight or Diplodia Tip Blight of Pines," available in Extension offices or on the Vista Web site, http://www.ag.uiuc.edu/~vista/. *(Nancy Pataky)*

Witches'-Brooms

Possibly you have heard this term before. "Witches'-broom" refers to a symptom on trees involving a proliferation of shoots where only one stem would normally develop. The result is a bunchy-looking stem tip such as you might see if you repeatedly pruned the tip of a stem to encourage side shoots. Often, these brooms are easier to detect in the fall or winter after leaves have fallen.

Witches'-brooms may be the result of repeated mechanical injury to branch tips, salt injury, or repeated weather-related injuries. They may also result from insect infestations or disease or both. Mutation of cells in the growing point can also result in a witches'-broom. Many of the dwarf conifers in the nursery trade are propagated from such mutations. Additionally, mistletoes can cause witches'-brooms.

Fungi, viruses, or phytoplasmas cause witches'-brooms common to the landscape. *Taphrina* is a fungal genus with species capable of causing leaf blisters as well as witches'-broom of cherry. Powdery mildew may cause brooming, most commonly on hackberry. Some rusts can cause this symptom, especially the juniper broom rust, which we don't see in Illinois. Bunch diseases of pecan, walnut, and hickory are phytoplasma diseases. Most rose growers are well aware of rose rosette, a viral disease that can cause brooming in rose.

I am not as familiar with insect problems that can cause witches'-brooms in landscape plants. The most frequent example seen at the Plant Clinic is the honeysuckle witches'-broom aphid. Early samples of infested plants were confused with 2,4-D injury.

A final example of a cause of witches'-broom symptom is late-season use of glyphosate. If this product is sprayed on buds or thin-barked stems, the plant may produce witches'-brooms the next spring. Be aware of the possible causes of this symptom when diagnosing a plant problem. *(Nancy Pataky)*

Plant Clinic Seasonal Closing

The U of I Plant Clinic is a seasonal operation. It opens May 1 each year and closes September 15 (or the closest Friday). Although staff will be at the clinic until the end of September, they will be finishing up samples, organizing paperwork, cleaning, and preparing for next season. We will not accept new samples after September 15. The Web site for more information is http://plantclinic.cropsci.uiuc.edu/. The clinic telephone number is (217)333-0519.

Plant disease problems rarely happen overnight. Insect problems might appear to happen quickly but are beginning to slow down at this time of year. My point is to get out into the landscape now and look at your plants. If you have a problem and need help, now is the time to act. We are happy to help, but get the samples in before September 15. *(Nancy Pataky)*

INSECTS

Raymond Cloyd Moves On

Dr. Raymond Cloyd has accepted a position in the Department of Entomology at Kansas State University. He starts his new position in September 2006. He is changing positions for family reasons. Dr. Cloyd has been a valuable asset to this newsletter and the University of Illinois for several years. Good luck in the future, Ray. *(Phil Nixon)*

Repellents: What Really Works?

The warm summer days occurring throughout Illinois means that people are outdoors and, in general, wearing minimal clothing, which increases the possibility of getting bit by mosquitoes. The Illinois Department of Public Health has recently issued news releases warning of the increased incidence of West Nile virus in Illinois (http://www.idph.state.il.us/public/press06/8.24.06wnv.htm). There have been 25 human cases, and the first fatality of the year occurred August 23. The concerns associated with West Nile virus, which is vectored by several mosquito species (including the northern house mosquito, *Culex pipiens)* warrant protection to avoid mosquito bites. Most active at dawn and dusk, mosquitoes are attracted to heat, moisture, carbon dioxide, and dark-colored clothing. Also, females can detect lactic acid and octenol, emitted when an individual sweats. Sweat acts as a kairomone, making it easier for female mosquitoes to locate hosts.

Primary methods to deal with mosquitoes include eliminating breeding sites, controlling larvae, and applying personal repellents. Repellents are materials applied to the skin and/or clothing, depending on the particular repellent, and are supposed to keep mosquitoes from landing on skin and initiating a biting sequence.

DEET (N, N-diethyl toluamide or N, N-diethyl-meta-toluamide), developed in 1946 and available to the public in 1957, has been the product of choice in deterring mosquitoes from biting people because it is very reliable. In fact, no other repellent provides the level of protection against mosquitoes and is as persistence on human skin. In general, it has a good safety record although there may be toxicological issues, primarily related to hypersensitive reactions. Also, DEET repels a broad range of biting arthropods, including ticks, sand flies, chiggers, and deerflies. However, DEET's activity or how it repels insects, especially mosquitoes, is not well understood. A 30% concentration of DEET provides up to 8 hours of protection, particularly against *Culex pipiens*. Concentrations between 10% and 35% are sufficient to "ward off" most mosquito species. Besides applying DEET to your skin, you can also apply it to clothing. It is important to note that DEET should not be used on children under than 2 years old, and only DEET concentrations up to 10% should be used on children. The effectiveness of repellents varies depending on the mosquito species. For example, *Anopheles gambiae*, the malaria mosquito, is less sensitive to DEET, compared to *Aedes* spp. Be careful when applying DEET because it damages plastics, as well as watch crystals and eyeglass frames. Avoid using DEET with a sunscreen because the combination may reduce the sunscreen's effectiveness. Products containing DEET include Off and Cutter.

Permethrin is a pyrethroid-based insecticide typically applied to clothing or imbedded into mosquito netting. It does not repel mosquitoes but kills them on contact. It should be applied only to clothing—not skin. Applications to clothing may provide up to 2 weeks of protection from mosquito bites. Permethrin is also effective against ticks, chiggers, and biting flies. Products containing permethrin (at 0.5%) include Repel Permanone and Cutter Outdoorsman Gear Guard.

Essential oils or those compounds derived from plants such as clove, peppermint, geranium, and catnip may repel mosquitoes. Citronella, derived from a lemon-scented grass *(Cymbopogon nardus),* is commonly used as a repellent in products such as Natrapel and Buzz Away. Also, citronella candles have been promoted as a method to repel mosquitoes. However, volatility impacts the effectiveness of citronella, as well as other essential oils, as repellents. For example, citronella is active as a repellent for only about 30 to 40 minutes. Citronella oil, derived from the geranium species *Pelargonium* x *citrosum*, is used as a repellent but lacks persistence in outdoor environments. Catnip *(Nepetia cataria)* acts as a repellent. However, pure catnip oil should not be applied directly to the skin, and catnip is active as a repellent for only 3 hours. A substance in tomatoes *(Lycopersicon* spp.) repels mosquitoes and other insects such as fleas and biting flies.

Although popular, Avon Skin-So-Soft repels mosquitoes for only up to 20 minutes because it is volatile and evaporates quickly, meaning to consistently repel mosquitoes, it must be applied repeatedly. Numerous factors may influence the length of protection or the effect of repellents on mosquitoes, including concentration of the repellent, time of day, temperature, and humidity. Also, characteristics of individuals, such as age, sex, level of activity (related to sweating), and "attractiveness" influences the effectiveness. Several guidelines for using repellents follow:

- Always read the product label before applying any repellent.
- Apply repellents to exposed skin according to label directions.
- Be cautious when applying repellents to children. Do not apply repellents to children's hands.
- Avoid applying repellents to cuts or skin wounds.
- Do not apply repellents directly to the face.

(Raymond A. Cloyd and Phil Nixon)

True White Grubs

We have received several reports of true white grubs, the larvae of May beetles, damaging turf in Illinois this summer. These reports persist even in turf that has been treated with typical grub insecticides.

True white grubs or May beetles do not consist of one or two species, like the other grubs that are important turfgrass pests. Instead they are a beetle genus, *Phyllophaga,* of many species with variable habits. Some species in the larval stage prefer to be scavengers and feed on dead plant material, and others prefer roots of plants other than turfgrasses. Even those that feed on turfgrass roots feed on dead organic matter if the roots are not present, meaning they will still be present to attack the roots of reseeded or resodded turf months after previous turf has been removed. Life cycles vary from 1 to 4 years, depending on the species. The most common May beetle species that attack turfgrass in Illinois have 3-year life cycles.

True white grubs that attack turf heavily in Illinois usually emerge as adults in May. True white grub adults are 1-inch-long, heavy-bodied, reddish brown to dark brown May beetles. The May beetles hide in the soil or thatch during the day and emerge just before to just after dusk. Eggs are laid in the soil.

The eggs hatch into larvae, or grubs, that are white and C-shaped, with brown heads and three pairs of legs. True white grubs have a characteristic raster pattern of two parallel rows of spines on the underside of the last abdominal segment. Species can be distinguished from each other by small differences in the arrangement and number of these spines. Mature grubs are 1 to 1-1/2 inches long.

True white grubs hatch in June and July and feed on the roots of turfgrass into fall. As winter approaches, they descend deeper into the soil, coming back to the turf root zone in the spring as soil warms. May beetle grubs feed throughout the spring, summer, and into the fall of this second year, descending deeper into the soil as winter approaches. In the spring of the third year, grubs ascend to feed for a short time on turfgrass roots in the spring and then descend to pupate. Adults emerge from pupae in late summer and remain in the soil for the winter. The following spring, adults emerge from the soil to repeat the life cycle.

Damage to turfgrass most frequently occurs during the second year when the grubs are large and feeding occurs from spring to fall. True white grubs damaging turf now in Illinois appear to be second-year grubs. During the first year, the grubs are small and do not eat many roots. During the third year, grubs feed for only a few weeks in the spring when normal rainfall helps the turfgrass replace eaten roots quickly. High populations of at least 10 to 12 grubs per square foot cause the turf to turn brown. Heavily attacked turf has so many roots eaten away that the it can be pulled up like a carpet. Depending on the number of grubs and the turf growing conditions, damage may occur at any time from spring into fall.

Control is obtained by applying the proper insecticide to the turf and watering it in with at least 1/2 inch of water to flush it into the root zone where the grubs are feeding. Timing of applications for first-year grubs is similar to that of Japanese beetle and masked chafers, allowing one application to control multiple species of white grubs. The grubs we are seeing in Illinois now will be controlled somewhat by typical grub insecticides, with trichlorfon, sold as Dylox, usually being the most effective. However, instead of the 95% control that Dylox commonly provides on young grubs, it may control only half that on second-year true white grubs. In many situations, this drops the numbers low enough that the turf recovers, especially if irrigated. Making sure that the turf receives at least 1 to 1-1/2 inches of total rainfall and irrigation per week will help the turf grow roots faster than the remaining grubs can eat them.

Insecticidal nematodes are usually more effective against these large grubs than are insecticides. An application of *Heterorhabditis bacteriophora* or other cruising nematodes typically controls about 60% of the grubs. Per thousand square feet, insecticidal nematodes are about five times more expensive than insecticides and must be applied later in the day (when the sun is lower in the sky) to prewatered turf, with the nematodes watered into the turf immediately after application. If the nematodes dry on the grass blades, they die, resulting in no control. Your pricing of insecticidal nematode applications needs to reflect your extra cost and labor. *(Phil Nixon)*

Home, Yard, and Garden Pest Newsletter is prepared by Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey. Information for this newsletter is gathered with the help of staff members, Extension field staff, and others. Karel Jacobs and Donna Danielson of The Morton Arboretum also provide information and articles. Major authors are Phil Nixon, (217)333-6650, Fredric Miller, (708)352-0109, and Raymond Cloyd, (217)244-7218, entomologists; Nancy Pataky, (217)333-0519, plant pathologist; Bruce Paulsrud, (217)244-9646, pesticide applicator training; and Tom Voigt and David Williams, (217)333-0350, and Michelle Weisbrook, (217)244-4397, horticulturists. Phil Nixon is the executive editor of the *Home, Yard, and Garden Pest Newsletter.* This newsletter is written by faculty in the Department of Natural Resources and Environmental Sciences and the Department of Crop Sciences. It is edited by Mary Overmier, Information Technology and Communication Services.

For subscription information, phone (217)333-2666 or (800)345-6087, or e-mail acesnews@uiuc.edu. Web subscriptions are available (http://www.ag.uiuc.edu/cespubs/hyg).

Copyright © 2006, Board of Trustees, University of Illinois