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 31, 2005

Turfgrass and Landscape Field Day

The 2005 University of Illinois Turfgrass and Landscape Field Day is set for Wednesday, September 14, 2005, at the Landscape Horticulture Research Center and the Hartley Selections Garden, both on South Lincoln Avenue in Urbana. This event is planned to provide current information and education to all professional turfgrass, nursery, landscape, and garden center personnel. Research to be presented includes

Poa annua Controls; PGRs for Putting-Green Speed; Putting-Green and Fairway Bentgrass Evaluations; Roundup Ready Bentgrass; Precision Turfgrass Applications; Controlling Dollar Spot; Managing Temperatures with Water; Organic Fertilizers and Disease; Combining DMSO with Fungicides; Does Sweetening Your Turf Make It Fat for Disease?; Grasses as Biofuels; Sudden Oak Death; Impatiens Breeding at UIUC; USDA NC7 Woody Plant Evaluations; Effects of Planting and Mulching Depths on White and Green Ashes; Emerald Ash Borer; Bedding Plant Selections

Field Day Schedule

9:00 to 9:45 a.m., Registration, coffee, donuts
9:45 to 10:00 a.m., Introduction, opening remarks
10:00 a.m. to 12:00 noon, Tour research plots
12:00 noon to 1:00 p.m., Lunch from Hickory River barbeque

Field Day Registration

Advance registration of $35 per person includes lunch. Completed registration form and payment must be received in Urbana by September 7, 2005. Activities are scheduled regardless of weather. No refunds will be issued.

On-Site Field Day Registration on September 14 is $45 per person and includes lunch, if available. If you have Field Day questions, phone (217)333-7847. *(Tom Voigt and Phil Nixon)*

PLANT DISEASES

Plant Clinic Seasonal Closing

This summer has flown by, and I am amazed at how rapidly we are approaching the University of Illinois Plant Clinic annual closing date of September 15th. That date is the last day of operation for this year. Any samples that arrive by September 15th will be processed as usual. This is a firm deadline. There is no one to process samples after that date. We will once again open May 1, 2006.

If you have a plant problem after the closing date, contact your local Extension office. You can obtain unit office addresses and maps at http://web.extension.uiuc.edu/cie2/offices/findoffice.cfm. Extension offices also have access to a distance diagnosis system through digital imaging that operates all year long. If further help is needed from a specialist, Extension personnel can help direct you. The following University of Illinois specialists may be available for telephone questions, but *do not* send samples to them unless they request them. There is no lab service after September 15th.

Insect problems: Phil Nixon, (217)333-6650; Raymond Cloyd, (217)244-7218; Kelly Cook, (217)333-4424

Disease problems: Nancy Pataky, (217)333-2478;

Advance Registration Form for Turfgrass and Landscape Field Day

Organization: _____

Address: _____

Phone: _____

Name(s) of attendees: _____

Total enclosed @ $35 per attendee: _____

Mail completed registration form and payment to University of Illinois, Attn: Carol Preston, S-406 Turner Hall, 1102 S. Goodwin Ave., Urbana, IL 61801. Make checks payable to University of Illinois.

Bruce Paulsrud, (217)244-9646

Tree/shrub problems: David Williams, (217)333-2126

Turf problems: Tom Voigt, (217)333-7847

Herbaceous plant problems: Jim Schmidt, (217)244-5153

(Nancy Pataky)

Look for Bacterial Leaf Scorch Now!

Bacterial leaf scorch (BLS) was discussed in issue no. 13 of this newsletter. In that article, I stated that symptoms appear in mid- to late summer. We are seeing symptoms of this disease very clearly now on a few oaks in the Champaign-Urbana area. Learn the symptoms of this disease and take another look at your problem oaks, elm, hackberry, maple, mulberry, sweetgum, sycamore, and planetree. We have confirmed BLS only on oaks in Illinois, but it could also occur on these other hosts.

Symptoms of BLS on oaks include early leaf browning, sometimes appearing along leaf margins but often in scattered blotches. We have seen this necrosis on old leaves and new leaves alike, scattered throughout the tree. The differences between symptoms of this disease and environmental scorch are twofold. BLS appears in mid- to late summer. Environmental leaf scorch usually appears in the spring, or as soon as hot, dry conditions begin. New leaves emerge each spring looking healthy whether the problem is BLS or environmental scorch. BLS becomes increasingly more severe with each summer, resulting in the death of the tree in 4 to 6 years. Environmental scorch does not kill trees. *(Nancy Pataky)*

Disease Problems on Ash

When ash species were introduced into the landscape they were considered to be problem free. For various reasons, several disease and insect problems have tarnished their reputation. In reality, no tree is problem free (even plastic trees have to be dusted), and it is helpful to know what problems might occur on a given species. There have been many ash tree problems in Illinois over the last decade. Some of these are insect problems and have been dealt with by entomologists through this newsletter (see issue no. 11, 2005). This article addresses the disease problems of ash that we have seen in Illinois.

One possible cause of decline is **ash yellows**. This disease primarily infects white and green ash in the north-central and northeastern parts of the United States. It is a problem in Illinois, but one that is difficult to quantify, because its presence is difficult to confirm. Ash yellows disease is caused by a phytoplasma (formerly called a mycoplasma-like organism). These pathogens are somewhat like virus particles, cannot be cultured in a lab, and are spread by phloem-feeding insects. They are limited to the phloem tissue of the tree. This disease is characterized by a loss of vigor over a period of 2 to 10 years before the tree dies. Symptoms include short internodes and tufting of foliage at branch ends. Leaves become pale green to chlorotic (yellowed) and might develop fall colors prematurely. The tree might defoliate, and the canopy generally appears sparse. Cankers form on branches and the trunk, causing twigs and branches to die back. Witches'-broom sprouts of growth might appear on some branches but are more common on the trunk near the ground. Cracks in the trunk may appear in this area as well. It is rare for an ash tree to recover from ash yellows. A great percentage of the ash trees in our landscapes are green ash. They do not show ash yellows symptoms as clearly as white ash. It is very likely that this yellows disease is more common than we realize because the typical witches brooms and yellowing are not always seen with green ash, even when the disease is present. Instead, we see only the cankers and stem dieback. Some images of ash yellows can be found in an ash yellows brochure at this USDA Forest Service site: http://www.na.fs.fed.us/spfo/pubs/howtos/ht_ash/ht_ash.htm.

To complicate matters, **Verticillium wilt** on ash also results in cankers and dieback and does not cause the typical vascular discoloration of most *Verticillium* infections. Refer to *Report on Plant Disease (RPD),* no. 1010, for more information on Verticillium wilt. It is difficult and time-consuming to distinguish among ash yellows, Verticillium wilt, and ash decline in Illinois. Diagnosis of these ash problems depends almost entirely on symptoms that could be caused by a variety of problems. Background information on symptom development and site stress is extremely helpful in reaching an accurate diagnosis.

Ash decline is a term that is often used loosely by many diagnosticians to refer to more than one condition. I think this problem is very common on Illinois ash trees. Ash decline might involve the ash yellows disease or even Verticillium wilt, but it is often used to indicate any decline of ash for which a single pathogenic cause has not been identified. Ash decline usually includes branch tip death, defoliation of enough leaves to give the tree a sparse look, and a slow decline of the tree over a number of years. Trees with ash decline may appear to recover each spring and then decline in July and August.

How do we diagnose these ash problems? Ash yellows disease is caused by a phytoplasma, which is a phloem-inhabiting pathogen. It cannot be cultured in the laboratory on artificial media. Some testing

services that offer specific PCR (polymerase chain reaction) tests can detect phytoplasmas in plant tissues. I spoke with AGDIA, Inc., a company in Indiana that has such a service. (The University of Illinois Plant Clinic does not.) You can read about AGDIA on the Web at http://www.agdia.com/. There are likely other labs that can help. The cost for phytoplasma testing varies with the number of samples being tested. The procedure is very time-consuming and involves expensive equipment, but unit costs are lower when multiple samples are run. The cost ranges from $134 to $315. Turnaround time also affects the cost; so if you need results quickly, it costs more. For this test, AGDIA would need live, thick bark from the tree base. The sample must include phloem tissues and be deep enough to prevent phloem tissue from drying out. It is advised that you call the testing service of choice before sending a sample. It is obvious why this disease has not been confirmed frequently in Illinois.

Verticillium wilt can be detected by traditional laboratory isolations of live leaf petioles at the Plant Clinic. Ash decline cannot be confirmed with laboratory isolations because there are many factors involved, many of which are nonpathogenic. Sometimes *Verticillium* is involved, sometimes ash yellows, and always some sort of site or environmental stress.

There are no cures for any of these maladies of ash. Suggested management to retard disease progression includes removing trees with severe dieback, watering the trees in drought lasting 2 weeks, and fertilizing in the fall with a balanced tree fertilizer. Removal of dead limbs may help as well. I have heard some good testimonials involving the value of fertilization and watering to ash tree recovery. *(Nancy Pataky)*

INSECTS

Scouting Watch

Fall webworm continues to be numerous throughout the state. *Bacillus thuringiensis kurstaki* (Dipel, Thuricide) or other labeled insecticides are effective if the insecticide gets inside the silk tent. Pulling off the silk tent and associated caterpillars or pruning off the tents is also effective. This late in the season, most active infestations have completed the damage they are going to cause, so ignoring them is also an option. Stripped branches will produce leaves next year.

Yellownecked caterpillar is common throughout southern Illinois. Thanks to Kevin Black for his report from Rend Lake. This colonial caterpillar does not build a silk tent. It has several longitudinal bold whitish to yellowish stripes on the body. The body is red when the caterpillars are young, black when older. It feeds on crabapple, maple, oak, pecan, hickory, walnut, and many other trees. Its close relative, the walnut caterpillar, feeds only on walnut and hickory, including pecan. Walnut caterpillar is also red when young, black when older. It has only a few thin white stripes; older caterpillars have scattered, long, white hairs. Control options are the same as for fall webworm, except there is no silk tent to contend with.

Lacebugs are common on sycamore and cotoneaster. Adults are flat-topped, 1/8-inch-long bugs with white, lacelike wings. Their nymphs are dark brown to black, diamond-shaped, smaller insects. Both the nymphs and adults live on the leaf underside, being concentrated along the major veins. They feed by sucking out the leaf sap, causing whitish stippling on the leaf upperside. The undersides of infested leaves are frequently covered with the tiny black spots of their tarlike feces. Control is rarely needed on these insects, although sprays of acephate (Orthene), carbaryl (Sevin), cyfluthrin (Tempo), and insecticidal soap are effective. *(Phil Nixon)*

How Does Drought Stress Influence Plant–Insect Interactions?

The recent warm and dry weather conditions and lack of rainfall throughout the state may result in more problems with plant-feeding insects and mites due to drought stress. First of all, the excessive heat accelerates insect and mite development so that it takes less time for them to complete their life cycles or generation time. Also, a major control for caterpillars, aphids, beetle larvae, and many other insects are natural fungi present in the environment. These fungi are more prevalent and "aggressive" when the weather conditions are cool and moist. However, when dry conditions are prevalent, more insects survive.

Drought stress, which is usually considered a temporary state, is the lack of sufficient moisture to maintain plant turgor and reduces the plant's ability to conduct biochemical processes that allow cells to function. This primarily occurs when the rate of transpiration from plant leaves and evaporation from the soil exceeds the capacity of roots to absorb water, due to a lack of sufficient rainfall, leading to decreased plant water potential.

The effect of drought stress varies, depending on the feeding behaviors of insects and mites. For example, insects with piercing–sucking mouthparts such as aphids, whiteflies, scales, and plant bugs typically benefit more from dry conditions than insects with chewing mouthparts, including beetles, caterpillars, and sawflies. Plant stress, due to a lack of soil moisture, often increases susceptibility to wood-boring insects, such as bronze birch borer *(Agrilus anxius),* twolined chestnut borer *(Agrilus bilineatus),* and bark beetles. Plants under drought stress decrease produc-

tion of compounds such as oleoresin, which act to deter feeding by wood-boring insects, thus increasing susceptibility. Additionally, water-deficient plants emit volatile chemicals, such as ethanol and alpha-pinene, that attract these types of insects. Wood-boring insects use these chemical cues to help them locate plants whose natural defenses have been compromised by lack of water. For example, a lack of moisture in the upper tree canopy may result in localized areas of cambial and phloem tissue degradation, which are very attractive to wood-boring insects such as bronze birch borer females for egg laying. Also, the colonization success of bark beetles increases when trees are stressed due to lack of moisture. Bark beetles depend on water stress to weaken the defenses of their target.

Inadequate soil moisture can also lead to higher populations of twospotted spider mite, *Tetranychus urticae,* because there is less moisture in the air from evaporation. These lower relative humidities and drier conditions tend to favor twospotted spider mite development. Also, twospotted spider mites tend to feed more under dry conditions because the dry air or low relative humidity allows them to easily acquire excess water in plant leaves, which is then excreted by the spider mites.

Insects are affected by drought or dry conditions through a number of mechanisms. First, dry conditions provide a favorable thermal environment of growth and development for plant-feeding insects and mites. Second, drought-stressed plants are more attractive and acceptable to insects. As plants lose moisture via transpiration, the water columns in the xylem cavitate or break apart, producing ultrasonic acoustical emissions that are sensed by many bark beetles, attracting them to stressed plants. Third, drought-stressed plants are more suitable for insects. Water-deficient plants are more favorable for insect growth (that is, increased larval weight), survival, and reproduction because plant nutrients are more concentrated and/or better balanced. However, the primary reason why water-deficient plants are more susceptible to insects is due to a decline in the production of secondary metabolites or defensive compounds, which increases susceptibility to attack. Fourth, drought or dry conditions increase insect detoxification systems. It has been hypothesized that insects feeding on drought-stressed plants are better able to break down certain plant allelochemicals or defensive compounds that would normally have a negative effect on them. The bottom line is that drought stress induces changes in the quality of plants, which improves the performance, in most cases, of plant-feeding insects and mites. *(Raymond A. Cloyd)*

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.

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