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

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PLANT DISEASES

Plant Clinic Seasonal Closing

The summer is almost over. We can tell because school has started, nights are cooling down, and the Plant Clinic is soon to close for the season. For those who use our services, it is known that September 15 is closing day. This notice is to remind those clients and to notify the unaware that September 15 is the last day a plant sample can arrive in 2003 and still be processed at the University of Illinois Plant Clinic. Doors will open again on May 1, 2004. Samples sent after September 15 will likely be returned to sender. The lab service is a summer service only.

Where can you go for help with plant problems after the 15th? Most Extension offices, both local and regional, have educators who can help. Those offices also have access to the Extension digital diagnosis system. They can take a digital image of your plant problem, help you fill out a form on the computer, and then send it to other Extension educators in Illinois for diagnosis. If the problem still needs help from a specialist, Extension educators can help you find the one who can help. They can also recommend private labs that may provide the service you need, such as soil-testing labs, a lab that can test for specific viruses, and a place to send insects for identification.

For commercial growers with crop questions, the following specialists may be able to help. Do not send them plant material unless they request a sample. *(Nancy Pataky)*

Problems with ornamental plants
Insects: Phil Nixon, 333-6650; Raymond Cloyd, 244-7218
Diseases: Nancy Pataky, 333-2478; Bruce Paulsrud, 244-9646
Trees/shrubs: David Williams, 333-2126
Turf: Tom Voigt, 333-7847
Herbaceous plants: Jim Schmidt, 244-5153

Problems with fruit/vegetable plants
Insects: Rick Weinzierl, 333-6651; Kelly Cook, 333-6652
Diseases: Mohammad Babadoost, 333-1523
Vegetable production: Chuck Voigt, 333-1969
Food crops: Mosbah Kushad, 244-5691
Weed control: John Masiunas, 244-4469

More Oak Wilt Found

In issue no. 12, the University of Illinois Plant Clinic reported laboratory-confirmed cases of oak wilt in many Illinois counties. Since that time, we have added two more for DuPage and McHenry counties, and one positive each for Knox, Lake, and Putnam counties. This does not mean there is an epidemic in Illinois. In fact, we find positive cases of oak wilt every year. It should remind us of an important pruning consideration. Please hold off pruning oaks in these areas until the dormant season. Why take a chance of attracting beetles that may be carrying the oak wilt fungus to your oak? The disease kills even mature trees.

Not all oak samples sent to the Plant Clinic are positive. Many oaks showing distress are not infected with oak wilt. It is possible that drought stress, compaction, construction injury, and many other factors could be involved in tree decline. If you send a sample to a lab for oak wilt testing, remember that, to obtain a reliable diagnosis, the wood must be alive, about thumb thickness, and showing vascular streaking. If the sample does not meet these criteria, then a negative lab test is an indication of the poor quality of the sample and not the absence of the disease. *(Nancy Pataky)*

Dutch Elm Disease or Elm Yellows

Dutch elm disease is still fairly common in Illinois. It is not unusual for the Plant Clinic staff to isolate this fungus from elm wood on a weekly basis (see issue no. 7). There are still cases of elms that appear to have Dutch elm disease but do not yield the causal fungus. Another look-alike disease to consider is elm yellows, also known as elm phloem necrosis. The Plant Clinic cannot test for the presence of this disease. Read through the symptoms that follow. If you need laboratory confirmation, some “how to” details are included.

Symptoms of elm yellows may appear anytime during the summer but are most common in mid- to late summer. Look for symptoms now: yellowing and drooping of foliage, followed by leaf drop and death

of branches. This pattern may occur on one or a few branches or may quickly involve the entire tree. Susceptible trees may show symptoms over the entire tree in a few weeks. Tolerant trees become stunted and may develop bunchy, prolific growth at the tips of branches (another example of witches'-brooms) or on the trunk. The inner bark tissues of infected trees often exhibit a butterscotch or light brown discoloration in small streaks or flecks. Although trees with Dutch elm disease usually show vascular discoloration in symptomatic branches, the discoloration from elm yellows is not usually in the branches—it is more commonly found in the trunk. A simple field test to help with diagnosis of this disease involves placing a few chips of the stained phloem tissue in a closed container for a few minutes and checking for a wintergreen odor.

Elm yellows disease is caused by a phytoplasma. These pathogens are bacteria-like organisms that have no cell wall, are too small to be seen with a compound microscope, and cannot be cultured in plant diagnostic labs. Confirmation usually involves extraction of DNA from a diseased plant, amplification of a DNA fragment by polymerase chain reaction (PCR), and identification of the fragment. Such procedures are available at a high cost due to labor and equipment needs. Some specialty labs, such as AGDIA, Inc., offer this service. Generally, diagnosis is based on symptoms in the field and elimination of Dutch elm disease as a possibility. For this reason, no confirmed case of elm yellows has been reported by the University of Illinois Plant Clinic; but confirmation has come from several knowledgeable tree specialists in the state.

There is no cure for elm yellows; and infected trees usually die within a year or two. The good news is that elm yellows disease does not move into new areas as quickly as Dutch elm disease. Removal of infected trees is advised to remove inoculum sources from the area. Siberian elm seems to be resistant to this disease problem. For more information about this disease, consult *Report on Plant Disease*, no. 660, or the book *Diseases of Trees and Shrubs* by Sinclair, Lyon, and Johnson. *(Nancy Pataky)*

Impatiens Necrotic Spot Virus

INSV is a viral disease that has become far too common on ornamental plants in the United States. It is in a viral group called the tospoviruses. Another virus that causes similar symptoms is tomato spotted wilt virus. In fact, the two were considered strains of the same virus until the early 90s. INSV is more often found in ornamental plants, while TSWV is more common on vegetable and field crops. Both diseases cause leaf and stem ring spots, as well as mottling and mosaic patterns. There may be a wavy-line pattern through the foliage with parallel lines. The leaf spots may be yellow, white, gray, or brown–black. If you have not seen these viral diseases before, you might mistake them for fungal leaf-spotting diseases. Eventually, plants will be stunted, with small leaves and poor plant vitality. I see INSV most frequently in impatiens. Both viruses are spread by thrips, usually the western flower thrips.

INSV is a big problem in the greenhouse industry because thrips are difficult to control, it takes only one thrips to spread the virus, and many ornamental plants and weeds can host this disease. Annuals and perennials that are propagated in greenhouses and sold to the public may also have the virus. If you have purchased a virus-infected plant or flat of plants, you will deal with the problem all season, or until the plant dies. Can the virus overwinter in Illinois? It is generally believed that INSV will not overwinter in Illinois without a live host plant.

A few hosts of INSV include impatiens, begonia, vinca, cineraria, exacum, cyclamen, chrysanthemum, and alstroemeria; but many more flowering plants, vegetables, and weeds can host this virus.

Virus diseases remain with a plant until its death. For this reason, we need to remove infected plants from the garden and try to prevent further spread. A nice publication available from Colorado State University Extension can be found at http://www.ext.colostate.edu/pubs/garden/02947.pdf. This report on greenhouse plant viruses describes INSV and TSWV in more detail and shows pictures of symptoms with which you should become familiar. *(Nancy Pataky)*

INSECTS

Magnolia and Tuliptree Scale

Scales are major insect pests of trees and shrubs grown in landscapes and nurseries. Certain scales feed on only one plant type, whereas other scales may feed on many different plant species; for example: magnolia scale, *Neolecanium cornuparvum*, and tuliptree scale, *Toumeyella liriodendrii*. These two scales are often mistaken for each other because they look similar. Magnolia and tuliptree scale are two of the largest scales in the United States. Both are soft scales with piercing–sucking mouthparts and produce large quantities of honeydew. However, magnolia scale is specific in that it attacks only magnolia, including *Magnolia stellata* and *M. soulangeana*, whereas tuliptree scale has a broader host range, attacking magnolia, tuliptree, walnut, and linden.

Magnolia scale females are 1/2 inch long and red–brown in color. They are initially covered with a white, waxy powder. In August and into September

(depending on the temperature), females produce eggs, which hatch into crawlers that are gray to red. Crawlers are active in September and move around before settling down to feed on twigs. The crawlers are usually located on the undersides of 1-to-2-year-old twig growth. They eventually produce a powdery, waxy white covering over their bodies. Magnolia scale overwinters as a first-instar crawler. There is one generation per year in Illinois.

Tuliptree scale females are also 1/2 inch long and vary in color from gray–green to pink–orange, with black mottling. Also, there are ridges on the edge of the body. Females have a high reproductive capacity, producing more than 3,000 crawlers over 2 to 3 weeks. Crawlers are black and move around on plants before settling on twigs in the fall. They are normally active from August through September. Tuliptree scale overwinters as a second-instar crawler. Similar to magnolia scale, there is one generation per year.

Infestations of either scale can cause branch dieback, plant decline, and possibly even plant death if repeated heavy populations occur. Also, the excessive amount of honeydew produced by the scales may attract other insects, including wasps and ants. Large quantities of honeydew serve as a growing medium for black sooty mold, which reduces a plant's ability to manufacture food through photosynthesis.

Treat for magnolia scale in late September, when the crawlers are most active. It is now too late to treat for the active crawlers of tuliptree scale; however, a dormant oil spray may be performed in late fall or winter to kill the overwintering crawler stage. Insecticides recommended for managing both scales, primarily targeting the crawler stage, include acephate (Orthene), insecticidal soap, and summer oil. It is important to cover all plant parts thoroughly. The primary way to minimize problems with scales is by promoting plant health through proper irrigation, fertility, mulching, and pruning practices. This reduces susceptibility or limit the injury from both scales.

Although there are natural enemies, including ladybird beetles, that feed on scales, they are not usually present in numbers high enough to provide sufficient control. *(Raymond A. Cloyd)*

Zimmerman Pine Moth

Now is the time to be on the lookout for the larval stage (caterpillar) of Zimmerman pine moth, *Dioryctria zimmermani*, which are actively crawling on the bark of trees. The larvae are highly exposed and susceptible to an insecticide spray application. Zimmerman pine moth larvae feed on all pines; however, they prefer Scotch and Austrian pines. The larvae bore into trees and create masses of pitch at branch whorls on the trunk or on shoots near the terminal leader. Excessive tunneling by the larvae can kill terminal leaders. Heavily infested terminals curve downward, resembling a fishhook. Repeated trunk attacks by the larva can cause tops to break off. Young trees are more susceptible to attack from the larvae and more attractive to adult females for egg laying (most likely due to transplant stress).

The caterpillars must come into contact with the spray before they enter the bark. Once they enter the tree, it is too late. The insecticides permethrin (Astro) and dimethoate (Cygon) can be used to control the caterpillar by spraying the bark and foliage. Dimethoate is no longer labeled for use in landscapes but can be used on Christmas tree farms. High-volume sprays should be used to drench the stem and bark, as a thick canopy of pine needles may prevent sprays from reaching the trunk. *(Raymond A. Cloyd)*

White Grubs

In much of Illinois, timely rains during June and July reduced the likelihood of white grub injury in turf. When rainfall continues through July, with even unwatered turf being green, adults of both the masked chafers (annual white grubs) and Japanese beetles lay their eggs over large areas. This results in few places where grubs are numerous enough to cause serious injury by feeding on turfgrass roots.

Although grub numbers per square foot appear to be low this year, there will be "hot spots" where grub numbers are high and damage is very likely. Block after block of lawns with low numbers will commonly be interrupted with an occasional lawn or portion of lawn with very high numbers of white grubs. Frequently, these lawns have heavy thatch or have been fertilized with manure or compost. The beetles that produce white grubs in turf are members of the Scarabaeidae, a family primarily known for dung beetles and species that feed in rotting wood. It is thought that lawn-damaging scarabs are attracted to high-organic soils because they still have an interest in decaying materials. Many of these species' larvae feed and can subsist on the dead organic matter in the soil, transferring over to feed on roots as the opportunity occurs.

To find these "hot spots," scouting is critical. Using a sharp, heavy knife, cut through the thatch and pull up a square foot of turf. Count the number of grubs in the root zone. If there are fewer than 10 per square foot, treatment should not be necessary. However, raccoons, skunks, and birds will tear up the turf, seeking the grubs as food. Grub numbers as low as three per square foot have been known to attract them. Areas with high numbers of these animals may require treatment to avoid damage.

Raccoon damage appears during the night as strips of sod (6 inches to 1 foot wide) pulled back to expose the grubs. Their damage is very obvious and impressive. Skunks also go after grubs at night. They open circular holes about 3 inches in diameter through the thatch. A single skunk makes about 100 of these holes per night. Insectivorous birds such as starlings and robins scratch open the soil to expose the grubs, causing brown, rough areas.

The treatment of choice for grubs at this time of year is trichlorfon, sold as Dylox. It kills the grubs in 3 days and should be gone in 5 days. Irrigation a day or two before insecticide application brings the grubs closer to the surface, resulting in better control. Insecticidal nematodes, particularly *Heterorhabditis bacteriophora* (Hb nematodes), are also effective at this time of year. Irrigation before application in the late afternoon or evening with follow-up irrigation after nematode application should provide about 60% control. *(Phil Nixon)*

Spruce Spider Mite

As fall approaches, spruce spider mite eggs that have been sitting dormant all summer will begin to hatch. Active mites are likely to be found on spruces, pines, junipers, and other needled evergreens in the fall. These mites typically cause more damage in the spring, resulting in tiny, light-colored spots (stippling) that eventually turn brownish. From a distance, foliage appears to be bronze to gray in color. As summer approaches, these mites lay eggs that lay dormant over the summer, and no active mites are found on the trees. This late-spring cessation of feeding typically occurs at about shoot elongation and candle formation, so new growth does not show injury. Mites at this time of year feed on both first-year as well as previous years' needles, resulting in the same type of damage as that cause by spring feeding populations.

Scout for the mites by sharply striking branches over a piece of white paper. Many of the mites will be knocked off the branch onto the paper. Slow-moving greenish to gray mites that streak green when smashed are plant-feeding mites. Faster-moving reddish mites that streak red when smashed are predatory mites that feed on the spruce spider mites. Based on the relative abundance of spruce spider mites, as well as relative numbers of predatory mites, a control decision can be made. Numerous predatory mites in comparison to plant-feeding mites can probably control the situation without pesticide use.

If pesticides are needed, bifenthrin (Talstar), insecticidal soap, and summer spray oil should provide control. Christmas tree growers have the added option of using dimethoate (Cygon). *(Phil Nixon)*

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