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HOME, YARD & GARDEN PEST NEWSLETTER
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INSECTS

Earwig

Recent wet weather in parts of Illinois has resulted in a noticeable increase in earwig populations. Earwigs are not a major pest; however, they do feed on flowers and can be a nuisance inside homes. Unusually wet springs and summers tend to intensify earwig infestations.

The major earwig species is the European earwig, *Forficula auricularia*. Adults are reddish brown and approximately 3/4 inch long. They resemble rove beetles, being slender with short wing covers. Both the males and females have large pincers (cerci) that stick out from the back of the abdomen. The pincers are used in defense for protection against predators or to capture prey. Earwigs hibernate in the soil as adults during the winter. In spring, adult females lay 25 to 30 eggs in the soil. The females nurture and protect the eggs and young (maternal care), which is uncommon for insects. Earwigs are nocturnal, which means they hide during the daytime and are active at night. They tend to prefer moist environments. During the daytime, they usually inhabit dark confined or shaded areas, such as underneath plants, debris, stones, organic mulch, tree bark, and flower pots. They are less likely to be found in exposed sunny areas. Earwigs will enter homes to hide, but they don't breed. When inside homes, earwigs may be mistaken for cockroaches, as they tend to resemble each other when it is dark. Earwigs are known to be attracted to outdoor lighting.

Earwigs are predators and eat aphids, mites, and insect eggs. However, they also feed on the flowers of plants, including marigolds, petunias, dahlias, and hostas. Earwigs eat small holes in plant leaves and flowers during the night. Leaves and petals have a ragged appearance with irregularly shaped holes. Seedlings and flowering plants can be severely damaged or killed by large earwig populations.

Earwig management includes sanitation, modification of cultural practices, trapping, or the use of pest-control materials. Remove outdoor harborage such as firewood, plant debris, weeds, and organic mulches from around the foundation of a house or building. Avoid overwatering plants and don't use a thick organic mulch. Inorganic mulches such as lava rock or stone are less attractive to earwigs. A moistened rolled-up newspaper, inverted old tuna fish can, or an 8- to 10-inch section of garden hose can be used to trap earwigs. Place traps in shaded areas where earwigs are most likely to hide during the daytime. Check traps in the morning, and shake the insects into a pail of soapy water.

Pest-control materials that may be used for controlling earwigs outdoors include granular or wettable powder formulations of carbaryl (Sevin) or chlorpyrifos (Dursban). Do not apply these insecticides directly onto flowers, especially Sevin because it is toxic to bees. For best results, apply insecticides late in the day. Earwigs that accidentally invade homes are primarily a nuisance because they don't cause damage or reproduce inside the home. To prevent earwigs from entering homes, caulk cracks and crevices and weather strip doors. Earwigs that are found inside the home can be vacuumed. Chemical treatments are generally not necessary. *(Raymond Cloyd)*

Japanese Beetle

Adult Japanese beetles have emerged in central and southern Illinois and should be appearing soon in northern Illinois. They typically are present until mid-August, feeding on the leaves of rose, linden, crabapple, willow, birch, and many other trees and shrubs, as well as the flowers of rose and other plants. Smartweed is very attractive to them, so they commonly appear there first. They are attracted to the sun, being most numerous on the top of the host plant. They feed through the upper epidermis of the leaf, leaving the lower epidermis intact, which then turns brown, and through the leaf lamina, leaving only the major veins.

Evidence exists to suggest that Japanese beetle adults are attracted to previously damaged foliage. Thus, reducing early feeding damage now can result in much less damage later. Homeowners can prevent heavy damage by hand picking the beetles daily on their prized plants. Soapy water or rubbing alcohol in a jar or can suffices as a killing solution. Place the jar or can below the beetle and disturb it, causing it to fold its legs and drop into the container.

Various insecticides are labeled for the control of adult Japanese beetles. Synthetic pyrethroids are more effective than others. Carbaryl (Sevin) is particularly effective. Recent evidence suggests that Sevin may be mildly systemic, penetrating the leaf tissue and remaining there for a number of days. This frequently results in control lasting 2 weeks or more, much longer than one would expect this chemical to last in the hot summer sun. Synthetic pyrethroids usually provide control for about 2 weeks, as well. Most other labeled insecticides' effectiveness lasts only a couple of days or so. Azadirachtin (Neem) is marketed in garden centers as a Japanese beetle repellent. Informal testing has not shown it to be effective.

Damage from this insect is primarily aesthetic. Its feeding occurs late enough in the season to cause relatively minor harm to the health of the plant. Leaves produce most of the food for the plant in the first few weeks of the growing season, with production dropping off as the season progresses. For this reason, one can reasonably choose to use insecticide on more obvious plants in the landscape and not treat very large trees or smaller plants in the backyard or other less-noticed landscape areas. Because control involves several insecticide applications, it reduces the amount of insecticide released into the environment and reduces the cost to the client, while still providing an attractive landscape.

Adult Japanese beetles are strong fliers. They commonly fly 1 to 2-3/4 miles in a single flight and are capable of 5-mile flights. These flights allow beetles to travel 10 to 15 miles from where they lived as larvae by the end of the season. Typically, one-third of the adult Japanese beetles fly to a new host each day. For this reason, controlling adult beetles to reduce the larval white grub population feeding later on turf is not effective. Neither is it effective to control the larval grubs to prevent adult damage.

Traps are available that use pheromone and floral lures along with yellow vanes to attract both sexes of adult Japanese beetle. It has been shown repeatedly that the use of these traps where a large beetle population exists results in increased landscape-plant damage compared to not using the traps. Apparently the traps attract beetles from a block or more away but do not lure many of the beetles all the way into them. Instead, the beetles feed on nearby plants and cause additional damage. Regardless, many homeowners use the traps, probably for the satisfaction of knowing that they trapped and killed at least some of the beetles. *(Phil Nixon)*

PLANT DISEASES

Powdery Mildew of Dogwood

Last week, we discussed dogwood anthracnose, a potentially devastating disease of dogwoods. Now that we have you looking closely at your dogwoods, we want to alert you to the fact that you will soon be seeing powdery mildew on that host. Central Kentucky reported the disease a couple of weeks ago and, based on past experiences, that means we can expect to see the disease any time now.

The disease will be most severe on crowded plants or plants in a shaded location or where air circulation is poor. Unlike most fungal diseases, powdery mildew is not as destructive when rains are frequent. High relative humidity (but not rain) is needed for spores to germinate, and mildew develops rapidly in extended periods of warm, dry weather when morning dews are heavy. Ideal disease conditions are 90 to 99% relative humidity at temperatures of 66 to 72°F.

The fungus grows superficially on the surface of the host, using special structures that penetrate into the host tissue. Most of the fungus appears on the surface as a white powdery growth that looks like a grayish mildew as it ages. The powdery mildew disease on dogwood is caused by *Microsphaera* species and/or by *Phyllactinia* species. Although most other powdery mildews in our landscape cause symptoms in mid- to late July, the powdery mildew fungi on dogwood are active all summer. We see symptoms starting much earlier on this species. Because the fungi are favored by high humidity and short-term predictions are favorable for high humidity, watch for the disease now.

Prune plants to allow better air circulation within the plant as well as within the planting. Never handle the infected plants when they are wet. As usual, plants should be maintained in high vigor to withstand disease attack. Fungicides are available to control the mildews, and, if sprays are begun at the first sign of mildew, control can be attained. On many landscape plants, damage from powdery mildew is only aes-

thetic, and the actual vitality of the plant is not affected. The mildew diseases of dogwood have the potential to cause more long-term damage to the tree. If you have a specimen tree that has been infected in the past, you may need to use a protective fungicide now before symptoms appear. If you decide to use a fungicide, use one of the products recommended under the appropriate host in the *Illinois Commercial Landscape and Turfgrass Pest Management Handbook 2000* or in the *Illinois Homeowners' Guide to Pest Management.* A newer product not yet listed in either manual (but will be added with the next revision) is Immunox. It will work to protect your dogwood from powdery mildew, too. Further information on powdery mildews is available in *Report on Plant Diseases* Nos. 611 and 617. *(Nancy Pataky)*

Birch Problems

We have many inquiries at the Plant Clinic concerning birch trees that are stressed. The complaints usually follow this scenario: The birch leafs out normally in the spring, then all of the leaves on a branch or two quit growing, wither, and die. Eventually the affected branches die, too. Often the tree has yellow-green leaves with branch-tip death.

Many diseases of birch exist, but few that cause the dieback symptoms described. Leaf blights do not cause such injury, nor do viruses or wood rots. Potential pathogens involved in this decline are the canker fungi (Botryosphaeria, Nectria, Physalospora, Diaporthe, and many others) and a dieback disease caused by a fungus named Melanconium. The dieback disease is actually closely related to canker problems. In all cases, the tree is infected when under stress. Melanconium dieback is known to cause a progressive dieback of upper branches, especially following periods of drought. We certainly had drought conditions last summer, fall, and winter to set up the decline process. The canker fungi could also infect trees predisposed by drought, injuries, flooding, borers, and so on. Usually more than one factor is involved, and it is impossible to determine which factor started the decline.

Michael Dirr in his book *Manual of Woody Landscape Plants* says that most birches do best in well-drained, acid, moist, and sandy or silty loam soils. He states that he would not plant a river birch *(Betula nigra)* unless the soil pH were 6.5 or below. Some birches are more adapted to a variety of soil types and moisture levels, but they will become very chlorotic in our high pH soils.

Each birch in decline is different because the stress varies with each tree and the particular site. There is no current disease epidemic on birch. In most cases, it appears that early drought stress compounded by high pH soils has probably stressed these trees, predisposing them to infection by canker and dieback fungi. There is no easy cure. Remove dead limbs to avoid problems with wood rot. Water the trees in periods of drought stress. Test the soil and find out what pH level your tree is growing in so that you can determine whether an acidic fertilizer is needed. Look for cankered areas on the wood, and remove these where possible. Last, do some research to find out the particular needs of the birch species you have planted. If you are planting a new birch, do the research first. *(Nancy Pataky)*

Elm Yellows (Phloem Necrosis)

Last week, we discussed Dutch elm disease, the fungal vascular disease that killed many American elms in the United States starting in the 1950s. Dutch elm disease is still with us, but a more current concern about elms is a disease called elm yellows, also known as phloem necrosis. It is caused by a phytoplasma (type of pathogen) that is only found in the phloem tissue. This fact, along with the fact that the infected phloem turns brown, gives the disease the alternate name of phloem necrosis. Because elm yellows and Dutch elm disease can appear similar, it is important to know the differences.

Symptoms of elm yellows may appear any time during the summer but are most common in mid- to late summer. Symptoms of elm yellows include 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 matter of a few weeks. Tolerant trees become stunted and may develop bunchy, prolific growth at the tips of branches (called 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 infected with the Dutch elm disease fungus 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 taking a few chips of the stained phloem tissue, placing them in a closed container for a few minutes, and then checking for a wintergreen odor.

Elm yellows is caused by a phytoplasma (formerly called a mycoplasma-like organism). Phytoplasmas 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. Generally, diagnosis is based on symptoms in the field. For this reason, no confirmed cases have been reported by the University of Illinois Plant Clinic, but confirmation has come from several knowledgeable tree specialists in the state. The disease is believed to be spread by such phloem-feeding insects as leafhoppers. The phytoplasma overwinters in infected tree roots and witches' brooms.

What is the fate of infected trees? Some may live for several years, but most infected elms die within 1 or 2 years of symptom development. No cure exists. The good news is that elm yellows does not move into new areas as quickly as Dutch elm disease. Removal of infected trees is advised in order to remove inoculum sources from the area. Siberian elm seems to be resistant to this disease problem. Watch for the development and release of resistant Asiatic or European elms. For additional information about this disease, consult *Report on Plant Diseases* No. 660 or the book *Diseases of Trees and Shrubs* by Sinclair, Lyon, and Johnson, as well as many Web sites discussing elm yellows. A publication is available from the U.S. Forest Service called *How to Differentiate Dutch Elm Disease from Elm Phloem Necrosis*. Check this out on the Web at http://willow.ncfes.umn.edu/ht_dednecr/ht_dednecrosis.htm. *(Nancy Pataky)*

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