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. 7 • June 6, 2001

INSECTS

Aphids and Their Natural Enemies

At this time of year, many aphid species feed on nursery and landscape plants, sometimes in large numbers. However, because aphids generally feed in exposed locations (including terminal growth and underneath leaves), they are susceptible to a variety of natural enemies such as predators and parasitoids. Predators (which may consume all or parts of aphids) include green and brown lacewings, lady beetles, hover flies, midges, bigeyed bugs, damsel bugs, soldier beetles, and blister beetles. In many cases, both adults and larvae (or nymphs) feed on aphids. Parasitoids or parasitic wasps that attack aphids include ichneumon and braconid wasps. Female parasitoids lay eggs into aphids; the eggs hatch into larvae that consume the internal contents. Eventually, the larva pupates and becomes an adult, which chews out an emergence hole. Parasitized aphids are swollen, brown to gray, and are called mummies.

Both predators and parasitoids can maintain aphid numbers below thresholds for causing plant damage so that an insecticide application is not warranted. An effective management strategy for controlling aphids without harming natural enemies is to spray plants with a hard stream of water. Although water doesn't have any EPA registration number and is not (currently) considered a pesticide, it knocks aphids off plants. Ground or rove beetles attack aphids that fall off and land on soil, grass, or mulch.

The use of conventional insecticides to control aphids may not only kill their natural enemies but also significantly impact those of other plantfeeding pests, such as twospotted spider mites. As a result, spider mites may become a bigger problem than the aphids. This type of phenomenon is referred to as secondary pest outbreak.

It is also beneficial to attract or retain aphid natural enemies in landscapes by incorporating plants that produce pollen and nectar that serves as a food source for many aphid natural enemies. Plants that produce an abundance of pollen or nectar include Queen Anne's lace *(Daucus carota)*, coreopsis *(Coreopsis* spp.), coneflower *(Echinacea* spp.), goldenrod *(Solidago* spp.), and sweet alyssum *(Lobularia maritima*).

The presence of natural enemies provides "free" aphid control, so before spraying with an insecticide, check to be sure that existing natural enemies are not already "taking care of business." *(Raymond Cloyd)*

Bagworms

Bagworms typically hatch in southern Illinois in early June and in central Illinois in mid-June. They are uncommon north of I-80. The last couple of weeks with cooler-than-normal temperatures probably has countered the warmer-than-normal temperatures earlier this spring. The result should be insect emergence that is close to normal.

Female bags from last year hanging on the tree contain 300 to 1,000 eggs each. Newly hatched larvae exit through the bottom of the bag, form their own tiny silk bags, and cover them with whatever is available. They climb high into the tree and dangle on 2- to 3-foot strands of silk. Winds catch and detach these strands, and the silk becomes a streamer that keeps the tiny bagworm larva aloft. These bagworms can float for long distances until the silk strand catches on an object. Many land on roads, buildings, and other inhospitable places, where they are likely to be run over by an 18-wheeler or die from some other means. Some catch onto trees and shrubs. The bagworms may climb to the top of the plant and repeat the ballooning process or settle down to feed on the plant. Feeding typically starts at the top of the plant.

Preferred hosts include eastern red cedar, other junipers, arborvitae, spruce, crabapple, hackberry, and oak; but this insect is capable of feeding on a wide range of plants. Initially, the young caterpillars feed on one epidermis and the mesophyll, leaving the other epidermis intact. This pattern results in leaves that are whitish and then turn brown. At this time, the caterpillars have cone-shaped, brown bags that are 1/8 to 1/4 inch long.

Older larvae eat most of the needle or leaf, stripping the branches at the top of the tree. As they age and keep running out of food, the larvae and their

damage descends the tree canopy. Stripped conifer branches usually die, and severe attack can kill an entire tree. Deciduous plants usually re-leaf and survive.

In late summer, typically mid-August, the bagworm cases reach 1-1/4 to 1-1/2 inches long. They pupate within the bag. Black male moths with clear wings emerge through the bottom of the bag, frequently leaving the empty pupal case hanging in the end of the bag. Females stay within the bag as a larvaform adult without wings. Males mate with the females through the end of the bag, and the females lay their eggs inside it and die. The eggs overwinter.

Handpicking and destroying the bags from fall through midspring is effective in removing the eggs. However, larvae are likely to balloon in the spring from neighboring or even distant trees. Insecticide sprays are effective against the young larvae, but larvae whose bags are at least 3/4 inch long are very difficult to control. It is most effective to wait a couple of weeks after egg hatch to treat, allowing the larvae to finish ballooning. Treating too early requires a second treatment to control larvae that balloon onto the trees or shrubs. Wait until mid-June in southern Illinois and early July in central Illinois to treat.

Bacillus thuringiensis kurstaki (Dipel or Thuricide), cyfluthrin (Tempo), spinosad (Conserve), trichlorfon (Dylox or Proxol), and other labeled insecticides are effective against the young larvae. Cyfluthrin and trichlorfon are the insecticides of choice if the larvae get a little large. Actively feeding bagworms always have little pieces of green foliage around the top of the bag, and these pieces dry and turn brown in just a few days. Older larvae with no green around the top have probably already pupated, and insecticidal control is useless. After treatment, the bagworms hang on the tree. A useful method to determine control is to check for green foliage on the bag a few days after treatment. If the top of the bag is brown, the larva is dead. *(Phil Nixon)*

PLANT DISEASES

Dutch Elm Disease Active

We have confirmed our first case of Dutch elm disease (DED) at the Plant Clinic this year. It was also reported this past week at The Morton Arboretum in Lisle. If you have elms, be aware of the symptoms of this disease so you can catch it early. Some think this disease occurs only on “Dutch elm,” but that is not where the name originated. Dutch plant pathologists did the original studies on the disease and gave the disease its name. American elms are very susceptible to the DED pathogen. Although Chinese elm and Siberian elm are known to be more resistant, infection of these species can occur as well. Work is still under way to develop resistant elms. So far, breeding programs have produced the more resistant Sapporo Autumn Gold, American Liberty, and Urban elms.

Dutch elm disease is caused by a fungal pathogen, *Ophiostoma ulmi* (*Ceratocystis ulmi*). The fungus works much as the other vascular pathogens, causing plugging of the vascular tissues and resultant wilting and death of foliage.

Watch for yellowing of the leaves in the elm, followed by wilting and browning. A single branch usually shows symptoms first (called flagging) with rather rapid spread to adjacent branches and the entire tree. Look for vascular discoloration to help with diagnosis. As with oak wilt (issue 5), DED causes a streaking of the sapwood. Peel the bark of a symptomatic branch to reveal the brown streaks in the otherwise tan outer sapwood. We generally select branches of about thumb thickness with wilted leaves. Verticillium wilt and Dothiorella wilt can also cause this streaking in elm. Positive identification would require laboratory culturing of the fungus. Cut several 6- to 8-inch long sections from wilting, but living, branches that show definite streaking in the sapwood. Send us sections you have not peeled. The fresh wood sections should be thumb thickness and can be sent in plastic or foil for testing. Chilling the wood is necessary for oak wilt suspects but should not be necessary with Dutch elm suspect samples. Expect about 7 days of lab time for the fungus to grow to where it can be positively identified. There is a $12.50 fee for this service. Remember that payment must accompany the sample or it will not be processed.

No chemicals are available to homeowners for control of DED. Some products available to commercial applicators are used as preventive or therapeutic treatments when the disease is caught early. Consult the *2001 Commercial Landscape and Turfgrass Pest Management Handbook* for details. For more information on DED, including control procedures, consult *Report on Plant Disease (RPD)* no. 647. A similar disease caused by a phytoplasma is discussed in RPD no. 660, “Elm Yellows or Phloem Necrosis and Its Control.” These reports are available in your local Extension office or on the Vista Website, **http://www.ag.uiuc.edu/~vista/horticul.htm.** *(Nancy Pataky)*

Honeylocust Disease Problems

This species is tolerant of many adverse conditions. It can tolerate drought, high pH, and salt. Mike Dirr in *Manual of Woody Landscape Plants* says it is one of the more adaptable native trees. Still, we see many insect problems on this species, along with canker disease and root rot.

Cankers are dead areas on stems, usually referring to trees but also present on herbaceous plants. Fungal organisms are blamed for the cankers, but in most cases the fungus can only infect a weakened plant, such as one growing under stress. Wounds are ideal sites for canker fungi to invade. If the canker girdles the stem, wood beyond that point dies. At this time of year, dead wood is obvious because gardeners are looking closely at their plants and because it stands out clearly against the new green growth of spring. Honeylocust trees are particularly prone to Thyronectria canker, Cytospora canker, and Kaskaskia canker; but the actual organism involved does not make a great deal of difference. The fungi invade stressed trees, so management involves pinpointing the source of stress and trying to correct it. This host has many insect and mite problems (borer, plant bug, webworm, spider mites), some of which have been discussed in this newsletter. Such problems certainly stress a tree. Soil compaction also stresses this species. Roots are shallow, so look for source of root injury.

The most aggressive canker disease of honeylocust is Thyronectria canker. Symptoms include yellowing and wilting of the foliage, premature leaf drop, and stem dieback. Look closely for cankers. The wood is often slightly sunken; the canker is cracked and has a yellow-orange color. The cankers are elongated and can occur on young or old wood. If in doubt as to the presence of a canker, do a bit of investigating, trying not to cause too much tissue damage. Use a knife to peel back some of the bark in the suspect area. The sapwood beneath the canker will be discolored, reddish brown. Healthy wood should be white or tan or slightly green. This canker disease is fairly common on stressed honeylocust trees; and the disease has been linked to drought stress in many cases. Still, the canker can be easily overlooked. As with most canker diseases, there is no rescue treatment to spray on the tree. Prune out dead wood in dry weather, water the trees when 2 weeks of drought occur, and avoid physical damage to the trees. When you see a canker problem, try to determine the cause of stress and take measures to alleviate that stress.

Ganoderma root rot is another problem we see frequently on honeylocust. This root rot pathogen forms reddish brown fruiting bodies (also called conks or shelf fungus) on the trunk, usually near the soil line. They are large (5 to 10 inches wide is common) and appear to be varnished with a shellac. We see problems with Ganoderma where rooting is restricted, soil is compacted, or other major soil changes have occurred. I witnessed results of infection by this fungus in some large planters that had been accidentally flooded earlier in the year. The U of I quad was planted with honeylocust to replace DED-infected elms in the 1950s. Most of these honeylocust trees have been removed because of Ganoderma root rot. Information about Ganoderma can be found in *RPD* no. 642, "Wood Rots and Decays," which includes a picture of the fruiting body. *(Nancy Pataky)*

Vinca (Periwinkle): Phoma or Rhizoctonia?

Two fungal diseases of this groundcover have been fairly common in the past few years in Illinois. Because of the similarity of symptoms, it is likely that many cases have been misdiagnosed. **Phoma blight** (Phomopsis blight) is probably the most common of the two. **Rhizoctonia root rot** can produce some very similar symptoms but requires different management.

Phoma blight is caused by the fungus *Phoma exigua* var *exigua*. Shoots turn brown or black, wilt, and die. Black lesions can be found on the stems, girdling and killing all tissue beyond the infection. Within the black lesions, the fungus forms black fruiting bodies the size of a pinhead. The fungus remains on the plant stems under the plant canopy, making this disease very difficult to control.

Rhizoctonia root rot causes brown, rotted areas on the roots. Poor root growth results in poor top growth, so dying shoots are prevalent with this disease as well. Black lesions may even appear on the stems. Fruiting bodies will not be found in the lesions on plants infected with Rhizoctonia. Closely examine the roots to distinguish between these two disease problems.

Both of these diseases are very difficult to control. Try to avoid overhead watering or excessive watering of vinca beds. It may be helpful to improve air circulation in the area by pruning surrounding plant material and overhanging branches. Because the fungus can survive in the soil on dead plant material, remove fallen leaves and dead tissue. This task may seem to be impossible—to remove all the dead material and still have live plants. Work with plants when they are dry to avoid further spread of the disease. It has been suggested that new plantings be mulched with black plastic perforated every 4 to 6

inches and then covered with pea gravel or ground corncobs. In most cases, we would avoid the plastic mulch suggestion, but this may be the only way to establish a healthy bed of vinca.

Fungicides that may provide some protection against Phoma blight include iprodione (Chipco 26019), azoxystrobin (Heritage), copper hydroxide (Kocide), thiophanate-methyl (Bonide Bonomyl, Dragon 3336, or Ferti-lome Halt), potassium bicarbonate (Bonide Remedy), copper hydroxide (Ferti-lome Blackspot), and mancozeb (Pentathalon or Protect T/O). Azoxystrobin and thiophanate-methyl are systemic products; iprodione is locally systemic. The other chemicals have a protective-contact mode of action and do not provide the same degree of control of the pathogen without multiple applications.

Fungicides that may slow progress of Rhizoctonia root rot include iprodione (Chipco 26019) and PCNB (Engage, Terraclor). Iprodione has a locally systemic mode of action, and PCNB is a protective-contact fungicide.

These diseases are most prevalent in cool, wet conditions; but infection can occur any time from June to August following periods of cool, wet weather. Rhizoctonia can occur even in dry conditions. These diseases are very persistent in vinca plantings, and their presence is one of the main reasons that growers often seek an alternative groundcover. Stem blight of vinca is discussed in *RPD* no. 640, available at Extension offices or on the Web at the VISTA site, **http://www.ag.uiuc.edu/~vista/horticul.htm.** *(Nancy Pataky)*

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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