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# PLANT DISEASES

## *Aegopodium*, Bishop's Weed (or Do You Say Ground "Ash?")

This plant goes by many names, including the above. You might also see it listed as ashweed and herb gerard, but the genus name of *Aegopodium* is most exact. This low, perennial ground cover is widely used in Illinois gardens because it grows well in shade, quickly covering the ground.

We have had some complaints at the Plant Clinic about this plant. The foliage is spotted and blighted with brown edges and scattered spots. The normally lush plant is thinned and looks weak. Samples that we have received are not infected with a disease. The symptoms described are caused by weather scorch. The variegated form that seems to be most widely used is sensitive to scorch in sunny locations. This injury is most common in a period of very hot weather following a time of lush growth—just the weather that much of Illinois has had of late and usually experiences each summer.

This plant is best maintained with periodic mowing throughout the growing season, whenever the foliage looks poorly. Mowing encourages new growth and helps keep plants dense. Don't mow low enough to injure the crowns, or the plants die. *(Nancy Pataky)*

## Euonymus Speckling

Euonymus plants in Illinois may now have a light color, possibly even early red fall color, with early leaf drop. Although several people have sent samples to the Plant Clinic certain that a disease was involved, this is not the case. Our entomologist confirms that spider mites are the cause of these symptoms. The foliage shows stippling typical of mite injury. Try the "white paper test," in which you sharply tap the branch over a piece of white paper, and you will see the mites crawling around. Drought-stressed plants are more susceptible to such injury, so water the plants to maintain plant health and use cultural and chemical management suggestions to control the mites. Consult issue 14 of this newsletter for details on the twospotted spider mite. *(Nancy Pataky)*

## Wetwood and Slime Flux

This disease can be quite ugly in mature shade trees. It also slowly contributes to rotting of the interior of the tree. We do not consider wetwood and slime flux to be an immediate threat to the tree. Still, it is important to understand how this bacterial infection affects tree decline.

Wetwood and slime flux is a condition caused by bacteria that enter wounds in a tree. *Enterobacter cloacae* (formerly known as *Erwinia nimipressuralis)* and other bacteria are associated with this disease. This condition in trees is very noticeable because infected trees often have seepage coming from a major crotch or wound in the trunk. In some cases, the liquid emitted from the wounds has a foul odor because secondary microorganisms colonize it.

Wetwood causes a water-soaked condition of wood in the trunk, branches, and roots of many shade and ornamental trees, especially old street trees. Elms, poplars, cottonwoods, oaks, and maples seem most commonly affected in Illinois; but many other tree species are susceptible. This chronic but rarely serious disease of trees can contribute to general decline in tree vitality but is not known to cause tree death.

Wetwood is most visible externally as a bubbling seepage of bacteria and toxins from wounded tissue in V-shaped branch crotches, pruning wounds, injection holes, and trunk cracks. The liquid often runs down the trunk, leaving a white stain. You cannot always see the wound, but you can see the liquid. Bacteria in the inner sapwood and heartwood of the tree ferment, causing internal gas pressure. This pressure commonly reopens old wounds, and the sour liquid flows down the bark. As it dries, a light gray to white encrustation called slime flux remains. The liquid commonly causes localized death of the cambium. Fluxing occurs from April to December, but it is most conspicuous in the summer, especially now.

There is no cure for this condition, but the following may be helpful. Fertilize stressed trees in the spring or fall to stimulate vigorous growth. Some people like to install perforated plastic or iron drain tubes in the tree to relieve the gas pressure and to allow continual drainage away from the trunk. The idea is to keep the liquid off the trunk so the cambium is not killed. Be aware that drain tubes often make the

problem worse internally. Trees have the ability to compartmentalize injuries or diseased wood. They may wall off the wetwood areas. Because drain tubes create a deep wound, they may also break the compartment that the tree has made to encompass the wetwood, allowing the internal discoloration and any future decay to spread outside the contained area.

Removing dead or weak branches, plus promptly pruning and shaping bark wounds, is helpful. These measures encourage rapid callousing of wounds. The sap flow that results from pruned branches is normal and is not the same as wetwood flow. The liquid we see with wetwood may flow year-round and is often followed by slime flux. Consult *Report on Plant Disease (RPD)*, no. 656, "Bacterial Wetwood and Slime Flux of Landscape Trees," for more on this condition. *RPDs* are available in Illinois Extension offices or on Extension's VISTA Web site. *(Nancy Pataky)*

### Pine Gall Rusts

In recent years, we have begun to see some rust diseases on pines that involve a gall formation on the stem. These rusts are not yet common in Illinois, but we have seen them each of the last three summers. The diseases are less likely to occur in home landscapes. Watch for them if you have a commercial tree nursery or Christmas tree farm.

There are many common rust diseases of trees in Illinois, including cedar-apple rust, cedar-hawthorn rust, and cedar-quince rust. These diseases require two hosts and cause most concern on the apple, crabapple, or hawthorn hosts. The two rusts of pine are pine-oak gall rust and pine-pine gall rust. Two hosts are necessary for pine-oak gall rust to occur. An alternate host is not needed for pine-pine gall rust.

The fungus causing **pine-oak gall rust** *(Cronartium quercuum)* requires two different hosts to complete its life cycle. In Illinois, the primary coniferous host is Scotch pine; but jack, Austrian, mugo, ponderosa, and red pines may also be infected. Deciduous hosts include red, pin, and bur oaks. This disease is also known as eastern gall rust.

Symptoms on pine include swollen areas on the branches, lumps or galls measuring up to 4 inches across, and slowed growth. Mature galls often have white to yellow, blisterlike ridges (fruiting bodies) that rupture through the bark and produce yellowish spores. Severe infections may result in witches' broom (multiple shoots growing from a gall), death of branches, and possibly death of the entire tree. Symptoms on oak leaves are similar to those of rust on crabapple. Small dark brown spots with yellow borders are visible on the upper leaf surfaces, and reproductive structures develop on the underside of infected leaves.

In the spring, mature galls on the pine host release windblown spores, which infect expanding oak leaves. About one week after infection, orange spores are released from the underside of infected oak leaves, causing additional oak leaf infections. Two to 3 weeks later, hairlike structures are produced on the underside of infected leaves and different spores are released that infect pine needles, succulent stems, and expanding candles. New pine infections take 2 to 4 years to develop into mature galls that can release spores capable of infecting oak leaves.

**Pine-pine gall rust** (also called eastern gall rust) is caused by *Endocronartium harknessii*. In Illinois, the primary host is Scotch pine, but jack and ponderosa pines may also be infected. Pine-pine gall rust is very similar to pine-oak gall rust in severity, symptoms, and formation of galls. However, pine-pine gall rust *does not* infect oaks and *does not* need two hosts to complete its life cycle.

To avoid this disease, purchase seedlings and young pines from a reputable source and inspect the trees before planting. However, even close inspection is not foolproof because you will not be able to detect an infection until 1.5 to 2 years after infection. Although the field symptoms of these two rusts are virtually indistinguishable on pine, there are microscopic differences in the spores from the pine galls. While on site, it may be helpful to examine nearby oak hosts for evidence of rust lesions, which indicate the presence of pine-oak rust.

Infected pine branches and/or whole trees should be removed before spring because the rust galls release infectious yellow-orange spores each spring. To protect pines in nursery settings from new infections, apply Bayleton or mancozeb (several trade names available) every 7 to 14 days during pine shoot elongation. Fungicides are not recommended for landscape trees.

Because pine-oak gall rust has a few extra steps in the spring infection cycle, peak pine infection will likely be later than for pine-pine gall rust. Pine-infecting spores are released 2 to 3 weeks after the first orange spores develop on the underside of oak leaves. *(Nancy Pataky and Bruce Paulsrud)*

## INSECTS

### Pest Watch

Annual white grubs have been reported in Bloomington in a lawn treated with halofenozide (Mach 2)

in May. Although both Mach 2 and imidacloprid (Merit) usually give 3 months or more of control, research indicates that either chemical fails occasionally. When the residue is several months old, this failure rate may be 10 to 15 percent of applications. Check turf treated in the spring to be sure that control has been obtained. If not, trichlorfon (Dylox) is a good rescue treatment that should kill the grubs within 3 days. We recommend treatment with Mach 2 or Merit in July for annual white grub or Japanese beetle grub to help avoid failure of older insecticide residues.

Black cutworm has been particularly numerous in recent weeks on golf course greens. There are several generations of black cutworm, so expect them anytime from early spring to late fall. Black cutworm damage is most likely in bentgrass because Kentucky bluegrass is a poor host. Surrounding greens with bluegrass can reduce injury on bentgrass greens. However, cutworms can live in the taller bluegrass and come onto the greens at night to feed on bentgrass. Feeding damage appears as round patches of closely cropped turf up to 3 inches across. These areas are so closely cropped than they commonly turn brown. Insectivorous birds—such as starlings, cowbirds, and robins—feeding on the greens or near them may also indicate cutworm presence and can seriously damage greens while pulling out the larvae. Spinosad (Conserve), pyrethroids, and other insecticides are effective in controlling black cutworm.

Sycamore lacebug is being found in high enough numbers to be a nuisance. This insect feeds on the underside of sycamore leaves, causing the upperside to turn whitish with stippling. The leaf underside has numerous tiny black spots, which are lacebug feces. The 1/8-inch-long, flattened adults with white, lacy wings are on the underside near major veins, along with the smaller, blackish nymphs. They rarely cause significant damage. If treatment is needed, pyrethroid and other insecticides are effective. *(Phil Nixon)*

## Impact of Japanese Beetle Sprays

We have been dealing with more problems associated with twospotted spider mite, *Tetranychus urticae,* this year than in previous years—mainly due to the dry conditions we have been experiencing throughout most of Illinois. However, another reason for the abundance of twospotted spider mite populations may be an indirect result of the heavy regional use of pest-control materials such as carbaryl (Sevin) and/or cyfluthrin (Tempo) for managing Japanese beetle adults this year. Japanese beetle adults were extremely abundant in many portions of the state, and carbaryl and cyfluthrin were used routinely (sometimes daily) to kill as many Japanese beetle adults as possible. Many of the heavy mite infestations are on silver maple, sugar maple, and oaks—trees typically not damaged or damaged only lightly by Japanese beetle. Commonly, in these situations, all of the trees and shrubs were sprayed for Japanese beetle regardless of the level of infestation or damage.

Carbaryl and cyfluthrin are very effective in managing the adult stage of Japanese beetle; however, both pest-control materials have broad-spectrum activity or kill many types of insects and mites. As a result, they are also very harmful to natural enemies, including predatory insects and mites that "naturally" regulate twospotted spider mite populations. In the absence of these predatory insects and mites, twospotted spider mites can increase in great numbers. This results in pest-control materials being needed regularly to prevent twospotted spider mite injury to plants. Also, natural enemy populations take much longer to build up in numbers to have any influence on the mite populations. This scenario is often referred to as a **secondary pest outbreak**.

Secondary pest outbreak, or pest replacement, is a situation in which a major pest (that is, Japanese beetle) is suppressed and continues to be suppressed by a particular pest-management tactic such as the use of pest-control materials. But it is then replaced in importance by another pest (that is, twospotted spider mite), previously a minor pest. Secondary pest outbreaks often occur in landscape settings after applications of pest-control materials. For example, spraying malathion for mosquito control in residential areas has led to outbreaks of pine needle scale on mugo pine because the malathion sprays kill the natural enemies of the scale.

There is a classic saying that "for every action there is a reaction." Nature doesn't exist in a vacuum, and once one organism or a group of organisms is removed, something else will occupy the niche. Although in the short term, it is important to control a given pest, it is also imperative to consider the long-term implications of a pest-management tactic. Proper stewardship of pest-control materials is important to prevent secondary pest outbreaks. *(Raymond Cloyd)*

## Tree Caterpillars Numerous

In late summer, it is common in Illinois to have an abundance of defoliating caterpillars on trees. Deciduous trees can cope with this damage relatively well; the loss of leaves this late in the season has little

effect on tree health. Leaves are most productive during the first half of the growing season and by now they have produced most of the the tree's food. Trees typically do not replace leaves lost late in the growing season. If the tree produces new leaves, this represents an expenditure of energy reserves that the new leaves may not have time to replace.

American dagger moth caterpillars are being found in much higher numbers than normal. These are white or yellow hairy caterpillars that look somewhat like woollybears, reaching 2 inches when fully grown. Towards the front and middle of the body, they have pairs of "pencils"—very long groups of black hairs that protrude well beyond the other hairs. There is also a pencil at the posterior end of the body. They feed on a variety of trees, preferring crabapple, linden, elm, maple, oak, and willow.

Walnut caterpillars are also more numerous than usual. They are most common on walnut, butternut, pecan, and hickory. They are reddish, with a couple of white stripes when young, but turn black, with a couple of thin black stripes and scattered, long white hairs when older. Fully grown caterpillars approach 2 inches in length. Its close relative, the yellownecked caterpillar, is similar in size and color but has many white to yellow stripes. Older, black caterpillars have a characteristic orangish to yellow "neck" behind the head. Yellownecked caterpillar feeds on the same hosts as walnut caterpillar but is also common on maple and oak. Both of these caterpillars feed in large groups without a silk tent. They have a curious habit of descending onto the trunk and forming a large mass to molt to the next larval stage.

Fall webworm is very numerous this year, with their large webs over the ends of branches being very noticeable. Remember that the web is water resistant, so to achieve control use sprays with enough pressure to break inside of the web.

Bagworms are numerous. They are very large; and many insecticides, including *Bacillus thuringiensis kurstaki*, are not likely to be effective. Pyrethroids, such as cyfluthrin (Tempo), should still provide control. Before spraying, make sure that the tops of the bags have pieces of green leaves and that the caterpillars are still active. If the bags are brown at the top and the top is sealed, the caterpillar has probably pupated, and it is too late to obtain control. *(Phil Nixon)*

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