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PLANT DISEASES

Oak and Peach Leaf Curls

It seems odd that the same disease could affect two widely differing hosts; but it is true. Oak leaf blisters and peach leaf curls are caused by different species of *Taphrina*, a fungus that causes distorted, thickened leaves and early leaf drop. Leaves turn downward and inward and may become red or purple. The disease may cause yield loss in edible peach but is not seriously harmful to ornamental species. Oak damage is mostly aesthetic. Still, repeated yearly infection may weaken an oak and predispose it to other problems.

Peach leaf curl occurs on peach, nectarine, and some ornamental *Prunus* species. Leaf curl, or leaf blisters, refers to a similar group of diseases on oak and occasionally on poplar. Several *Taphrina* species (fungi) cause all these diseases. Leaf distortion and blisterlike growths or puckering of the leaves is common to all. The leaves are often thickened, almost crisp. It is not unusual to confuse this with chemical injury or even early season cold injury to new growth.

The fungi survive over winter in buds and twigs, infecting leaves and flowers in the cool, moist weather of early spring, from bud swell to bud opening (ideally, temperatures are 50° to 70°F).

For fruit growers, a single dormant-fungicide spray is recommended. Apply in the fall after leaf drop or in the early spring before budbreak. This practice is common for most commercial growers. Home fruit growers in Illinois who use a dormant fungicide and are careful to provide full coverage of buds do not have problems with leaf curl.

Landscape managers should focus on promoting tree health by pruning, watering, and fertilizing—practices that help the tree refoliate. New leaves will not be infected this season. Fungicides are not usually recommended for ornamental trees. In all cases, fungicides would be useless against this disease now. If you are having problems with curl and blisters, mark your calendar for a late-fall fungicide application.

For more information, see *Report on Plant Disease*, no. 805, "Peach Leaf Curl and Plum Pockets," or no. 663, "Oak Leaf Blister," on Extension's VISTA Web site; both include photos. *(Nancy Pataky)*

Rose Downy Mildew

Downy mildew on rose is present this season. It was detected in a retail operation in Illinois—before plants were sold. Quick action by the retailer prevented its spread to home gardens. This disease is one that growers need to recognize to prevent spread of a damaging disease. Downy mildew is not related to powdery mildew and does not cause the same symptoms.

Downy mildew on rose is caused by *Peronospora sparsa*. Symptoms include lesions on the leaves, stems, and flowers. Leaf lesions are the most obvious and appear purplish to brown, blocky, and often accompanied by yellowing of surrounding tissues. Severe defoliation may occur as a result of infection. The symptoms are suggestive of chemical injury or possibly nutrient stress. The downy mildew fungus forms a downy mass of spores on the underside of leaf lesions. This growth is difficult to see without a hand lens or microscope. The fungus thrives in cool, humid conditions (85% relative humidity). The optimal temperature for rose downy mildew is 64°F. Spores form more readily in cool, humid conditions. Once conditions turn warm and dry, the disease is kept in check until the next cool, humid period.

Examine roses carefully before purchase. Usually in Illinois, this disease is not seen outside greenhouses or production areas; but that is not guaranteed. Do not buy plants with these lesions. If established plants are infected, chemicals are available for control. Many options are listed in the *2003 Commercial Landscape & Turfgrass Pest Management Handbook*, as well as the *Home, Yard, & Garden Pest Guide*. These products are listed as preventives and work best before the disease is established. Be sure to get thorough coverage of foliage, especially undersides of leaves. Because the fungus can survive on infected plant parts, remove infected tissue from the site. Place tissue directly into a plastic bag and seal it before moving through the garden. *(Nancy Pataky)*

Scab Control Question

Apple scab was discussed in issue no. 1 of this newsletter. Chemical control options for scab were discussed with crabapple in mind as the host. The same disease also affects edible apple. Many readers grow apples in their home gardens and ask questions about

control on edible apple. The *Midwest Tree Fruit Pest Management Handbook* discusses chemical options for commercial producers. Chemical schedules for homeowners are in chapter 6 of the *Home, Yard, & Garden Pest Guide*. Unfortunately, the only products listed for scab are captan and multipurpose fruit spray, which usually contains captan and an insecticide. Although these products work as protectants, growers want systemic product options. The chapter will be revised soon to include such information, but the present question is whether there are systemic alternative for scab control on homeowner apple production.

There are some suggestions we can make. Of course, always read labels carefully before using a fungicide, no matter what you read here. Labels change often. Make certain that the product is registered for use on the intended crop (apple) and against the intended disease (scab). Homeowner products that we found with systemic activity and labeled on edible apple include Spectracide Immunox, Fertilome Halt, Bonide Bonomyl, and Immunox Plus. Those with a protective/contact activity included Fertilome fruit tree spray (captan and malathion) and Bonide captan. Others undoubtedly exist. Check the label before using any of these products. *(Nancy Pataky)*

Anthracnose as Usual

Anthracnose is a fungal disease that appears each year on select ornamental trees. The extent of infection depends on weather conditions and the host. It has appeared in 2003 and may worsen with wet conditions and new foliage production. Trees commonly infected in Illinois include sycamore, ash, maple, oak, birch, dogwood, and walnut; others, less frequently.

Symptoms include spotting and blighting of leaves, buds, and sometimes stems. Anthracnose is caused by one of many fungi present in cool, wet conditions as tender leaves are first developing. The disease is most prevalent in the spring because conditions are conducive to fungal development, while slowing plant development. Leaves emerging in warmer, drier conditions usually escape the disease. Conditions needed for infection vary with the host and the fungus. For most, the critical period for primary infection is the 2 weeks after budbreak.

Unless anthracnose fungi have repeatedly hit a tree or a very young tree is involved, we do not recommend using fungicides. Dogwood anthracnose is another story altogether: It can cause extensive damage, and fungicides are recommended. Dogwood anthracnose will be discussed in an upcoming issue. In general, anthracnose diseases do not kill trees; but repeated infections can weaken trees, making them susceptible to other problems. Some defoliation may occur, but refoliation with healthy leaves follows in warmer weather. Concentrate on boosting tree vitality, which promotes new growth. Prune in and around the tree to open it to better air movement. Remove dead or dying branches, water in periods of drought, and mark calendars now to fertilize affected trees in the fall. Watering in summer drought is probably the best advice we can give to help infected trees. If we see 6 weeks of drought in 2003 as in 2002, these trees will suffer. To help them, water must be provided during drought, not as an afterthought in the fall. Don't add to the stress by ignoring these trees in drought.

You might confuse anthracnose with late frost damage. Anthracnose generally causes more discrete spotting on the leaf blade; it occurs where air movement is slow and relative humidity high—most severe near the bottom and inside of the canopy. Frost injury is more likely on branch tips or near the canopy top—areas more exposed to weather conditions. For more information, see *Report on Plant Diseases*, no. 621, "Anthracnose Diseases of Shade Trees," on Extension's VISTA Web site. *(Nancy Pataky)*

INSECTS

Wood-Boring Insects

Now is the time of year to take appropriate measures to minimize problems with wood-boring insects in landscapes and nurseries. The two main groups of wood-boring insects are beetles (order: Coleoptera) and moths (order: Lepidoptera). The wood-boring beetles active at this time of year include bronze birch borer *(Agrilus anxius)*, flat-headed appletree borer *(Chrysobothris femorata)*, and round-headed appletree borer *(Saperda candida)*. Moth borers active at this time include lilac/ash borer *(Podosesia syringae)*, peachtree borer *(Synanthedon exitiosa)*, and viburnum borer *(Synanthedon fatifera)*.

Many of these wood-boring insects feed on a variety of plant types. Bronze birch borer attacks European white birch, gray birch, paper birch, and yellow birch. The flat-headed appletree borer primarily attacks plants in the rose family (Rosaceae), including crabapple, cotoneaster, hawthorn, pyracantha, and rose. Lilac/ash borer attacks ash, lilac, and privet. In general, adult females lay eggs on exposed bark; they hatch into larvae that tunnel through the cambium. Larvae feed within the sapwood or heartwood, whereas adults feed on leaves or flower nectar.

The key to managing wood-boring insects is to keep plants healthy and avoid stress by using proper cultural practices, including watering, fertilizing, mulching, and pruning. Avoid lawn-mower or weed-trimmer injury to the base of trees and shrubs as this

removes essential cambium tissue that is responsible for transporting food upwards to leaves. This injury places undue stress on plants. Many wood-boring insects are opportunistic and thrive on stressed plants; healthy plants are less susceptible. Pruning trees and shrubs at certain times of the year may increase problems with certain wood-boring insects. For example, it is generally suggested to avoid pruning birch trees, especially white birch, from May through August because bronze birch borer female adults are flying around looking for places to lay eggs. Pruning then creates wounds that emit odors that attract females.

Newly planted trees and shrubs are highly susceptible to borer attack. For example, the flat-headed appletree borer attacks recently planted shrubs and trees because they are stressed, thus increasing their susceptibility. It is important to properly water plants, provide adequate drainage, and mulch young plants to minimize stress. Avoid placing a thick mulch layer (over 6 inches deep) against the crown because it suffocates the plant; this is especially important with finely decomposed mulches. Place a 3-to-4-inch layer of mulch around trees and shrubs, and leave a 2-to-3-inch gap between it and the base of the plant. Finally, avoid overfertilizing as this may cause plants to divert resources from production of defensive compounds and increase susceptibility to wood-boring insects.

Insecticides may be used to minimize problems with wood-boring insects. The loss of landscape use of chlorpyrifos (Dursban), dimethoate (Cygon), and lindane due to the Food Quality Protection Act has created concerns on availability of effective insecticides. Chlorpyrifos is no longer available to homeowners, as it cannot be used in the urban landscape; it is still available to commercial operators for use in nurseries and golf courses. Permethrin (Astro) is the product of choice for managing moth borers. Imidacloprid (Merit, Imicide, and Pointer) has some activity on beetle borers. Research has shown that imidacloprid is effective in controlling bronze birch borer.

The residual activity of insecticides applied to plants often depends on bark characteristics, with activity generally lower on smooth bark (such as birch bark) compared to ridged or furrowed bark. Insecticide binds more easily to rough bark, with less potential for wash-off from rain or irrigation. It is important to thoroughly soak the bark up to 5 feet from the tree base as adult borers tend to lay eggs there.

The timing of insecticide applications to the bark is critical. Apply before eggs hatch or when adults emerge because most insecticides do not penetrate bark after insect entry. After larvae are inside the tree, very little can be done except to maintain plant health. *(Raymond A. Cloyd)*

Lilac/Ash Borer

This time of year in Illinois, plants such as ash, lilac, and privet are susceptible to attack from lilac borer *(Podosesia syringae)*, also known as ash borer. Adults are brown, slender clearwing moths that resemble paper wasps. Peak moth flight occurs in late May to early June. Females lay oval, tan eggs in cracks, crevices, or wounds at the base of plant stems. A female lives about a week, laying 300 to 400 eggs.

Eggs hatch into cream-colored larvae, about 1-1/2 inches long when full-grown, with brown heads. Larvae cause plant injury by creating tunnels and feeding within the bark. They tunnel into the wood and feed within the sapwood and heartwood. Feeding restricts the flow of water and nutrients, causing shoots to die. This borer generally feeds near the base of plant canes. The larval feeding creates swollen areas or cracks at the base of plants. Evidence of larval feeding is the presence of light-colored sawdust below infected areas. Lilac borer overwinters as late-instar larvae in the tunnels of stems.

Lilac borer partially tunnels out through the bark before pupating. The moth emerging from the pupa is unable to chew, so it simply pushes out the thin layer of bark remaining. When the moth emerges, the brown shell of the pupa is usually left behind and protrudes from the hole. Sometimes this barely shows, but commonly the pupal case sticks out about 1/2 inch. Male moths emerge first; females emerge several days later. The moths are 1 inch long, with a brown-colored body. They are very active fliers. There is one generation per year in Illinois.

Prevent plant stress by proper cultural practices such as watering, fertilizing, and mulching; stressed plants are very susceptible to lilac borer. A 2-to-3-foot-wide mulched area around the base of trees and shrubs prevents plant injury from lawn mowers and weed-trimmers. In addition, avoid pruning plants in late spring and early summer when moths are present.

The insecticide permethrin (Astro) can be applied to control lilac borer larvae before they enter the plant. Pheromone traps are available that capture adult males, which indicates that females will eventually be laying eggs. This can help in timing insecticide applications. Another option is to use beneficial nematodes. Nematodes are applied as a heavy spray to the larval entry points; nematodes attack the larvae feeding within the tunnels. *(Raymond A. Cloyd)*

Scouting Watch

Gypsy moth eggs have been hatching in northern Illinois. The Illinois Department of Agriculture (IDOA) and USDA APHIS will treat for the larvae toward the end of the month. Oaks, major hosts for gypsy moth,

break bud relatively late. Waiting until oak leaves are half expanded provides additional surface area, resulting in better control. Where gypsy moth is numerous —as in Lake, Cook, DuPage, and McHenry counties —application can be made by arborists, landscapers, and others. In counties other than Lake, check to be sure that you and IDOA are not treating the same trees. *Bacillus thuringiensis kurstaki* (Dipel, Thuricide, others), spinosad (Conserve), tebufenozide (Mimic), diflubenzuron (Dimilin), and cyfluthrin (Tempo) are all very effective against the caterpillars.

Whitemarked tussock moth is hatching and can be treated in southern and central Illinois. It commonly feeds on crabapple, oak, linden, maple, and sycamore. *Bacillus thuringiensis kurstaki* (Dipel, Thuricide, others), spinosad (Conserve), and several other insecticides are very effective.

Maple petiole borer damage has been reported from Effingham County in southeastern Illinois. The borer is a sawfly that lays its eggs at the base of the leaf petiole in the spring. The resulting larvae tunnel through the petiole, causing the leaf blade to fall off close to where it joins the petiole. The larva remains in the petiole that stays on the tree. Later, the petiole drops to the ground, where the larva pupates. There is one generation per year. Although this insect's damage is impressive—with up to 30% of the leaves without petioles falling from the tree in May and June—it typically has no serious impact on the tree, and there is no control. As the larva is not in the fallen leaves, raking and destroying the leaves has no effect.

Birch and alder leafminers are treatable at this time in central and southern Illinois and will be treatable in a week or so in northern Illinois. Typically, these and most other leafminers are not numerous enough to warrant treatment, and plants seem to do well in spite of them. It is common for birch leafminers to be in numbers high enough to warrant treatment in the northernmost row of Illinois counties. If these leafminers are very numerous, acephate (Orthene) or imidacloprid (Merit) should be effective.

Scale crawlers of several species are present at this time and treatable. Before treating, check to make sure that the crawlers are out. They are period-sized insects moving around on the leaves and branches. Double-sticky tape wrapped around a branch captures the crawlers, making it easier to scout for them. **Scurfy scale** appears to be more common recently in Illinois. This white scale is on the trunk and branches of crabapple, maple, alder, hickory, ash, willow, and many other trees. Its purplish red crawlers are treatable now. Heavy infestations kill the tree. **Pine needle scale** should be treatable as brick red crawlers around the state. **Euonymous scale** (bright yellow crawlers) and oystershell scale (gray crawlers) are treatable in central and southern Illinois and should be out as crawlers in northern Illinois later in May. Most contact insecticides are effective against scale crawlers, including insecticidal soap, summer spray oil, and pyrethroid. *(Phil Nixon, Tim Laatsch, phenology information from Bill Sullivan)*

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