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

### Apple Scab Update

As predicted, 2002 is a banner year for apple scab on crabapples. Untreated susceptible varieties are showing symptoms in central Illinois. For details on how and why this occurs, see issue no. 2 of this newsletter.

Recently, we have seen several severe cases of scab on crabapple. Besides the usual scattered lesions and infection along the vein, we saw entire leaves affected and some large, blotchy areas—dark brown rather than the usual greenish brown. We ruled out fire blight, anthracnose, and frogeye leaf spot. All samples were infected with scab fungus, with no other pathogens. The term "sheet scab" is used for these large areas of infection. Affected leaves may drop. Cold-temperature injury may have occurred along with scab, resulting in extensive leaf damage.

Remember, symptoms of scab do not show for 8 to 18 days. If a tree is showing scab now, there is probably not much benefit to spraying. Fungicides mainly protect new growth, and many of the healthy-looking leaves have already been infected. Mark your calendar to spray next spring when new growth starts. Meanwhile, rake and remove fallen leaves and concentrate on watering in periods of extended drought this summer. *(Nancy Pataky)*

### Ash Problems Abound

The Plant Clinic has recently received many samples and calls about ailing ash trees. We see this every year but not always so early. Major possibilities include ash yellows, ash decline, and Verticillium wilt.

Management is going to be similar, so why distinguish among the three? Ultimately, these problems may kill your tree. Then, you may want a replacement. Knowing what killed the tree may help you avoid problems by properly selecting a replacement. If you have no such intentions, remove the dead wood, water in periods of drought lasting 2 weeks, and apply a balanced fertilizer in the fall.

One cause of ash decline is **ash yellows,** a disease mainly infecting white and green ash in the north-central and northeastern United States. It is a problem in Illinois but is hard to quantify because its presence is hard to confirm. Ash yellows is caused by a phytoplasma (formerly, mycoplasma-like organism). These pathogens are somewhat like virus particles, cannot be cultured in a lab, are spread by phloem-feeding insects, and are limited to the phloem tissue of a tree.

A tree shows a loss of vigor for 2 to 10 years before it dies. Symptoms include short internodes and tufting of foliage at branch ends. Leaves become pale green to chlorotic (yellowed) and might develop fall colors prematurely. It might defoliate, with a sparse canopy. Cankers form on branches and trunk, causing twigs and branches to die back. Witches'-broom sprouts might appear on branches but more commonly on the trunk near the ground. Cracks may also appear.

It is rare for an ash tree to recover from ash yellows. Many of the ash trees in our landscapes are green ash. It is likely that this yellows disease is more common than we realize because with green ash only the cankers and stem dieback appear.

**Ash decline** is a term used loosely to refer to various conditions—sometimes ash yellows or even Verticillium wilt; but it often indicates any decline for which no cause is identified. It usually includes branch tip death, defoliation of leaves to give the tree a sparse look, and a slow decline over years. Trees with ash decline may appear to be recovering in spring and then decline in July and August. Often a viral disease is also involved, so leaves may be mottled, thickened, and slightly deformed.

To complicate matters, **Verticillium wilt** on ash also results in cankers and dieback, not the typical vascular discoloration of most *Verticillium*. Refer to *Report on Plant Disease (RPD)* no. 1010 (available in Extension offices and on Extension's Vista Web site). The *Verticillium* fungus can be isolated in labs such as the U of I Plant Clinic. Hundreds of plants may host the *Verticillium* fungus. Also, it lives years in the soil without a plant host. Logically, it follows that replacement plants must be resistant to infection, or the problem will recur. The list of options is small.

Ash yellows is caused by a phytoplasma, a phloem-inhabiting pathogen. It cannot be cultured in the lab on artificial media. Some services that offer specific PCR (polymerase chain reaction) tests can detect phytoplasmas in plant tissues. This service is not offered at the U of I Plant Clinic. I spoke with AGDIA, Inc., a company in Indiana that offers this service; see

**http://www.agdia.com/.** (There are likely other labs that can help.) The cost varies with the number of samples. The procedure is time-consuming and uses expensive equipment; unit costs are lower when multiple samples are run, ranging from $134 to $315. Turnaround time also affects cost. For this test, AGDIA needs live, thick bark from the tree base. It must include phloem tissue and be deep enough to prevent the phloem from drying out. Call them before sending a sample.

Ash decline cannot be confirmed with laboratory isolations because many factors are involved: sometimes *Verticillium*, ash yellows, or a virus, and always some sort of site or environmental stress.

There are no cures for these maladies. Suggested management to slow disease progress includes removing trees with severe dieback, watering trees during extended drought of 2 weeks, and fertilizing in the fall or early spring with a balanced tree fertilizer. Removal of dead limbs may help. *(Nancy Pataky)*

### Juniper Blights

Most gardeners and landscapers are familiar with juniper blight from *Phomopsis*. At this time, however, another, closely related fungus might be the problem: *Kabatina.* It is important to understand the differences between these fungi because *Phomopsis* can be managed, but we have fewer choices with *Kabatina*.

Juniper tip blight, or Phomopsis blight, is the most common disease of Midwest junipers. Most damage occurs on eastern red cedar and on creeping, Rocky Mountain, and savin junipers; we have seen it on arborvitae, Douglas fir, fir, yew, and larch. The newest growth is susceptible, becoming resistant once needles become dark green. Emerging growth is susceptible, but you won't see symptoms for a few weeks.

*Phomopsis* infection occurs on the youngest needles, starting as yellow spots. Shoot tips turn light green, then brown. Homeowners usually dismiss early symptoms as winter burn and do not become concerned until shoot tips brown. A diagnostic feature to help identify this disease and distinguish it from weather scorch is the grayish band at the base of the dead shoot. In this band are pinhead-sized, black fruiting bodies (pycnidia) of the fungus. They are visible to the naked eye or with a hand lens. If the tissue is dry, place it in a plastic bag with a wet paper towel overnight. Fruiting bodies will be easy to see the next day.

Infection by *Phomopsis* can occur on succulent new growth in wet weather. Spores germinate under moderate temperatures (60° to 82°F) and high humidity, within 7 hours of contacting the foliage. The fungus is persistent. If foliage dries before infection occurs, spores do not die; they begin growth again with wet weather. Pycnidia form 3 to 4 weeks later. Watch for this disease soon.

Splashing rain disperses spores. Phomopsis blight may be controlled by pruning and removing infected foliage when the plant is dry and by using preventive fungicides. If replacing plants, use resistant varieties for the easiest long-term control. If replanting is not an option, pruning is important because commonly infection is from the previous year. Prune only dry foliage to avoid spreading spores and to lessen the risk of infection by other fungi. For fungicide recommendations, see the *Illinois Commercial Landscape and Turfgrass Pest Management Handbook* and the *Home, Yard, and Garden Pest Guide*. *Report on Plant Disease (RPD)* no. 622, describes Phomopsis blight and is available at **http://www.ag.uiuc.edu/~vista/horticul.htm.**

Already in 2002, the Plant Clinic has received several samples of Kabatina blight, the other juniper blight. It is caused by a fungus that appears similar to *Phomopsis* unless you look at fruiting bodies with a microscope. The significant difference in these diseases is the time of symptom development. Phomopsis blight occurs on new growth, with infection the same spring. Kabatina blight occurs on last year's needles. It usually follows a wound such as winter injury. You might see it in March to May on "new" growth—actually last year's growth; this year's growth is much lighter in color and emerges in May and June.

The other significant difference is management. Kabatina blight is not clearly understood, and fungicide timing has not been effective. Remove and destroy infected twigs in dry weather. Reports indicate that disease-resistant varieties are in development, so ask for these at your nursery. For information about Kabatina blight, see Sinclair, Lyon, and Johnson's book, *Diseases of Trees and Shrubs. (Nancy Pataky)*

## HORTICULTURE

### Off-colored, Thin, Open Turf

This spring, some turf does not look as good as would be expected, given the cool temperatures and abundant rainfall. Off-colored, thin, open turf seems to be relatively common throughout Illinois. How can these conditions be explained? Most likely, a combination of factors slowed turf growth and development.

First, some turf may be suffering from inadequate nitrogen due to excessive rainfall. When soils are wet, the nitrogen cycle may reverse—making available nitrogen unavailable due to denitrification. Thus, even though a turf may have been fertilized this spring, the nitrogen may not be available for plant use.

Another contributor might be the long periods of overcast skies. Lack of sunlight can affect turf photosynthesis and overall turf growth and appearance. Cooler-than-normal temperatures also reduced turf growth. After turf growth got off to a fast start with warm weather in mid-April, it slowed when air (as well as soil) temperatures cooled. Also, cool-season turf is flowering. Turf in flower becomes stemmy and open as flowering stalks develop and density declines.

Will these conditions persist? Probably not. For instance, as conditions dry, nitrogen in the system may become available. Sunnier, warmer days should enhance turf growth, provided we ease into typical hot, dry summer conditions. When the spent, flowering shoots in the stand start to decompose—if weather conditions normalize—turf should regain the appearance we expect during late spring and early summer.

Unfortunately, a negative outcome of this weather may be reduced turf root development. When soils are waterlogged and soil oxygen limited, turf root growth may be restricted, which may manifest itself in the hotter, drier summer when turfgrasses with modest root systems develop problems related to a lack of available water. Throughout the season, an overall goal should be to use cultural practices that enhance root development and assist turf performance and survival during unfavorable weather conditions. These practices include mowing high, applying balanced fertilizers, and aerifying appropriately. *(Tom Voigt)*

# INSECTS

## Bagworm

Bagworm, *Thyridoteryx ephemeraeformis*, eggs will be hatching in central and southern Illinois, so it is time to minimize damage. Bagworms attack many evergreen and deciduous trees and shrubs (128 plant species), including arborvitae, juniper, spruce, fir, pine, maple, box elder, linden, honey locust, and black locust. Eggs overwinter in old female bags, 1 to 2 inches long and covered with dried foliage from the host. Young caterpillars, or larvae (1/8 to 1/4 inch long), emerge in June and feed on foliage. The caterpillars climb up the tree and spin threads, which they hang from until caught in breezes. The caterpillars float for long distances.

Bagworm eggs will continue to hatch for several weeks. Generally, 2 weeks after eggs hatch, bagworms quit migrating and feed on plant foliage. While feeding, they create a bag or pouch made of interwoven dead foliage, small twigs, and silk. Young caterpillars blend in with plant foliage. Large populations can completely defoliate plants, which may result in death of branches or entire plants. This is especially the case for evergreens, which don't normally put out a flush of new growth following defoliation by bagworms. As the caterpillars increase in size (3/4 to 1 inch long), the bags hang from trees like Christmas ornaments. Caterpillars feed for about 3 months. On some plants, female bags are mainly found at the top, male bags at the bottom, which may make it easier for females to effectively disperse the pheromone to attract males. In August, males pupate within the bags and emerge as winged adults—ugly black moths. It takes about 7 to 10 days for a pupa to become an adult, depending on temperature. Males then fly off to mate with females. Females never develop into winged moths and lack eyes, wings, legs, and antennae, never leaving the bag made during the larval stage; they remain inside bags and produce eggs. There is one generation a year in Illinois.

Management includes removal and/or the use of pest-control materials. If fewer than 30 bags are present, the bags (holding the overwintering eggs) can be removed before egg hatch. Bags should be placed in a plastic container and disposed of. Scout trees and shrubs regularly to assist in timing application of pest-control materials; apply about 2 weeks after hatching starts to allow all the bagworms to hatch and blow around. Apply in mid-June in southern Illinois and late June in central Illinois. Bagworms tend to occur in greater numbers north of I-80 after mild winters.

Pest-control materials for controlling bagworms include cyfluthrin (Tempo), *Bacillus thuringiensis* (Dipel and Thuricide), and spinosad (Conserve). The bacterium *Bacillus thuringiensis* is effective on young caterpillars, but the material must be ingested—so thorough coverage of all plant parts is essential. Spinosad works by contact and ingestion. Research conducted with Clifford Sadof at Purdue University demonstrated that spinosad controls bagworms. Larger bagworms are more difficult to control, and the females feed less as they prepare for reproduction. Thorough coverage of all plant parts is essential, especially the top of trees. Besides the pest-control materials mentioned, research has shown that beneficial nematodes attack bagworms. When sprayed onto the bags, the nematodes infect the bagworms inside.

A sex pheromone, used in traps to lure male moths, may be used to interfere with mating behavior, reducing fertilization. Unfertilized eggs do not hatch.

Bagworms are susceptible to natural enemies, including the ichneumon parasitic wasps, *Itoplectis conquisitor* and *Chirotica thryrifopteryx*. Both wasps attack the pupae; however, bagworms are generally present at damaging levels before the wasps are effective. Parasitism of male bagworms is generally greater than females, as parasitic wasps tend to locate on the bottom of trees. *(Raymond Cloyd)*

## Scouting Watch

The warmer weather of last week is speeding up the insects, so be on the lookout for not only new insects but also some that came out a couple of weeks ago.

Periodical cicada remains active in southern areas of the state where this brood has emerged. Numbers are high in southwestern Illinois in Randolph, Madison, and St. Clair counties. We have reports from Crawford and Lawrence counties in the southeast. Typically, males sing and mate with females for about 2 weeks, males die (causing the singing to stop), and then females lay eggs. As the singing abates, it is time to protect young trees with trunks less than 2 inches in diameter. Wrap the trunks with tree wrap or mesh. If using mesh, let it stand off the trunk an inch or two to avoid the cicadas' laying eggs through the mesh. Females lay eggs for 2 to 3 weeks, so keep protection on at least that long. In heavily infested areas, the ground becomes littered with dead cicadas. Remember, insecticide use may look impressive, but cicadas flying in later are still likely to cause serious trunk injury.

May beetle adults are feeding at night on the leaves of crabapple, oak, ash, and other trees. If you are seeing the edges of leaves eaten away, sometimes to the midvein, with no insect in sight, look at the tree after dark. You may see hundreds of beetles feeding; during the day, they burrow into the soil. The most common species of adult May beetles, or true white grubs, is about 1 inch long, heavy bodied, and reddish brown to dark brown. One species is tan and 1/2 inch long—looking like the adult masked chafers or annual white grubs. We had a likely report of this insect in northeastern Illinois; they occur throughout the state, particularly in southern Illinois. Carbaryl (Sevin), as well as several other labeled insecticides, is effective against this feeding.

Bronze birch borer is still treatable with dimethoate (Cygon), imidacloprid (Merit), and permethrin (Astro, Ambush, Pounce). Birch leafminer is active; treatment may be needed in far northern Illinois, where damage can be severe. Cygon is effective, and Merit should also provide good control. Hawthorn and alder leafminers are also active, but populations are typically too low to merit treatment. Woolly alder aphids and larch adelgids are active in northeastern Illinois. *(Phil Nixon, Jim Fizzell, and Morton Arboretum)*

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