

Number 8 – June 14, 2013

Hawthorn and Apple Mealybug

Hawthorn mealybug is being found in high numbers on cotoneaster in northeastern Illinois. Hawthorn mealybug, *Phenacoccus dearnessi*, is also known as two-circuli mealybug. It feeds on hawthorn, cotoneaster, pyracantha, mountain ash, amelanchier, and other rose family plants.

This mealybug is globular and red, but is covered with white wax so that the red does not show unless the wax is removed. Older nymphs overwinter in cracks in the bark. In the spring, the females move to twigs, being numerous on the undersides. They become fully grown in late May to June. At the same time, the male nymphs that stayed in the bark crevices molt into winged adults. Mating occurs, and the females retain their fertilized eggs which hatch into crawlers which then emerge from their mothers.

These nymphs crawl onto the leaves to feed. In late summer, large numbers of nymphs form aggregations in leaf folds. They move to bark crevices to overwinter in September and October.

The apple mealybug, *Phenacoccus aceris*, is similar in size and appearance, but it has an elevated crest running up the back of the mealybug. This crest is high enough to be easily seen despite the white wax. It feeds on rose family hosts like the hawthorn mealybug but also feeds on other trees and

shrubs including honeysuckle, maple, elm, linden, dogwood, oak, and magnolia. Its life cycle is similar to hawthorn mealybug in that mature females are present and obvious at this time of year.

Control can be obtained on ornamental hosts with systemic insecticides such as imidacloprid (Merit, Xytech, Pointer, Imicide) or dinotefuran (Safari). Trees can be trunk injected and both trees and shrubs can be treated through soil injection. Sprays should also be effective, including imidacloprid, acephate (Orthene), and labeled pyrethroids. Be watchful for crawlers, control will be more effective then. (*Phil Nixon and Jim Fizzell*)

Red Mites

Little red mites are common this year in mulch and damp soil. These mites are bright red with long, obvious red legs. Landscaping crews are probably seeing them and being asked about them by clientele. As the weather warms and the mulch dries, they are moving into buildings. They are a nuisance indoors by their presence, but do not bite humans.

These mites appear to be in the family Trombiculidae, which includes the chigger. Chiggers are one species of predatory mite in this family that feed on mammal fluids as larvae. Chigger larvae are red and about the size of a pinpoint, being almost microscopic. Older stages of chiggers feed

on other mites and do not attack mammals. The larvae of other mites in the family are predatory on other mites.

Mites go through three stages of development. They hatch as six-legged larvae that molt to eight-legged nymphs once they have fed. After feeding and growing, the nymphs molt to eight-legged adults. The use of larvae and nymphs for these stages are familiar as they are terms for immature insect stages but are confusing as nymphs are the immatures of insects with incomplete metamorphosis and larvae are the immatures of insects with complete metamorphosis. A single species of insect does not have both larval and nymphal stages as do single species of mites.

If the mites are numerous in mulch alongside buildings, removing the mulch should reduce the numbers that come indoors. Cracks and crevices, such as along baseboards, can be sprayed with a pyrethroid, such as aerosol flying and crawling insect spray, by the homeowner. If ignored, the mites will likely die within two to three weeks indoors. The drier air indoors, lack of mites to feed upon, and short life cycle of the mites at this time of year will combine to eliminate them. (*Phil Nixon*)

Callery Pear Blights

A year ago, many Callery Pears were showing unsightly symptoms associated with bacterial blast, a disease which caused blighted leaves and shoots throughout the affected tree's canopy. Pictures and more details on the symptoms of this disease can be found in last years newsletter <http://hyg.ipm.illinois.edu/article.php?id=362>.

At this time last spring, my colleagues and I were answering many phone calls and emails regarding this disease.

Unfortunately, we were unable to definitively answer questions on how the affected trees would respond to this disease infection in the following years. Reports of this disease, from previous occurrences, did not describe how the trees responded in the following years. We recommended a wait and see approach, suspecting most trees would show no symptoms the following year. We knew the bacterial pathogen responsible was considered a weak pathogen, and that it likely took advantage of the favorable environment provided by last spring's unusual weather. As a result, we suspected the infection would be halted by warm, dry weather and the tree's natural defense mechanisms. As it turns out, hot and dry conditions defined the summer of 2012. Needless to say, I was anxious to see how the trees would appear this spring.

A year later, many of the Callery pears severely affected in 2012 show no signs of new infection. A few other trees show similar blight symptoms as seen last year; however, new infections are much less severe and are confined to only a few branches. The pictures below are of the same tree and were taken almost one year apart. Close inspection revealed only a few dead branches and leaves still attached from last year as well as some new blighted leaf symptoms. The University of Illinois Plant Clinic cultured tissues from the newly affected leaves on a number of Callery pear samples. This year, the plant clinic has mostly isolated Fire Blight (*Erwinia amylovora*). Though, some samples still tested positive for *Pseudomonas sp.*, the pathogen responsible for Bacterial Blast.

Fire Blight is a difficult disease to control, as there are no effective management options once a tree is infected. Blighted tissues and branches can be pruned out during dormant season. If you can't wait for dormancy, try to prune in an extended dry period and disinfect pruning tools after every cut. The bacterium can spread further down the stem, ahead of the canker. Unfortunately, this means wood should be removed 8-10 inches below the edge of the visible canker.

Chemical options are limited, especially for home growers. Timing of sprays is also critical. Commercial growers should apply copper products in the dormant season and streptomycin at 4-5 day intervals throughout bloom. Fertilization and watering are not recommended. Such practices will promote lush growth, which is more susceptible to infection by the fire blight bacterium. (*Travis Cleveland*)

Holly Decline: Fully Utilizing U of I Extension Resources and the Plant Clinic

As a plant diagnostician, I have quickly learned that there are several different types of homeowner mindsets when it comes to diagnosing and managing their landscape problems. There are some plant problems that can be diagnosed over the phone or via a picture and the U of I Plant Clinic is not needed. However, there are complicated plant issues that do not have an easy diagnosis. I recently solved a problem for a person that moved into a new home and she was consistently having problems with the holly bushes planted in her front landscaping. She had done research, contacted her local Extension, and then was referred to the U of I Plant Clinic. She

submitted several branches that appeared to be yellowing and declining. Unfortunately, the sample only consisted of symptoms and not the plant pathogen clues needed for diagnosis. I suspected the problem was at the base of the plant or below ground. This meant that the Plant Clinic needed a resample(s), pictures, or a site visit to determine if there were fungal cankers involved, injury at the base, improper planting, or root rot.

A site visit confirmed that the holly bushes were declining.

At first glance, I noticed that these bushes did have cankered branches. The branches were taken back to the Plant Clinic lab and were found to be infected with *Botryosphaeria*. This fungus usually infects plants that have been stressed by environmental factors (flooding, drought, freeze/thaw, etc.), site problems (compaction, competition, nutrient imbalance, etc.), or injuries (before or after planting). Infection occurs through wounds. Symptoms usually begin as lesions on the twigs and gradually spread throughout the tree. Cankers (dark sunken areas) will form on infected branches; and vascular tissue beneath the cankers is killed. These cankers may girdle the branches, causing wilting and loss of leaves. We really didn't stop our inspection there, because fungal cankers often signal further stress involved.

Further investigation was done by digging out the mulch/dirt around the base of the plants to check for signs of improper planting.

When looking at the base of the bush, the lower branches were practically underground, I suspected that these bushes had been planted too deeply and

this could cause a gradual decline of the bushes over time. In order to determine if your tree/shrub is planted too deep, you will need to locate the first major root coming off the trunk. It should be at or just below the soil line. A flare of the trunk should be visible above the soil line. The trunk should not be the same width at the soil line as it is 4' up the trunk. It is really a pretty simple concept: roots are below ground and everything else is above the ground. There is not much you can do if an established shrub is found to be planted too deep. You can try to pull back the soil from the base of the shrub.

Most would stop there and be satisfied with a fungal canker and deep planting diagnosis, but there were other red flags that indicated further problems with the roots. This area had been irrigated and holly is susceptible to root rot pathogens, such as *Phytophthora* root rot. The roots of this holly were submitted to the U of I Plant Clinic and tested positive for *Phytophthora* using an Agdia immuno quick strip. Some things that can contribute to *Phytophthora* infection include:

- Compacted or poorly drained soil
- Planting too deep or over mulching
- Water standing in the area for several hours
- One of the shrubs could have been infected when purchased

Phytophthora control in the landscape is mostly comprised of sanitation and good cultural practices. There are fungicides available as a preventative measure, but are mostly used in nurseries and rarely in the landscape. A few things you can do to prevent and manage this disease include:

- Choosing hollies adapted to the local climate

- Purchasing hollies with healthy white roots
- Planting on a raised bed with other shallow rooted shrubs
- Amending beds with pine or hardwood bark
- Fertilizing to maintain vigor

Unfortunately with *Phytophthora*, there is no way to stop the infection once it has started and these shrubs will mostly likely die. However, included in the link below is a fact sheet on *Phytophthora* that includes recommendations on what to plant in a site with a history of this disease: http://www.cals.ncsu.edu/plant/path/activities/societies/ornamental/AG-747_Crown%20Rot.pdf

In conclusion, thanks to the research done by this homeowner, the guidance of the U of I Extension, and the utilization of the U of I Plant Clinic, we were able to use a team approach to get to the “root” of this holly problem. (*Stephanie Porter*)

Invasive Species Spotlight: Hemlock Woolly Adelgid

The hemlock woolly adelgid was first identified in 1924 in the Pacific Northwest and in the 1950's in Richmond, Virginia. Infested areas of eastern and Carolina hemlocks in the eastern United States are increasing in number). To date, this invasive insect has not been found in Illinois. It was discovered in Indiana in [2012](#).

Although the natural growing range of hemlock trees is just to the east of Illinois, these plants are quite adapted to landscape use and are popular in many areas within the state. Hemlocks make interesting trees in the cultivated

landscape. They provide year-round color and soft textures. These insects have spread rapidly through the Appalachians, mostly by wind or carried by migratory birds, mammals, and humans. However, infested nursery stock has also carried the insect into some areas. This is a concern within the state of Illinois.

Adelgids are mostly associated with coniferous trees. Hemlock is the primary host, with spruce being a possible secondary (alternative) host. The adelgid feeds on the sap of these trees, which can deplete its essential fluid and nutrient supplies, and produces saliva which contains toxins harmful to the trees.

These small aphid-like insects are less than 1/16 in long, black in color, and usually covered in a white puffy wax which progressively becomes thicker during their one year life cycle. The wax serves as a barrier to protect them from predators as well as to keep them from drying out during low humidity. They are usually found in great numbers almost covering entire sections of tree branches.

This particular species often undergoes a brief period of dormancy during the heat of the summer but can still be found on the stems of the plant. Adelgids, like many aphids, reproduce parthenogenetically, that is, the entire population is female and undergoes asexual reproduction. It can reproduce in large numbers very quickly. A typical adelgid can produce up to 300 eggs at a time and can reproduce twice in one year. While their populations increase on a tree growth becomes stunted, needles begin to fade and fall off the tree. Within a few years a highly infested tree will perish.

Because the hemlock woolly adelgid has no real natural predators in the eastern

United States, its populations have grown rapidly allowing it to cause large amounts of damage to hemlock stands.

Researchers are investigating the benefits and efficiency of introducing predatory insects into infested areas to serve as a control measure in large forested areas. Other treatments successfully used for individual trees include systemic insecticides, horticultural oils, and insecticidal soaps.

Informative Links on Hemlock Woolly Adelgid:

- [Bugwod Wiki](#)
- [Forest Health Protection Program](#)
- [Forest Service Pest Alert](#)
- [USDA Species Profile](#)
- [Save Our Hemlocks](#)

[Hemlock Woolly Adelgid Webinar from EAB University](#)

If you suspect a hemlock woolly adelgid infestation, please contact Kelly Estes at the Illinois Cooperative Agricultural Pest Survey program at (217)333-1005 or kcook8@illinois.edu. (*Kelly Estes*)

Modified Growing Degree Days (Base 50°F, March 1 through June 14)

Station Location	Actual Temp.	Historical Average (11 year)	One-Week Projection	Two-Week Projection
Freeport	673	658	819	976
St. Charles	685	620	823	972
DeKalb	707	713	857	1018
Monmouth	775	776	927	1086
Peoria	808	819	964	1132
Champaign	871	846	1034	1207
Springfield	921	927	1089	1267
Brownstown	931	998	1102	1283
Belleville	982	1026	1142	1319
Rend Lake	1071	1110	1248	1435
Carbondale	1046	1052	1212	1387
Dixon Springs	1065	1119	1233	1410

Insect development is temperature dependent. We can use [degree days](#) to help predict insect emergence and activity. Home, Yard, and Garden readers can use the links below with the degree day accumulations above to determine what insect pests could be active in their area.

[GDD of Landscape Pests](#)

[GDD of Conifer Pests](#)

Degree day accumulations calculated using the [Illinois IPM Degree-Day Calculator](#) (a project by the University Of Illinois Department Of Crop Sciences and the Illinois Water Survey). (*Kelly Estes*)