

Number 4 - May 23, 2017

### **Fire Blight vs. Bacterial Blast**

We're beginning to see symptoms of fire blight in central Illinois. The University of Kentucky Extension service has been reporting high risk of fire blight this spring, so we were expecting to see symptoms show up sooner rather than later. The Plant Clinic received the first two samples of suspect fire blight earlier this week, one pear, the other crabapple.

Fire blight is a bacterial disease that only affects plants in the Rosacea family. Pears, apples, crabapples, hawthorn, quince, and serviceberry are the most common hosts in Illinois. The pathogen, *Erwinia amylovora*, is favored by warm, wet weather during blossoming. Characteristic symptoms include blighted flower clusters, "shepherd's crooks" at the ends of branches, and sunken cankers along infected branches.

The disease decreases the aesthetic value and fruit production of infected trees, and may be lethal to highly susceptible varieties. Management consists of pruning out infected branches 4-6 inches below the cankers and sanitizing pruners between every cut. Avoid stimulating new growth (either through heavy pruning, or high nitrogen fertilizer applications) as succulent new growth is particularly susceptible to infection. An application of copper sulfate or streptomycin sulfate in early spring helps protect blossoms, which are the initial entry point for the pathogen.

Bacterial blast is caused by the bacterium *Pseudomonas syringae*. This disease is of minor concern as it only causes injury during freezing or near-freezing conditions. However, it produces similar symptoms to fire blight. Therefore, we recommend laboratory testing to confirm the diagnosis. Management for bacterial blast focuses on improving tree vitality, as the pathogen rarely causes lasting damage to healthy trees. (*Diane Plewa*)

### **White Pine Decline**

Several eastern white pine samples have made their way to the U of I Plant Clinic this spring. The samples all arrived with similar descriptions of overall symptoms, "Dying trees with thinning, yellowing and browning needles." These samples are always somewhat frustrating because they usually lack any pathogens to explain the symptoms. Incubated needles and branches rarely produce any diagnostic clues. The lack of pathogen(s) leads us to attribute the symptoms to white pine decline, a condition caused by an environmental or abiotic stress.

What does white pine decline look like? In some instances, a single tree may be the only one affected out of a group. Trees have yellowish-green or browning needles that drop prematurely resulting in an overall thinned canopy.

Bark on branches and smaller limbs appears shriveled or wrinkled and will sometimes exude sap. The U of I Plant Clinic rarely gets the opportunity to view the root systems of landscape plants, especially large trees. Those who have had the opportunity to examine roots have reported that white pine decline affected trees have sparse root systems with few fine, white roots compared to healthy trees.

White pine decline is believed to be the result of environmental and site stress, especially for trees planted outside species' requirements. White pine performs best on moist, sandy loam soils. Though considered an adaptable species, they seem to grow with intermittent success in Illinois. Many of the symptomatic trees were growing on sites with heavy clay soils, often with high soil pH. An overall trend toward a wetter spring climate may also be a contributing factor. Excessive rains saturate soils resulting in a lack of oxygen and impaired root development. Further damage occurs when the tree's root system is unable to tolerate extended dry spells.

Decline is difficult to reverse once it begins. Although there is no disease organism that will move to other trees, declining and adjacent healthy white pines are commonly attacked by pine engraver. This bark beetle carries blue stain fungi, which kills healthy white pines. More information is at <http://hyg.ipm.illinois.edu/article.php?id=111>.

Isolated trees do not result in pine engraver attack of healthy trees, and immediate removal is not necessary. Watering during dry periods can help, along with mulching with 3–4 inches of a natural

mulch over the root system. Fertilizing with an acidic fertilizer specifically packaged for pines or acid-loving plants may also help. However, prevention is by far the best way to manage white pine decline. Locate white pines on sites well suited to the species. (*Travis Cleveland*)

## **Rabbit Damage**

Peter Rabbit looks so innocent with his little fluffy tail wiggling back and forth. Not to mention Flopsy, Mopsy and Cottontail. But there is garden evil imbedded in his DNA.

Rabbits are gnawers, loving to eat branches and bark (during the winter) and tender plants during the spring and summer. They'll munch grass down to the crowns, eat developing peony shoots, vegetable transplants, and some bulbous plants like lilies and tulips. They'll occasionally munch on hostas, but most severe hosta damage is usually from deer, which will devour the blade and leave the leaf petiole. Angular cuts or chewing is an indicator of rabbit damage. When feeding on woody twigs close to the ground, their angled cuts looks similar to those made by pruners.

Fruit plants are fair game during winter months, as are most shrubs including barberries, which goes to show the plant's barbs don't really protect the plant from hungry rabbits. Thin barked young trees are also fair game. Rabbits will feed close to the soil surface, and proceed higher on the plant by standing on their hind legs, reaching for the tenderer and less "bark-ier" limbs and buds. Rabbits have the ability to stand on snow, which wasn't a problem in winter 2016-2017 but has been in previous

years. Damage usually appears as stripped bark or gnawing on the woody tissue. Bark damage can kill the plant; damage from eating the stems from multi-stemmed shrubs tends to be minimal.

A rabbit may breed up to 5 times per year depending on the environment, with the typical litter consisting of 3 to 6 little ones. If the food source is plentiful, the population explodes.

Exclusion is the best control. A good fence, with at least 6" buried below ground to prevent the rabbit from digging or crawling under, is recommended. Chicken wire or hardware cloth cylinders can be erected around desired plants, again making sure to bury 6". Leave several inches between the wire and the trunk of any tree to prevent the rabbit's teeth from reaching the wood.

Repellents such as predator urines, capsaicin (pepper) extracts or castor oil will provide some relief, but you must continue to reapply after rains.

Illinois law prohibits trapping or hunting rabbits out-of-season without permission from the IL Department of Natural Resources. (*David Robson*)

### **Squirrel Damage**

Squirrels are often blamed for damage that may be caused by other animals, particularly rabbits and deer. As day feeders, you should be able to see the squirrels do the damage, particularly to ground plants.

Squirrels are diggers, and will eat bulbs (mainly tulips and crocus, but not so much daffodils) or dig up plants in order to use the loosened soil to store their cache of nuts and other food. They aren't commonly

known to feed on flowers and vegetables unless other food sources are limited.

They gnaw on wood, from branches and limbs to wood house decks and railings. Damage to trees tends to be in the upper branches, where bark can be stripped from young twigs and limbs, with some limbs gnawed through to make part of their nests. The height of the damage distinguishes it from rabbit damage.

It is common during the spring or summer for a squirrel to decide to clip off the tips of tree branches. The ground will become littered with twigs about 8" long, typically with a few leaves attached. After a few days, 100 or more twigs may litter the ground. The cuts will be angled, looking similar to those made by pruners. There seems to be no plausible reason for this, but squirrels commonly cause damage with no apparent purpose.

More damage will come from squirrel digging, particularly in landscape beds and containers. This can be prevented by putting in larger rocks, pieces of chicken wire or sticks laid horizontally. Some have success with bamboo skewers (used for barbecues) placed vertically with the points up. Essentially, you are limiting their digging or making it more difficult.

Capsaicin (pepper) sprays or flakes can be used to deter squirrels, but must be applied after rains or heavy irrigations.

Exclusion really isn't an option. There are more than enough squirrels in a neighborhood and nature abhors a vacuum. Trapping and removing the squirrels only leaves the area welcoming for another squirrel. (*David Robson*)

## May Beetles

Adult May beetles are present throughout the state. These are 1-inch long, stocky beetles that are active at night. Many species occur in Illinois, all in the scarab genus, *Phyllophaga*. As such, they vary in color and somewhat in size, being some shade of brown, from tan through dark chocolate brown. The ones that are out now are reddish brown.

These insects emerged from the pupal stage last fall and spent the winter underground as adult beetles. These beetles are sometimes found when planting trees or tilling the soil in the fall and spring. As their name indicates, they emerge in May and are quite common, being strongly attracted to lights at night. They spend the day burrowed into the soil of turf areas, emerging at night to feed, mate, and lay eggs.

May beetle adults feed primarily on tree leaves, eating at leaf margins, sometimes to the midvein. Damaged leaves are commonly seen on crabapple, ash, oak, and other broad-leaved trees in the spring. Damage can be puzzling because no insects are present during the day. They start to show up on the tree foliage at about dusk, and I have found them numerous times feeding in high numbers on the foliage at about 10:30 p.m.

These adults are easily controlled with a spray of carbaryl (Sevin), various pyrethroids, and other labeled insecticides. Typically, most of these beetles are engaged in sex while the female continues to eat the tree foliage. Mated females fly to turf and other areas, burrowing down a couple of inches into the soil to lay their eggs. The larvae are known as true white grubs and have broad feeding habits.

The larvae feed on dead organic matter, as well as roots. It is common for them to be found in mulched areas, such as flower beds, where they typically cause no serious harm to the plants. They also feed on the roots of vegetables, including carrots, potatoes, and sweet potatoes. This is so common that it is recommended to avoid planting root vegetables for 3 years in new garden areas that were previously in turf. They also feed heavily on turfgrass roots, causing turf to wilt and turn brown, with the turf being easily pulled back like a carpet due to the loss of roots.

Life cycles are quite varied, with this genus containing the 3-year white grub, named for the length of its life cycle. Species with 3-year life cycles commonly take 4 or more years to complete their life cycles under adverse food or climate conditions. However, there are species in this genus that have 1- and 2-year life cycles.

One common *Phyllophaga* species in southern Illinois has a 1-year life cycle and emerges as an adult in spring. There were reports of this insect about a month ago. Unlike most in the genus, the adult is tan and only about 1/2 inch long. Landscapers and other turf professionals see these beetles and think that the masked chafers have emerged early. Masked chafer adult beetles are named for their black face, which this true white grub species does not have.

Eggs hatch 2 to 3 weeks after the beetles die off. Due to the adult beetles' feeding on tree foliage, the adults are present for 3 to 4 weeks. The eggs hatch into white grubs that feed through the balance of the summer and are easily controlled in this first year with insecticides used to control annual white grub species, such as Japanese beetle and masked chafers.

In the 3-year life cycle, larvae descend deeper into the soil to overwinter, rise to the turf root zone to feed during the next growing season, descend into the soil to spend a second winter, and rise to feed during their third spring. They pupate and emerge as adults underground during this third growing season.

These second- and third-year true white grubs are commonly encountered by turf professionals as large individuals at times when Japanese beetle and masked chafer grubs should not be present or should still be small. It is important in these cases to check the raster pattern of the grub for identification. True white grub larvae have two parallel rows of thick hairs, or setae, on the underside of the last abdominal segment. They also tend to grow larger, with third-year larvae approaching 1-1/2 inches in length.

True white grubs tend to survive better in drier soil conditions than do Japanese beetle and masked chafer grubs. For that reason, they frequently appear in nonirrigated turf that is commonly not treated for the annual-life-cycle grub species. Turf damage tends to be spotty because, although May beetle grubs can be found in small numbers in many turf areas, damaging numbers are uncommon. When turf damage does occur, the grubs are typically too large for effective control by typical grub insecticides. Insecticidal nematodes, particularly *Heterorhabditis bacteriophora*, provide the most effective control. (Phil Nixon)

### Neonicotinoids and Milkweeds

A milkweed plant purchased on April 27, 2017 at a home improvement box store in the New Orleans, Louisiana area con-

tained a tag in the pot stating that it had been treated with a neonicotinoid insecticide. The person who bought the plant returned to the store and found approximately 100 more milkweeds with the same tag inserted in their pots. Her finding was reported to National Garden Clubs who contacted Home Depot on May 1. On May 2, a Home Depot official reported back that the plants were labeled in error, that they were not treated with neonicotinoids.

Prior to May 2, National Garden Clubs communicated with their state associations about the situation. Garden Clubs of Illinois posted this alert in the milkweed portion of their web site. National Garden Clubs is planning to release a more complete statement on June 1, indicating that the plants were mislabeled.

Garden center plants can be treated with several products which often are listed on the plant's tag. Check tags thoroughly. (Phil Nixon)

### Modified Growing Degree Days (Base 50°F, March 1 through May 18)

Station Location	Actual Total	Historical Average (11 year)	One-Week Projection	Two-Week Projection
Freeport	378	348	454	541
St. Charles	370	333	440	520
DeKalb	389	384	472	565
Monmouth	560	435	645	741
Peoria	646	470	732	831
Champaign	564	476	657	762
Springfield	564	476	657	762
Perry	733	506	824	927
Brownstown	783	587	890	1009
Belleville	814	616	925	1046
Rend Lake	870	668	987	1116
Carbondale	827	632	938	1062
Dixon Springs	917	684	1033	1161

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 Department of Crop Sciences at the University of Illinois and the Illinois Water Survey).  
(*Kelly Estes*)