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Borer Increase Likely After Drought

Insect borers are likely to be more numerous than normal for the next several years. During extended dry conditions, trees lose root mass, resulting in a reduction of sap flow and dieback of branches. The reduced sap flow provides opportunities for borer attack that would not be present otherwise. This increase is likely to be noticeable next year and will build for about three years. Borer infestations are likely to fall over the following two years until reaching normal levels around 2018.

Tree dieback and death due to the drought will be more acceptable to clientele over the next couple of years than later. Many trees will take three years to die, and some will hang on until five years after the drought. These later deaths and accompanying borer attacks will be difficult for clientele to understand and accept. In your newsletters or other communications with your clientele, bring up these possibilities occasionally over the next few years so that it comes as less of a surprise.

Insect borer adults are tuned into aromatic chemicals released by trees with dieback. Generally, this comes from the portion of the tree with storm injury, other limb breakage, frost cracking, or pruning wounds. Trees dying from old age produce similar compounds. These chemicals indicate reduced sap flow. Eggs laid into niches made by adult beetle borers or other small wounds on healthy trees are likely to be washed out of the wound by strong sap flow. Eggs managing to stay in the niche or wound will hatch into larvae that will likely to be drowned in sap or be crushed by internal sap pressure. While these natural defense mechanisms by the tree are effective in eliminating borers, it is also in the borers' best interests to not expend resources and energy by laying eggs into unsuitable hosts. Selecting trees or parts of trees that are dying are a better option for the adult borers.

Bark beetle infestations will increase along other beetle borers. Flatheaded appletree borer attacks crabapple, hawthorn, serviceberry, mountain ash, and ornamental pears, plums, and cherries. It also attacks maple, ash, and a variety of other trees. Two-lined chestnut borer, another flatheaded borer, attacks declining chestnuts, oaks, and beeches. Redheaded ash borer is a roundheaded borer that attacks many tree species in addition to ash. Other, more specific roundheaded borers include linden borer in linden, cottonwood borer in poplars and cottonwood, and ash and privet borer in ash and privet.

Moth borers will increase in numbers, particularly ash/lilac borer, dogwood borer, and carpenterworm. Dogwood

borer and carpenterworm attack a wide range of hosts. (*Phil Nixon*)

Scale Increase Due to Drought

There are a couple of scale species that become much more numerous after droughts and other tree-weakening events. European fruit lecanium scale becomes very common on stressed trees and remains in high numbers for several years until the tree recovers. It is common on maples, oaks, hazlenuts, crabapples, and many other tree species. Large infestations produce high amounts of honeydew such that it feels like it's raining under the tree.

Mature lecanium scales appear similar to small army helmets or turtle shells. They are round, slightly-raised, brown domes about one-quarter inch in diameter. They produce pink crawlers that emerge in mid-June in central Illinois when Queen Anne's lace is blooming. Being soft scales, they are controlled with dormant oil sprays.

Scurfy scale becomes more common after droughts as well. It attacks many hosts including hawthorn, quince, crabapple, firethorn, mountain ash, horsechestnut, elm, hickory, maple, willow, and dogwood. It is grayish-white and about one-eighth inch long. When numerous, it coats trunks and branches, making them appear to have white bark. Purple crawlers hatch in spring when bridal wreath spirea, *Spirea X van houttei*, is in early bloom. Crawler sprays are most effective at that time. Being an armored scale that overwinters in the egg stage, it is not very susceptible to dormant oil sprays and does not produce honeydew. (*Phil Nixon*)

***Phytophthora* on Rhododendron, but on the Leaves, not the Roots**

A rhododendron sample was recently submitted to the U of I Plant Clinic by an Illinois Master Gardener. She suspected that her rhododendrons, just recently purchased from a nursery, were infected with *Phytophthora*. We normally think of *Phytophthora* as a root rot pathogen, but in this instance, the foliage was infected. The symptomatic leaf tissue was first tested for the presence of *Phytophthora* sp. by using an Agdia ELISA quick strip test at the U of I Plant Clinic. The sample tested positive for the presence of *Phytophthora*.

This Master Gardener had done her homework and knew the rhododendron could be infected with the dreaded, invasive pathogen, *Phytophthora ramorum*, the pathogen that causes Sudden Oak Death (SOD) (this pathogen has not yet been established in Illinois). The U of I Plant Clinic followed proper Regulatory protocol and submitted this sample for further PCR testing to determine if the sample was positive for *Phytophthora ramorum*. Luckily, the sample tested negative for *Phytophthora ramorum*, If you are interested in learning more about Sudden Oak Death (SOD), you are welcome to log in and take part in the Master Gardener SOD training module at the following link: http://mg.cropsci.illinois.edu/

Phytophthora dieback is a distinct disease phase that infects azaleas and rhododendrons. The disease is thought to occur when disease spores splash on foliage, which causes lesions on leaves and shoots, but not necessarily on roots. This disease can cause epidemics in nurseries due to (overhead?) sprinkler

irrigation, increased uses of nitrogen (produces succulent growth), and susceptible cultivars.

Symptoms of *Phytophthora* dieback first appear 1 to 2 days after infection as circular lesions on young leaves. The lesions eventually become water soaked and turn a chocolate brown color. Within 3 to 5 days after infection, the lesions expand causing the tissue to dry out and become brittle. The infected young leaves may curl inward, but remain attached to the stem. Entire shoot tips can eventually become necrotic and die after infection. Young plants may die, but in older plants, the pathogen may spread from infected stem tissue though petioles to colonize mature leaves. Usually, older leaves have resistance against *Phytophthora* infection; however in certain cultivars, older leaves have been found to be susceptible.

This disease can develop on containerized plants during hot, wet weather. Cloudy weather after heavy rainfall is an ideal condition for disease infection. A film of water on foliage is needed for infection of *Phytophthora* to occur. It is thought that splashing water moves zoospores or sporangia, spores of this disease, onto the current season's foliage from the ground or soil surface.

Control Practices

- Avoid overhead watering from sprinklers in the early morning or late afternoon in order to reduce leaf wetness.
- Pruning and destroying disease material, may help to avoid further disease spread.
- Avoid applying excess amounts of nitrogen fertilizer, which can promote high amounts of young, succulent growth, which can be more susceptible to infection.
- Most rhododendron hybrids and native rhododendron (*R. maximum*) are susceptible to *Phytophthora* dieback.
- Several fungicides have proven useful in the PREVENTION of *Phytophthora* dieback of rhododendrons. Some fungicides available to homeowners are chlorothalonil and mancozeb. These can be used as foliar sprays and are effective for various lengths of time in the prevention of shoot infection. Please read and follow label directions and be sure to get good coverage of new growth and the lower surface of leaves.
- No single control method mentioned listed above will prevent *Phytophthora* dieback. Be sure to use an integrated approach in the prevention of this disease.

(*Stephanie Porter*)

Fairy Rings on Turf

Heavy rains over the past week have promoted the growth of mushrooms in landscapes across Illinois. On turf, mushrooms can form in distinct circles or arcs, a condition referred to as “fairy rings.” Fairy rings obtained their name from old folklore that theorized the rings to be areas where elves, pixies, or fairies danced and played.

Three types of fairy rings appear on turf. The diameter of the rings can range from a few inches to 50 feet or more in diameter. The rings reappear from year

to year and continue to widen as the fungus expands below ground.

Type 1 fairy rings appear as ringed areas or brown, dead or dormant grass. The dead or dormant grass is likely caused by the dense subsurface layer of fungal growth that creates a hydrophobic soil condition and impedes water movement in to the soil. Some other theories suggest the subsurface fungal growth depletes nutrients essential for plant growth, and may even produce toxic levels of ammonia or hydrogen cyanide that kill the grass. Type 1 fairy rings commonly occur with an area of lush dark-green growth bordering the outer margin of the killed/dormant ring. The lush, dark-green grass of the fairy ring is the result of an increased amount of nitrogen made available to the grass by the fungus as it breaks down organic matter in the thatch and soil. Mushrooms may or may not appear with a type 1 fairy ring.

Type 2 fairy rings appear as circles or arcs or lush dark green growth. As with a type 1 fairy ring, the lush growth is also the result of increased available nitrogen produced as the fungus breaks down organic matter. Type 2 fairy rings may appear with or without mushrooms present. This type of fairy ring does not result in dead or dormant turf.

Type 3 fairy rings appear as circles or arcs of mushrooms with no visible effect on the turf.

Of the three types of fairy rings, the type 1 ring is the most unsightly and difficult to control. The soil in the affected area can become almost impervious to water. Areas of killed turf are difficult to re-establish and are often invaded by weeds. Fungicide applications have provided mixed results in suppressing fairy ring development. The fungicides need to be applied with a soil surfactant at a time when the fungus is actively growing. Symptoms can be “masked” by deep watering. Core aerification and the use of wetting agents will help the water move deeper into the soil.

Type 2 and type 3 fairy rings are easier to mask. Fertilizing the areas around a type 2 fairy ring will promote lush green growth of the turf surrounding the ring. The fairy ring will essentially blend in with the fertilized turf. Mushrooms with associated with the fairy rings can be removed by mowing or raking. Neither of these methods will suppress nor weaken fairy ring fungus. However, they are cost effective and will reduce the aesthetic damage caused by the fairy ring. Other control techniques, such as soil excavation and fumigation are expensive, labor intensive, and usually cost prohibitive.

Site conditions that promote fairy ring fungi can be avoided. Before planting a new turf area, remove tree stumps and large roots, construction lumber, and other large pieces of organic matter from which these fungi obtain nutrients. (*Travis Cleveland*)