

FOREST HEALTH



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Wetter Weather? Expect more Fungal Diseases.

by Ellen Crocker

It's no secret that fungi love wet weather! But did you know that high moisture levels can also promote fungal disease on your trees? Future climate projections for Kentucky suggest that we will experience warmer, wetter weather in the future, which will likely promote various diseases. Most of these are minor leaf issues that can look bad but typically aren't considered serious threats. However, some of these diseases can stress trees and may present bigger threats over time. Here are some current tree diseases that are promoted by wet weather:

Anthracnose:

If you are noticing brown, crumpled leaves and thinning tree canopies in the late spring, anthracnose may be the culprit. This native fungal disease makes its annual appearance when humidity is high. In the past, anthracnose was considered only a minor issue for trees in our region



Above: Thinned canopy of a sycamore with severe anthracnose. Left: Shoot dieback symptoms of anthracnose in sycamore.

Photos courtesy: Ellen Crocker, University of Kentucky

and damage was typically restricted to the spring due to the wet conditions then. However, this disease appears to be becoming more problematic, with wetter weather creating conditions that favor disease for more of the year.

Species that are highly susceptible to anthracnose, like sycamore, seem to be experiencing disease of

greater severity for a longer period of time. Because of anthracnose, sycamore canopies may be very thin in the late spring and early summer. While trees tend to drop affected leaves and put out a new flush in the summer if needed, this damage likely stresses trees. In addition, anthracnose in sycamore, dogwood, and several other species can infect twigs and branches as well as leaves. This causes cankers and shoot dieback and is more harmful to the health of the tree long-term.

In most cases, no management is needed for anthracnose and trees will recover. However, in severe cases (or for landscape trees) there are a range of management options, including fungicide treatments, pruning to increase air circulation, and pruning out branches with cankers.

Other fungal leaf issues:

There are many other foliar issues that are promoted by wet weather. While these might look bad, most are minor problems and not serious threats to the health of trees. It is important to monitor trees and distinguish these from more harmful threats.



Maple leaf blister looks bad but isn't a major concern.

Photo courtesy: Alicyn Ryan, University of Florida, Bugwood.org



Photo credit: Steven Katovich, Bugwood.org



Photo courtesy: Ellen Crocker

Left: Maple tar spot increases under wet conditions but doesn't harm trees. Right: Many different rust species can be promoted by wet weather.

Root rot:

There are a wide range of different root rots (mostly caused by fungi) that can impact trees. Although you typically can't see them, since the damage they cause is underground or under tree bark, you may notice dieback in a tree's canopy and reduced vigor. Most of the time, healthy trees can defend themselves and outgrow damage. But, extensive decay can result in a stressed tree and an increased likelihood of tree failure.

There are many different factors that impact root rot severity including species, damage to trees, site condition, and weather. If a tree is growing in a spot that holds moisture, it may experience more problems. Trees growing in sites that previously were drier, now may need to contend with increased root rot.

There is no treatment that can undo the damage caused by rots so preventing damage to begin with is the best management strategy. Wounding or compaction to a tree's root zone invites future issues so care should be taken to protect remaining trees from damage during harvests or other management. In addition, any actions that promote general tree health will better enable the tree to defend itself.

Some common rots include:

- **Armillaria root rot:** Also called shoestring root rot because of the string like threads this fungus makes as it grows through wood. This fungus produces mushrooms in the fall called "honey mushrooms"
- **Ganoderma:** There are several different species of Ganoderma fungi that can cause decay to the roots and base of trees, stressing trees, decreasing their value, and reducing their structural integrity. Hard, shelf-like mushrooms are occasionally produced by the fungus.



Ganoderma fungi can cause decay to the roots or base of trees.

Photo courtesy: Ellen Crocker

Decline:

Decline is a general term used for the progressive dieback and eventual death of trees due to many compounding stressors. This includes a combination of predisposing issues (things like site, tree age, and species), inciting stress triggers (things like drought), and contributing factors that can act as a nail-in-the-coffin for stressed trees. While tree decline isn't new, our changing weather seems to be causing new patterns of decline throughout the state. In some places, the increased precipitation has likely changed site conditions enough that trees, previously growing in more ideal locations, are now more off-site. For example, soils in some sites



Bleeding cankers like this one can be caused by many different pathogens.

Photo courtesy: Ellen Crocker, University of Kentucky

may be wetter now than they were when trees first started growing there years ago. If this change doesn't match up with the needs of the tree, this can result in a tree that is always stressed, susceptible to other problems, and less adapted to the site.

Bleeding cankers:

Have you noticed dark patches on your tree's trunk or branches with sap oozing out in spots? These could be bleeding cankers, another issue that can be promoted by wet weather. Under the bark, the pathogen is causing a dead patch (canker), killing the bark and outer wood tissue. Bleeding cankers can cause decline over time, stressing trees and making them susceptible to other issues.

Several species can cause bleeding cankers in trees, particularly water molds in the group *Phytophthora*. The spores that spread *Phytophthora* cankers live in the soil and thrive in wet environments, spreading up to the trunk of trees in splashing rainwater. While there are treatment options for bleeding cankers, these typically are not feasible in forest settings due to cost but may be a good option for landscape trees.

In conclusion:

Our changing climate will likely result in a wide range of changes to the health of our trees, both direct (increased moisture and warmer temperatures) and indirect (like the diseases mentioned here). How this plays out will depend on many things. For example, many of the fungal leaf diseases mentioned here are promoted by cool wet spring weather. But this may not be what we experience in the future if instead increased precipitation comes in fewer major weather event. There's no crystal ball for predicting what the future has in store but promoting the health of your trees in general will help them defend themselves against future stresses.

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