



College of Agriculture,
Food and Environment
Cooperative Extension Service

Kentucky Nursery LISTSERV Bulletin

University of Kentucky Nursery Crops Team

End of July 2019

Cooler and Wetter than Average Start to August

There is an increased probability of the first two weeks in August having cooler and wetter than average weather on the whole. This trend is true across the commonwealth as well as the Midwest and Upper South as a whole.

Looking further ahead towards the latter half of August and into September, the longest range outlooks give indicate typical seasonal weather for the end of August.

The longest range forecasts still show a somewhat warmer than average September and October on the horizon for the southeastern part of Kentucky.

See [UKAg Weather's Long Range Outlooks](#) for a variety of forecasts of temperature and precipitation probabilities.

Nursery Crops Extension & Research Team

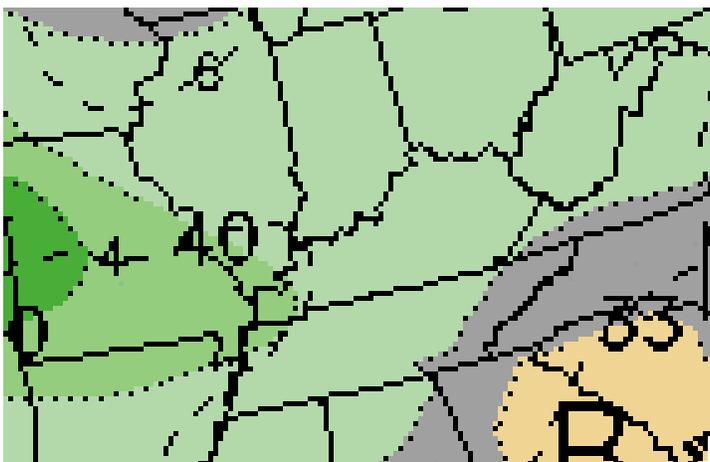
Winston Dunwell
Extension Professor
270.365.7541 x209

Dewayne Ingram
Extension Professor
859.257.8903

Joshua Kight
Extension Associate
859.257.0037

<https://NCER.ca.uky.edu/>

Joshua Knight, Managing Editor



Aug 07-13, Precipitation Probability
Image: NOAA Climate.gov, 30 JUL 2019

- **Armillaria Root Rot — A Threat to Stressed Landscape Trees**
- **Spruce Dieback — Needle Cast Diseases May Be To Blame**
- **Water Stress in the Nursery**

Armillaria Root Rot: A Threat to Stressed Landscape Trees

Kim Leonberger, Extension Associate, Plant Pathology
Nicole Ward-Gauthier, Extension Professor, Plant Pathology

Tree stress can come from numerous factors including weather, mechanical damage, insects, or poor growing conditions. These stresses make plants more susceptible to the plant disease Armillaria root rot. This fungal disease is also known as shoestring root rot, mushroom root rot, or oak root rot. Once symptoms are observed, damage is often too severe to save infected trees, as no effective management strategies are available.

Armillaria Root Rot Facts

- Symptoms include dieback and decline. Loose or decayed bark near the base of the tree is often observed. When bark is peeled back, creamy white fans of fungal mycelium (thread-like structures) or dark brown rhizomorphs (thick strands of fungal mycelium) (Figure 1) may be present. In fall, distinct “honey” mushrooms are produced at the base of the tree or along decaying roots (Figure 2).
- The fungal pathogen overwinters in decaying wood and can persist for many years on this plant material in soil.
- Common hosts include oaks, maples, pines, hornbeams, taxus, and fruit trees.
- Trees exposed to stressful growing conditions such as drought, winter injury, insect defoliation or borers, mechanical injuries, or construction damage are more likely to become infected.
- Caused by multiple species of the fungus Armillaria.

Disease Prevention Options:

- Consider removal of infected trees, roots, and stumps.
- Maintain plant health with proper nutrition.
- Select well-drained planting sites that are high in organic matter.
- Minimize stress from environmental factors.
- If site has a history of Armillaria root rot, avoid susceptible tree species.

Additional Information

Shoestring Root Rot- A Cause of Tree and Shrub Decline ([PPFS-OR-W-05](#))

University of Kentucky Plant Pathology Extension Publications ([Website](#))



Figure 1. Dark brown rhizomorphs (or shoestrings) may be observed under the bark of trees infected with *Armillaria* root rot.

Photo: Cheryl Kaiser, University of Kentucky



Figure 2: “Honey” mushrooms may be present at the base of infected trees or along decaying roots, especially during rainy seasons

Photo: Homeowner, Kenton County KY

Spruce Dieback—Needle Cast Diseases May Be To Blame

Nicole Ward Gauthier, Extension Professor, Plant Pathology
Kim Leonberger, Extension Associate, Plant Pathology

Blue spruce and Norway spruce are popular landscape plants in Kentucky. However, many factors can cause spruce trees to cast (shed) needles. Casting may be the result of environmental stresses (heavy soil, poor drainage) or fungal diseases. In Kentucky, *Rhizosphaera* needle cast is the most common disease of spruce. This disease causes needle drop on lower branches, resulting in a distinct thinned appearance. *Stigmina* needle cast is a less common disease of spruce, but also causes symptoms similar to *Rhizosphaera* needle cast. Management options for both diseases include reduction of plant stress, good sanitation practices, and timely use of fungicides.

Rhizosphaera and Stigmina Needle Cast Facts

- Symptoms become evident in summer when needles on lower branches turn purplish or brown (Figure 1). Needles fall within a few weeks and lower limbs are left bare (Figure 2).
- In order to determine whether *Rhizosphaera* or *Stigmina* needle cast is present, infected needles should be inspected with a hand lens. Look closely for the type of fungal fruiting body emerging from stomata (pores in needles) to confirm diagnosis.
- - ⇒ **Rhizosphaera needle cast** - Small, dark fruiting bodies (pycnidia) appear as tiny raised, grayish bumps topped with white waxy caps (Figure 3). While most easily recognized with a hand lens, they may also be visible with the naked eye.
 - ⇒ **Stigmina needle cast** - Fungal fruiting structures (sporodochia) appear as tiny, brown to black, brush-like tufts emerging from needles (Figure 4).
- ⇒
 - *Rhizosphaera* needle cast is caused by the fungus *Rhizosphaera kalkhoffii*. *Stigmina* needle cast is caused by multiple *Stigmina* species.
 - Spread by water splash or wind-driven rain; moisture is needed for infection.
 - If defoliation occurs over 3 to 4 consecutive years, branch death is likely.



Figure 1. Needles infected with *Rhizosphaera* turn purplish brown during summer.

Photo: Julie Beale, University of Kentucky



Figure 3. Needle drop and thinning of lower canopy are classic symptoms of *Rhizosphaera* needle cast in spruce.

Photo: Minnesota Dept. of Natural Resources Archive

Continued on next page...

Management Options

- Stressed trees are more susceptible to infection than healthy plants, so take steps to maintain plant vigor.
- Properly space plants to improve air circulation, thereby encouraging rapid drying of needles.
- Practice good sanitation habits.
- Homeowners can apply fungicides that contain chlorothalonil, copper, or mancozeb during needle emergence (mid-April). During rainy seasons or in plantings with a history of disease, fungicides may be applied 2 consecutive years during spring when fungi are most active.



Figure 3. *Rhizosphaera pycnidia* appear as tiny raised, grayish bumps topped with white waxy caps.

Photo: Paul Bachi, University of Kentucky



Figure 4. Tiny, brown to black, brush-like tufts emerge from infected needles through *Stigmata* infected stomata.

Photo: Paul Bachi, University of Kentucky

Additional Information

- Spruce Diseases in Kentucky ([PPFS-OR-W-24](#))
- Homeowner's Guide to Fungicides ([PPFS-GEN-07](#))
- Landscape Sanitation ([PPFS-GEN-04](#))

Water Stress in the Nursery

Joshua Kight, Extension Associate, Nursery Crops

Although most field nurseries do not routinely irrigate, growers should be prepared to irrigate during extended dry periods to avoid loss in plant quality and decreased growth. Following several months with below average temperatures and above average rain fall, the month of July has seen an increase in temperature, humidity, and extended periods without rain. An extended dry period with above 90 F temperatures, could result in water stress.

Water stress can be more serious in a container nursery than a field production nursery, because a container is more reliant on regular irrigation. None the less, it can still be a concern in field nursery production, especially in recently transplanted liners. Even with a mild water deficiency, trees and plants may be slow growing or stunted. Leaves will start showing signs of distress with marginal leaf burn or they can turn from being shinny to a duller color. Even before some plants show these visual symptoms, the growth rate may have been reduced.

Having a management practice in place before plants are water stressed is important. Make sure that your irrigation pumps and lines are working correctly. Identify blocks of plants that are newly planted and may need supplemental water if there is lapse in rainfall. Also, monitor the short- term and long- term weather trends. In the

words of Ben Franklin "an ounce of prevention is worth a pound of cure" so being prepared is crucial to health and vigor of quality plants.

Remember to water well, so that the water moves into the root zone. The proper amount of water to apply in an irrigation depends on the soil conditions and the root characteristics of plant species and cultivars. If

feasible, target irrigate with drip tape as it uses less water and there is little to no off targeted water loss. Make sure to monitor drip tape for clogs and breaks. When using overhead irrigation monitor coverage, be aware of wind direction and speed. Check nursery blocks to make sure that areas being irrigated are getting adequate coverage.



Dogwood showing water stress.

Photo: Missouri Botanical Garden

The University of Kentucky's **Nursery Crop Extension Research Team** is based out of two locations across the bluegrass to better serve our producers.

The **University of Kentucky Research and Education Center (UKREC)** in **Princeton** serves western Kentucky producers while our facilities and personnel on main campus in **Lexington** serve central and eastern Kentucky producers.

Check out our [YouTube Channel!](#)

Contact Us

Western Kentucky

UK Research & Education Center
1205 Hopkinsville Street
P.O. Box 496
Princeton, KY 42445
270-365-7541

Central / Eastern Kentucky

UK Main Campus
Horticulture Department
N-318 Ag. Science Center North
859-257-1273

Visit us on the web at

<https://NCER.ca.uky.edu/>

An Equal Opportunity University | University of Kentucky, College of Agriculture