

Kentucky Nursery LISTSERV Bulletin

University of Kentucky Nursery Crops Team

End of June 2018

Warmer Than Average Summer

The cool weather that characterized the first days of Summer are over as a strong high pressure builds, bringing heat and continued high humidity. Maximum heat index values in the 100–105°F range along and west of the I-65 corridor.

The NOAA long-range outlook shows an elevated probability for above normal temperatures for the commonwealth, while eastern KY is expected to have a summer season of “above normal” precipitation.

Please see the [UKAg Weather Center’s Long Range Outlooks](#) for more information.

Nursery Crops Extension & Research Team

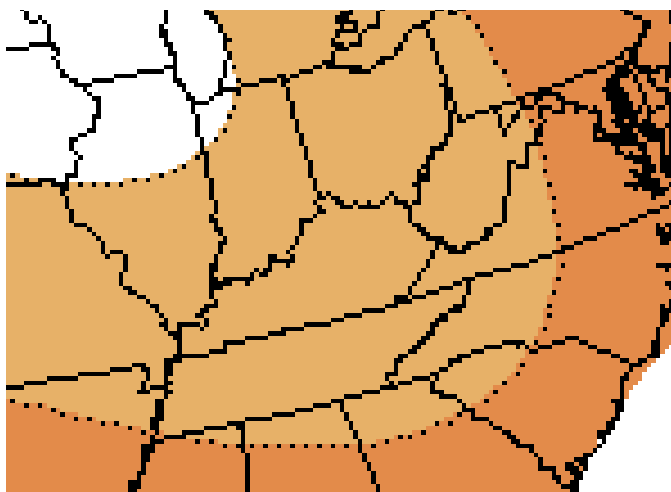
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Three-Month Outlook, Temperature Probability
June 21, 2018. Valid July–September
Source: NOAA Climate Prediction Center

- **Spruce Dieback—Needle Cast Diseases May Be To Blame**
- **Anthracoese Diseases on Shade Trees**

Spruce Dieback—Needle Cast Diseases May Be To Blame

Kim Leonberger, Extension Associate, Plant Pathology
Nicole Ward-Gauthier, Extension Specialist, 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.



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

Image: Julie Beale, University of Kentucky

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.



Figure 2. Needle drop and thinning of lower canopy are classic symptoms of *Rhizosphaera* needle cast in spruce.

Image: Nicole Ward-Gauthier, UK

- ⇒ **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.

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

Image: Paul Bachi, University of Kentucky



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

Image: Paul Bachi, University of Kentucky

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.

Additional Information

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

Anthracnose Diseases on Shade Trees

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The term anthracnose refers to the dark blotching (necrotic) symptom common to these diseases. When expanding leaves are affected, leaf distortion frequently results (Figure 1). Defoliation (leaf drop) often occurs during severe infections. The disease is generally not fatal, and a new flush of foliar growth immediately follows defoliation on some tree species. Causal fungi may also infect twigs and branches resulting in cankers that girdle stems (Figure 2).

Symptoms

The fungal pathogens that cause anthracnose diseases are quite host-specific, meaning that the anthracnose pathogen on oak will not infect ash, etc. Symptom appearance and severity differ with each host and with climatic conditions.



Figure 1. Symptoms of anthracnose on shade trees include dark blotches and leaf distortion.

Image: Nicole Ward Gauthier, University of Kentucky

Ash anthracnose: Common symptoms include brown blotches along leaf edges. Leaf drop often results, and then new leaves soon emerge. Causal fungus: *Discula umbrinella*.

Maple anthracnose: Symptoms begin as leaf spots and may progress into shoot blight and shoot cankers. Leaf spots with brown, somewhat angular symptoms may be confused with tar spot (spots are round and black). Symptom development and susceptibility vary with tree species, but lesions often follow veins. Causal fungi: *Discula* sp. and *Kabatiella apocrypta*.



Figure 2. The fungal pathogens that cause anthracnose may also infect twigs and branches. Resulting cankers girdle affected branches.

Image: John Hartman, University of Kentucky

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Oak anthracnose: Not commonly observed in Kentucky. Irregular brown spots develop on leaf tips and along veins. Causal fungus: *Apiognomonia quercina*.

Sycamore anthracnose: Young, expanding leaves develop irregular dark, necrotic blotching centered along leaf veins or edges. These dark blotches may turn tan-colored as the diseased areas of leaves dry out. Blighting of twigs or shoots may follow. Trees produce new foliage rather quickly, but affected branches may remain crooked (lateral shoots become dominant when terminals are killed). Also affects London plane tree. Causal fungus: *Apiognomonia veneta*.

Management

For most trees, anthracnose disease is not lethal. However, repeated defoliation can be stressful to trees. Additionally, persistent rains and disease spread can lead to infection of twigs and branches. Good cultural practices are important to reduce disease:

- Select a planting site with a sunny eastern exposure to promote rapid foliage drying early in the day.
- Rake and destroy fallen leaves, as they can be a source of inoculum (fungal spores). Do not compost.
- Remove dead twigs and branches, as fungi can overwinter in dead wood.
- Reduce plant stress when possible.
- Avoid wounding, such as bumping with mowing equipment and making jagged pruning cuts.
- Maintain mulch 2 to 3 inches thick over the root zone and beyond the drip line (not against the trunk) to help maintain soil moisture and to protect trees from lawnmower injury.
- Protect trees from drought. Water at least once a week during hot, dry months using soakers or drip irrigation. Avoid overhead sprinklers; wet foliage favors sporulation and infection.
- Diagnose and treat insect and disease problems as soon as possible.
- Fungicides are often not recommended. They can be costly and it is difficult to effectively cover large trees. Commercial nurseries, on the other hand, should protect trees with fungicides.

Resources

Shade Tree Anthracnose (PPFS-OR-W-23)
<http://plantpathology.ca.uky.edu/files/ppfs-or-w-23.pdf>

Landscape Sanitation (PPFS-GEN-04)
<http://plantpathology.ca.uky.edu/files/ppfs-gen-04.pdf>

Considerations for Diagnosis of Ornamentals in the Landscape (PPFS-GEN-15)
<http://plantpathology.ca.uky.edu/files/ppfs-gen-15.pdf>

Woody Plant Disease Management Guide for Nurseries and Landscapes (ID-88)
<http://www2.ca.uky.edu/agcomm/pubs/id/id88/id88.pdf>

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.

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