

Shade Tree Anthracnose

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INTRODUCTION

Anthracnose is the common name given to several fungal shade tree diseases with similar dark, irregularly-shaped leaf lesions. While they are primarily foliar diseases, damage on some hosts may extend to twigs, branches, and buds. In established trees, anthracnose usually does not cause permanent damage. However, resulting defoliation and dieback, especially if it occurs year after year, can weaken trees and make them more susceptible to environmental stresses and secondary pathogens.

This publication discusses anthracnose on the shade tree hosts most commonly affected in Kentucky: ash, maple, oak, and sycamore. Dogwood anthracnose is discussed in a separate publication, PPFS-OR-W-06.

SYMPTOMS & SIGNS

Specific symptoms vary somewhat from host to host, but common anthracnose symptoms can include:

- Death of leaf buds, resulting in failure to leaf-out in spring; can be confused with frost damage.
- Dead spots or blotches on foliage, usually found along leaf margins and/or veins (FIGURE 1).
- Premature defoliation.
- Twig death.
- Most severe symptoms occur on lower and inner leaves/branches.
- Fungal fruiting structures on symptomatic leaves (FIGURE 2) and in cankers on dead twigs; these may only be visible with a hand lens, magnification glass, or microscope.

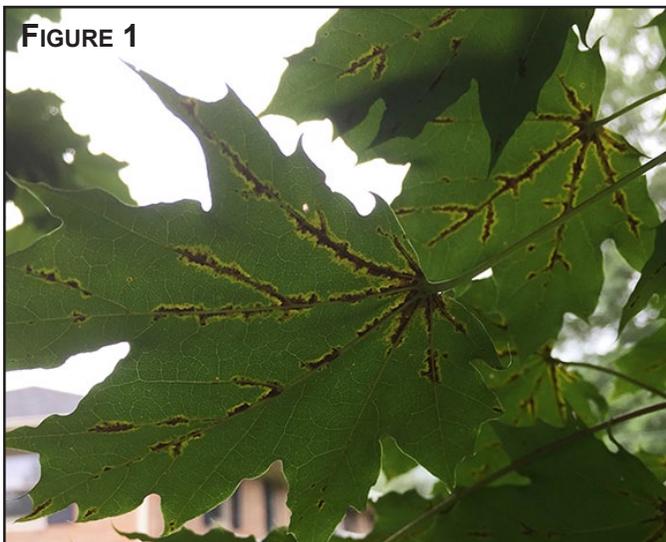


FIGURE 1



FIGURE 2

FIGURE 1. ANTHRACNOSE SYMPTOMS MAY FOLLOW LEAF VEINS ON SOME HOSTS. **FIGURE 2.** PATHOGEN FRUITING BODIES, WHICH MAY BE EVIDENT WHEN MAGNIFIED WITH A HAND LENS, EXUDE SPORES THAT RESULT IN ADDITIONAL INFECTIONS.

Ash (*Fraxinus* sp.)

Early spring infections occur in expanding leaves, resulting in irregular brown (necrotic) blotches near or along leaf margins; distortion of leaflets is also common (FIGURE 3). Infected leaflets drop prematurely. Although shoots may become stunted, infections on ash do not result in conspicuous twig or branch cankers. Regrowth is usually less susceptible to disease since cool rainy weather that promotes infection often has passed by the time the second flush of leaves emerges. Mature ash leaves are generally resistant to anthracnose.



Maple (*Acer* sp.)

Anthracnose on maple results in irregular necrotic leaf lesions that vary in size and shape, depending upon maple species.

Japanese maple—Leaves blacken and shrivel.

Norway maple—Purple to brown lesions follow veins (FIGURE 1).

Red maple—Variable symptoms, ranging from dark spotting clustered near veins to larger, pale brown blotches similar to leaf scorch (FIGURE 4).

Sugar maple—Brown to reddish brown lesions form along or between veins; symptoms can be confused with abiotic leaf scorch or bacterial leaf scorch (see Resources). Twig infections result in blighting and death of shoot tips.

Oak (*Quercus* sp.)

Early infections that occur before buds open in spring result in death of buds. As a result, twigs remain bare and eventually die. New shoots may later grow from a lower branch, but they, too, may eventually die. Repeated growth and death of twigs results in a witch's broom symptom. Later infections that occur during leaf expansion cause leaf distortion and scorching of leaf tips and along veins (FIGURE 5). Infections of fully expanded leaves produce irregular brown spots that coalesce as they enlarge. Twig infections develop into cankers, resulting in shoot dieback during spring.



Sycamore (*Platanus* sp.)

Early infections lead to complete death of young leaves and twigs. Twig infections can cause shoot tips to die back as much as 8 to 10 inches (FIGURE 6); cankers may also form on major branches and limbs (FIGURE 7), starting at bud origin. Later infections result in irregular necrotic areas along veins or leaf margins (FIGURE 8). As is common with other hosts, affected leaves may drop prematurely; however a second flush of leaf growth usually occurs later in the season. Repeated defoliation and dieback disfigures and stresses trees.

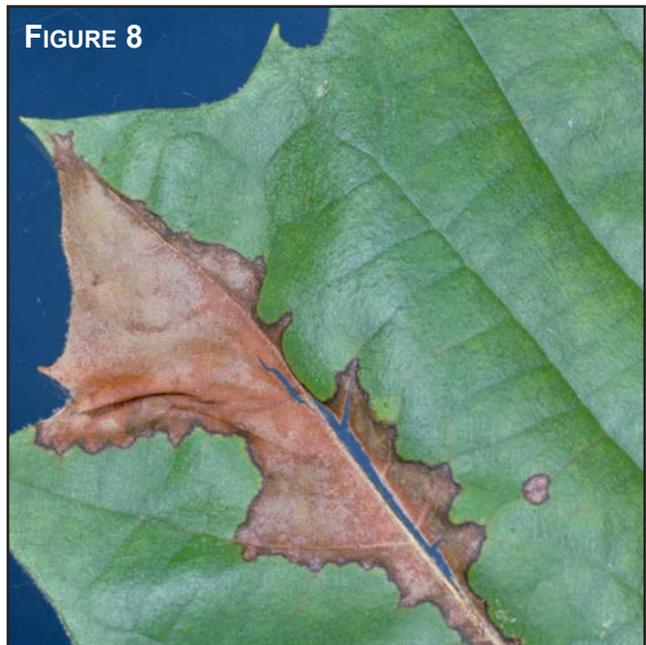
FIGURE 6



FIGURE 7



FIGURE 8



CAUSE & DISEASE SPREAD

Shade tree anthracnose is caused by several species of closely related fungi (*Apiognomonia* spp., *Aureobasidium* spp., *Discula* spp., *Gnomonia* spp., *Gloeosporium* spp., and *Kabatiella* spp.). Most of these fungi are host-specific; they only infect one particular host plant. Anthracnose fungi overwinter in twig and branch cankers (whether attached to trees or on twigs that have fallen to the ground), infected buds, or fallen leaves. During cool (50°F to 55°F), wet weather in spring, fungal spores are discharged from overwintering fruiting bodies and carried by wind or splashing rain to emerging shoots and leaves. Cankers that developed from a previous season's infection will expand further as long as cool, wet weather conditions continue. Pathogens remain inactive during summer months.

DISEASE MANAGEMENT

Cultural practices

Preventative measures include reducing environmental stresses by promoting plant vigor; thus, enabling trees to better resist disease:

- Water during dry periods.
- Fertilize according to soil test results.
- Mulch to preserve soil moisture and regulate soil temperatures.
- Prune to preserve tree structure.
- Make clean sharp pruning cuts that heal readily.
- Avoid physical and mechanical damage.

Once disease develops, use sanitation to help eliminate or reduce sources of infection:

- Prune infected twigs and branches as soon as symptoms develop; destroy by burning, burying, or disposing in the trash. Do not compost diseased plant material.
- Rake, gather, and destroy fallen leaves and twigs in autumn or as soon as they fall.

Fungicide sprays

Fungicide applications are generally not warranted. However, preventative fungicides may be considered in the following situations:

- Young trees
- Nursery stock
- Valuable trees
- Trees that have been affected for 2 or 3 consecutive years.

Fungicides registered for anthracnose are protectants and therefore must be applied prior to infection; fungicides are ineffective once infection has occurred. Contact your county Extension office for information on recommended fungicides. Apply three sprays, one each:

- (1) At bud break,
- (2) When leaves are half-expanded, and
- (3) When leaves are fully expanded.

ADDITIONAL RESOURCES

- Bacterial Leaf Scorch (PPFS-OR-W-12)
http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-OR-W-12.pdf
- Dogwood Anthracnose (PPFS-OR-W-06)
http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-OR-W-6.pdf
- Leaf Scorch and Winter Drying of Woody Plants (PPFS-OR-W-17)
http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-OR-W-17.pdf
- Stress and Decline in Woody (ID-50); see section on *Managing Plant Stress* (page 10)
<http://www2.ca.uky.edu/agc/pubs/id/id50/id50.pdf>
- Woody Plant Disease Management Guide for Nurseries and Landscapes (ID-88)
<http://www.ca.uky.edu/agc/pubs/id/id88/id88.pdf>

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