

Anthracnose

Common foliage disease of deciduous trees

Pathogen—Anthracnose diseases are caused by a group of morphologically similar fungi that produce cushion-shaped fruiting structures called acervuli (fig. 1). Many of the fungi that cause anthracnose diseases are known for their asexual stage (conidial), but most also have sexual stages. Taxonomy is continually being updated, so scientific names can be confusing. A list of common anthracnose diseases in the Rocky Mountain Region and their hosts is provided in table 1.

Hosts—A variety of deciduous trees are susceptible to anthracnose diseases, including ash, basswood, elm, maple, oak, sycamore, and walnut. These diseases are common on shade trees. Marssonina blight of aspen (see the Marssonina Leaf Blight entry in this guide for more information) is an anthracnose-type disease. The fungi that cause anthracnose diseases are host-specific such that one particular fungus can generally only parasitize one host genus. For example, *Apiognomonina errabunda* causes anthracnose only on species of ash, and *A. quercina* causes anthracnose only on oaks.



Figure 1. *Apiognomonina quercina* acervuli on the mid-vein of an oak leaf.
Photo: Great Plains Agriculture Council.

Table 1. Common anthracnose pathogens in the Region by host and part of tree impacted (ref. 3).

Host	Pathogen	Part of tree impacted
Ash (especially green)	<i>Apiognomonina errabunda</i> conidial state = <i>Discula</i> spp.	Leaves and twigs
Basswood	<i>Apiognomonina tiliae</i>	Leaves and twigs
Elm	<i>Stegophora ulmea</i> conidial state = <i>Gloeosporium ulmicolum</i>	Leaves
Maple	<i>Kabatiella apocrypta</i> conidial state unknown	Leaves
Oak (especially white)	<i>Apiognomonina quercina</i> conidial state = <i>Discula quercina</i>	Leaves, twigs, shoots, and buds
Sycamore and London plane-tree	<i>Apiognomonina veneta</i> conidial state = <i>Discula</i> spp.	Leaves, twigs, shoots, and buds
Walnut	<i>Gnomonia leptostyla</i> conidial state = <i>Marssoniniella juglandis</i>	Leaves, twigs, and nuts

Signs and Symptoms—Symptoms of anthracnose vary considerably from host to host. Most anthracnose fungi cause blotchy, necrotic spots on leaves associated with veins and sometimes cause leaf distortion and premature defoliation (figs. 2-4). On oak and sycamore, the disease also impacts twigs, shoots, buds, and fruits and occasionally causes stem cankers and brooming. When leaves are infected in early spring, they often turn black and may be confused with frost-damaged leaves.

Disease Cycle—These fungi overwinter on infected leaves and branches on the tree or the ground. In spring, spores are produced during periods of cool, moist weather. These may be conidia or ascospores, but conidia appear to play the most important role in dissemination and infection. Spores are spread by wind and

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splashing rains and infect buds, twigs, and newly emerging leaves if conditions are conducive. Lesions eventually form and symptoms become visible in mid to late summer. In some species (e.g., ash and walnut), secondary spores (called “summer spores”) are produced on primary lesions during periods of cool, wet weather, allowing the diseases to intensify throughout the summer.

Impact—Disease severity appears to be associated with prevailing weather. Periods of cool, wet weather are conducive to spore production, spread, infection, and disease development, and warm temperatures (above 55 °F) inhibit the fungus. In the Rocky Mountain Region, damage is usually minor and vigorous trees can recover fairly rapidly. Trees weakened by other factors such as environmental stress, nutritional imbalance, or insects and diseases may be more susceptible to the diseases. Anthracnose can also stress trees, making them more susceptible to other diseases or insects.

Management—Anthracnose damage is generally insignificant in the Region, but management may be necessary in certain high-value areas. The following are control strategies that can be used to reduce disease severity:

- Plant resistant or tolerant species in areas where the disease is a problem or where air circulation is poor. Species vary in their susceptibility to anthracnose diseases. For example, true London plane is more resistant than American sycamore, and the red oaks tend to be more tolerant than the white oaks.
- Maintain proper spacing between trees to increase air circulation and improve tree vigor.
- Proper fertilization may increase disease tolerance.
- Raking infected leaves and litter in the fall may help reduce infections in the spring.
- Effective protective fungicides labeled for anthracnose control are available.

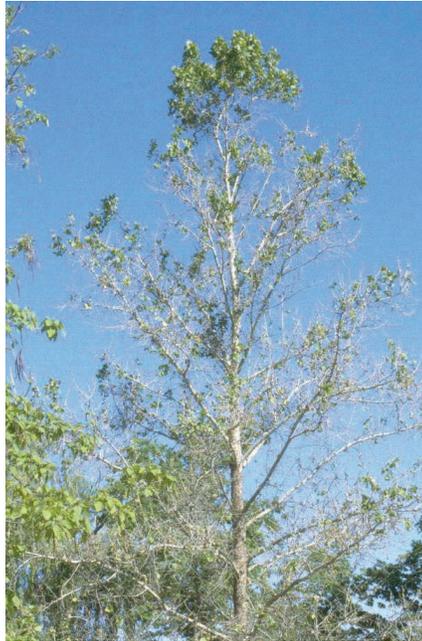


Figure 2. Crown symptoms caused by *Apiognomonia veneta* on sycamore. Photo: William Jacobi, Colorado State University, Bugwood.org.



Figure 3. Ash leaves infected with *Apiognomonia errabunda* have irregularly-shaped blotches and are distorted. Photo: Joseph O'Brien, USDA Forest Service, Bugwood.org.



Figure 4. *Apiognomonia quercina*-infected oak leaves with irregular necrotic area associated with veins. Photo: Joseph O'Brien, USDA Forest Service, Bugwood.org.

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