



Anthracnose of Shade Trees

One of the most common and unsightly shade tree diseases to greet Indiana homeowners in spring is anthracnose. A fungus-caused plant disease, anthracnose becomes severe when cool, wet spring weather persists as leaves are first emerging. In Indiana, those trees most commonly affected are ash, oak (white), maple, and sycamore. Dogwood, birch, catalpa, elm, walnut, butternut, hickory, and linden may also be affected.

Symptoms

Anthracnose is most noticeable in the lower branches. Often the very top portions of the tree escape infection and appear quite healthy in comparison to

the lower sections of the tree (see Figure 1).

A common leaf symptom is the killing of tissue on or adjacent to leaf veins (see Figure 2). This is opposite from leaf scorch symptoms which tend to be located between leaf veins rather than on the veins. Refer to pages 4 and 5 for causes of leaf scorch.

- Ash, both green and white, are generally the first to show infection from anthracnose. Green ash is especially apt to show extreme leaf drop in mid to late April. Symptoms start as irregular necrotic areas near the midvein and expand outward to the leaf margin.

- Sugar maples are often the second to show anthracnose infection. Infected leaves will curl and turn black; severe infection can result in extensive leaf defoliation in the lower branch canopy (see Figure 3).

- Sycamore anthracnose is the most serious of the anthracnose diseases in Indiana. In those years when infection is severe, sycamores will appear more dead than alive through the early spring months. Newly emerged leaf tissue will suddenly wilt and turn brown. This stage, commonly referred to as "twig blight" is often confused with late freeze injury. The cause of twig blight is the numerous stem cankers (localized, injured areas) that occur throughout the tree canopy. The leaf blight phase of sycamore anthracnose often follows twig blight. Brown, dead areas, develop along the leaf veins (see Figure 2). Frequently the infected area will expand outward to the leaf margin, causing a distortion of the leaf. Injury is again most noticeable

in the lower branches.

- Of the oaks, white oak is most susceptible to anthracnose. Leaf symptoms appear along the midribs and veins to the leaf edges. The disease is most common on the lower branches. Red oak seldom show infection but do commonly show symptoms of blister leaf, another fungal-caused leaf disease.

Cause

Anthracnose results from infection by any of several different fungi. During winter these fungi reside in diseased leaf and/or stem tissue. In early spring, infectious spores are produced and then carried by rain and wind to newly emerging leaves. Anthracnose is most severe in those years when cool, wet conditions prevail at the time new leaves are emerging.

Fig. 1 - Anthracnose caused defoliation of this sycamore. Note that the very top of the tree escaped infection.



"It is important to understand that the fungi that cause anthracnose are very 'host specific.' Therefore the fungus that causes sycamore anthracnose WILL NOT attack dogwood; likewise, the fungus that attacks dogwood will not attack sycamore."

Fig. 2 - Leaf blighting of sycamore caused by anthracnose is most noticeable along leaf veins.



In the case of sycamore anthracnose, cankers are formed when the fungus grows from leaf tissue down the petiole and into stem tissue. The fungus will overwinter within cankers and cause a girdling of stem tissue the following spring, resulting in twig blight. Additional spores are produced from recently infected leaf and stem tissue, which allows further spread of the disease.

Remedies for Anthracnose

Cultural Practices: Anthracnose does not result in tree death. Most trees are able to withstand infection and push out a new crop of leaves by mid-June. Healthy, vigorous trees will quickly recover from anthracnose with little if any permanent injury. Therefore, the primary control for anthracnose is to maintain good tree health. In the spring, after leaf emergence, fertilize trees suffering from severe defoliation; also be sure to deep-water affected trees during drought periods.

Sanitation is also important in helping to minimize the severity of anthracnose the following year. Since the fungi that cause anthra-

cnose overwinter within fallen leaves and/or twigs, it is best to rake and dispose of all fallen leaves and twigs before they become brittle and break into fragments that are difficult, if not impossible, to rake. Unfortunately, such sanitation does little good for sycamore anthracnose since so much of the fungus resides in cankers within the tree canopy. Prune out all dead and dying branches as they occur.

Fungicide Applications: In most cases, spraying with fungicides is unnecessary because the disease usually does not affect the long-term health of trees. An important exception to this is dogwood anthracnose; this is a very aggressive disease that can cause permanent damage and even tree death. For information on dogwood anthracnose and recommended fungicides, refer to BP- 48 (Dogwood Anthracnose).

When a specimen tree

must be protected, fungicides can be applied. Thorough coverage and proper timing of the sprays are critical for adequate control. Spray applications must be made in early spring, before infection has occurred. Sprays applied after symptoms appear are of little benefit since infection has already occurred. Apply the first spray when buds first start to open. Two additional sprays should be made at about 10-day intervals. Chlorothalonil (sold as Daconil 2787, Fung-onil, etc.) and various copper containing fungicides are labeled for certain anthracnose diseases. Before applying any pesticide, check the label to make sure the plant type is listed. Fungicides vary in their formulation and percent active ingredient. Follow all label directions regarding amounts of pesticide to use, methods of application, and safety warnings.

Once symptoms develop, it is too late to apply fungicides to control anthracnose.

Fig. 3 - Maple anthracnose often results in leaf distortion and defoliation.



The first and most important step before managing a tree disease is to accurately diagnose the problem. With an inaccurate diagnosis, more harm than good could be done, not to mention the wasting of both time and money.

This publication is just one of several available online from Purdue Extension that addresses diseases found on landscape trees in Indiana. If your tree does not have symptoms similar to those described in this publication, please check the others.

Also, for more detailed photographs of disease symptoms, consider purchasing *Common Tree Diseases of Indiana* (BP-63). It presents information about the six most common tree diseases seen in Indiana. It is available from the Purdue Extension Media Distribution Center. The publication is \$5 and can be ordered by calling 1-888-EXT-INFO.

If you are still in doubt as to the cause of the problem, consult a professional such as the Extension Educators at your local Purdue University Cooperative Extension Service office or Purdue University's Plant Pest and Diagnostic Laboratory (P&PDL).

To submit a plant sample to the P&PDL for diagnosis, obtain a sample submission form from your local Purdue Extension office, from the P&PDL office (1-888-EXT-INFO), or from the P&PDL Web page www.ppd.l.purdue.edu/. Detailed instructions for submitting most types of samples are included on the back of the forms.

Submit a sample that is representative of the problem and shows the varying degrees of symptoms. Send several branches (even large ones) showing the symptoms and a detailed description of the problem and other useful information about the site, the age of the tree or shrub, and the date of planting. Photographs are very helpful.

Send the sample and submission form by first-class or overnight mail early in the week to:

Plant & Pest Diagnostic Laboratory
Purdue University
1155 LSPS
West Lafayette, IN 47907-1155

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