Dogwood Anthracnose

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Introduction

Dogwood anthracnose is a potentially devastating fungal disease that has been infecting flowering dogwoods in both landscapes and forests throughout the eastern and northwestern U.S. since the late 1970's. The disease was first confined in Indiana in 1993 and has presently been found in several counties from the Michigan to Kentucky borders. Sites of infection have been primarily landscape trees but the disease has invaded localized areas in northern Indiana forests and can potentially cause significant mortality to native dogwoods throughout the state.

Figure 1. Leaf spots showing typical tan centers and purple margins

Figure 2. Leaf blight followed by twig infection.

Symptoms

Spots that usually develop in May or June on leaves and flower bracts are the first symptoms of dogwood anthracnose. Foliar symptoms commonly develop on lower branches first and progress up the tree. The lesions vary from small circular spots to irregularly shaped blotches and usually are tan or brown in color with a reddish-purple margin. On the underside of the leaf spots the fruiting structures of the causal fungus Discula destructiva, may be visible as small raised tan or brown specks scattered randomly over the lesion surface. Spores from these structures are washed onto...
new leaf tissue during periods of wet weather or sprinkler irrigation. If cool wet weather persists leaves may become severely blighted.

Twigs and branches are also susceptible to infection. Young shoots can become blighted and cankers (localized sunken discolored areas with cracked bark around the margin) form on larger branches where blighted shoots are attached. Fruiting structures of *D. destructiva* are often visible on blighted twigs. Leaves killed by dogwood anthracnose will often cling to dead shoots through the fall and winter and serve as a source of fungal spores for infection the following spring. Dieback of larger branches occurs on trees in advanced stages of the disease.

Water sprouts (young succulent shoots produced on trunks and lower branches) are common on diseased trees. The leaf and stem tissues of water sprouts are very susceptible to infection by the anthracnose fungus. As these infections progress, the fungus may enter the main trunk resulting in the formation of a canker. A tree will die if several cankers girdle the trunk circumference.

Several other fungal leaf spot diseases of dogwood may be mistaken for dogwood anthracnose. *Elsinoe* spot anthracnose causes small, circular leaf spots on trees in the spring. These spots may appear similar to spots caused by *D. destructiva*, except they remain small (1/8 in or less) and do not enlarge. *Septoria* leaf spot causes angular lesions with black speck-like fruiting bodies on the upper leaf surface. This disease commonly occurs in late summer or fall. Neither of these fungal diseases attack twigs or branches, and neither have any major impact on tree vigor. A spring leaf blight may occur following bract infection by the fungus *Botrytis cineria*. If *Botrytis* infected bracts come into contact with young leaves, infection of those leaves may occur, resulting in symptoms similar to anthracnose.

Powdery mildew is another disease that can mimic anthracnose. Severe mildew infection can cause leaf blight and twig dieback, particularly in late summer. Leaf scorch due to drought, or other noninfectious root stress problems can also resemble symptoms of dogwood anthracnose, although foliar symptoms due to noninfectious causes usually form a more uniform pattern on the leaf.

**Confirmation of Dogwood Anthracnose**

Dogwood anthracnose can be difficult to diagnose. If you suspect your dogwood is infected by anthracnose, it is advisable to bring or send a sample to your county extension office or to the Plant and Pest Diagnostic Laboratory, 1155 LSPS, Purdue University, West Lafayette. IN 47907-1155. Several branches with symptomatic leaves or twigs should provide enough diseased tissue to make an accurate diagnosis.

Enclose branch samples in an unsealed plastic bag or wrap in dry newspaper and pack in a box (do not wrap in wet paper towels and seal in plastic, because this promotes rotting of the tissue) Ship the sample so transit time is minimized (overnight or 2-day shipment). Be sure to provide ample background information including the age of the tree and number of years in the site; note also any stressful environmental or site conditions.

**Control**

No single practice can insure complete control of dogwood anthracnose. Successful management of dogwood anthracnose involves a combination of both cultural and chemical control measures as outlined below. In some instances total destruction of infected trees may be more economical and more prudent in protecting other non-infected dogwoods and Indiana's wild dogwood population. Trees with extensive twig dieback and/or trunk cankers should be destroyed because effective control is not possible.

**Figure 3. Elsinoe spot anthracnose produces small, circular, spots on leaves.**

**(1) Cultural practices:**
A healthy vigorous dogwood is better able to withstand infection from anthracnose than a weakened tree growing under stress conditions. Maintain tree health through proper watering, mulching, and fertilization. Water during drought periods, but do not use overhead irrigation since this may increase the potential for disease infection and spread. Mulching to a depth of 2-4 inches can help maintain uniform soil moisture as well as help protect trunks from mechanical injury; however, be sure to keep the mulch away from the tree trunk. Fertilize as needed, using a balanced fertilizer with fairly low nitrogen content for moderate growth. Rapidly growing, succulent twigs which have been stimulated by excessive fertility are more susceptible to anthracnose infection.

Dogwood borer is a frequent pest that can result in added tree injury and stress. Check the main trunk and branches for signs of dogwood borer in early spring and in early fall, infested trees develop seeping cracks containing piles of sawdust-like frass. Mechanical damage to tree trunks, such as that caused by lawn mower injury attracts borers. If dogwood borers are a chronic problem in your area it would be best to apply an annual borer spray in early May. Follow all label instructions regarding amounts of pesticide to use, method of application, and safety warnings. For information on insecticides for dogwood borer see publication E-41. Recommendations for Managing Insects and Mites on Shade Trees and Shrubs, available from your local county extension office.

Good sanitation is especially important for trees infected with anthracnose. Prune out and destroy dead and dying twigs and branches and rake up fallen leaves to help reduce potential sources of inoculum and improve tree appearance. It is also advisable to prune out water sprouts which develop on the trunk or main scaffolding limbs since they are very susceptible to infection from anthracnose. Prune only under dry conditions and sterilize pruners with alcohol between pruning cuts.

Avoid planting monocultures of flowering dogwood, *Cornus florida*. There are no flowering dogwood cultivars known to be resistant to dogwood anthracnose. Kousa dogwood, *C. kousa*, (also known as Chinese or Japanese dogwood) is resistant but not immune to anthracnose: however it may be a better choice for replanting in sites where flowering dogwoods have died from the disease. However, the cold hardiness of Kousa dogwood in Indiana is questionable. **Do not transplant flowering dogwoods from forested areas to your yard; this can result in further spread of the disease.**

![Figure 4. Infected twigs are gray or tan and may show spore producing structures, called conidiomata, which appear as raised, reddish-brown spots. Enlargement shows magnified view of conidiomata.](image)

**(2) Chemical control:**

Fungicide sprays are recommended only if you live in a high risk area for anthracnose or if your tree has been confined as being infected with anthracnose. Start sprays at bud break and continue spraying according to label directions. The recommended interval between sprays will vary depending on the fungicide and the rate of application. Recommended fungicides include: myclobutanil (trade name Immunox); propiconazole (trade name, Banner) and chlorothalonil (trade name, Daconil 2787). Make sure the fungicide you use has dogwood listed on the label. Follow all label instructions regarding amounts of pesticide to use, method of application and safety warnings.

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