

Anthracnose Diseases of Dogwood

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Introduction

The most prevalent anthracnose diseases on dogwood in the southeastern area of the United States are **Spot anthracnose** and **Dogwood anthracnose**. These are two distinct infectious plant diseases that should not be confused with each other. Each disease is caused by a specific microorganism and produces characteristic symptoms in diagnosis.

Spot anthracnose is caused by the fungus *Elsinoe corni*. Spot anthracnose is primarily significant on flowering dogwood (*Cornus florida*) in Arkansas, but the fungus can also affect Kousa dogwood (*Cornus kousa*). This disease is common in Arkansas, especially following frequent rainfall and cool temperatures in April and May. Spot anthracnose is considered a “cosmetic” disease and does not usually have an adverse impact on the overall health of the tree.

Dogwood anthracnose is caused by the fungus *Discula destructiva* and is more serious than Spot anthracnose. Unlike Spot anthracnose, Dogwood anthracnose can lead to tree death under certain environmental conditions. The fungus has caused extensive mortality of dogwoods in portions along the East Coast into the Southeastern United States since it was first discovered in the early 1970s. Dogwood anthracnose is known

to infect flowering dogwood (*Cornus florida*), Pacific dogwood (*Cornus nuttallii*) and, to a lesser extent, Kousa dogwood (*Cornus kousa*).

Symptoms

Spot Anthracnose

This type of anthracnose produces small (1-2mm diameter), rounded, purple-bordered spots on the bracts, leaves and fruit. Bracts are usually infected first (Figure 1). As with the leaf spots, the centers of the spots on bracts become light-colored and then drop out, leaving a “shot-hole” appearance to the bracts. Infected bracts may become distorted, smaller or even aborted. Leaf distortion can also occur as a result of foliar infections. Spots tend to be more numerous in leaf crevices where water may collect (Figure 2). Spot anthracnose does not



Figure 1. Spot anthracnose on dogwood bracts
(Photo courtesy of A. Windham)

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Figure 2. Foliar symptoms of Spot anthracnose (Photo courtesy of Sherrie Smith)

cause a dieback of branches, but severe infection may hamper bud opening. The fungus overwinters on twigs, infected fruit and leaves that remain attached to the tree and in buds.

Dogwood Anthracnose

Symptoms of Dogwood anthracnose can range from leaf lesions [blotched] (Figure 3) to twig blights to stem cankers. Leaves may wither, turn brown and remain attached to the twigs (Figure 4). Infected twigs form a shepherd's crook reminiscent of fire blight symptoms. Young leaves and sprouts are especially susceptible under shady and wet conditions. From the infected leaves, the pathogen can grow into branches and trunks. Once trees become severely cankered, they may not be saved. *Discula destructiva* generally overwinters in infected leaves, branches and twigs. This disease tends to be more severe under cool (65°-75° F), wet and shady conditions.

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Figure 3. Dogwood anthracnose (*D. destructiva*) foliage symptoms (Photo courtesy of M. Windham)



Figure 4. Twig blight of Dogwood anthracnose [*D. destructiva*] (Photo courtesy of J. Robbins)

wet conditions. Spores of *Discula* produced on the undersides of leaves and on branch cankers have been shown to spread on windblown water droplets and by some insects. One method of long distance spread is by shipment of infected nursery stock.

Important look-alikes of Dogwood anthracnose are leaf scorch (abiotic disorder) and Septoria leaf spot (*Septoria cornicola*), both of which produce symptoms that can easily be confused with Dogwood anthracnose. Leaf scorch produces varying degrees of tip and marginal necrosis of the foliage (Figure 5).



Figure 5. Marginal leaf scorch [abiotic] (Photo courtesy of A. Windham)

Interveinal necrosis can also be a symptom of leaf scorch (Figure 6). Leaf scorch is a common symptom of drought stress. It also occurs during windy, hot and dry conditions on trees not receiving adequate irrigation. Newly transplanted trees often develop this problem. Infection from the Septoria fungus results in purple spots on the leaves. Septoria leaf spots are generally larger in diameter, somewhat angular in shape and lack the lighter-colored center (Figure 7) that is present in Spot anthracnose. This leaf spot usually occurs late in the season and is of little concern to tree health.



Figure 6. Interveinal necrosis [abiotic] (Photo courtesy of A. Windham)



Figure 7. Septoria leaf spot (Photo courtesy of Sherrie Smith)

Disease Management

Spot Anthracnose (*Elsinoe corni*)

Control is usually not warranted for Spot anthracnose in most years. Specimen landscape trees can be sprayed with an appropriate registered fungicide at specific times during the growing season. Multiple fungicide applications may be necessary for control. Rake and destroy fallen leaves and twigs prior to bud break in the spring. Complete coverage and timing of the fungicide are important. Fungicides containing chlorothalonil or mancozeb can be used preventatively. The first application should be just before bud break after bracts fall, one month later and then after new flower buds form. Dogwoods resistant or tolerant to Spot anthracnose include:

Kousa dogwood (*Cornus kousa*) – ‘National’, ‘Milky Way Select’

Flowering dogwood (*C. florida*) – ‘Cherokee Brave’, ‘Cherokee Chief’, ‘Welch’s Bay Beauty’, ‘Cherokee Princess’ and ‘Springtime’

Rutger’s Hybrid – ‘Stellar Pink’

Dogwood Anthracnose (*Discula destructiva*)

Growing resistant cultivars is the best way to manage Dogwood anthracnose. Currently, the flowering dogwood, ‘Appalachian Spring,’ is considered resistant. Some cultivars of kousa dogwood (*C. kousa*) and hybrids of (*C. florida* × *C. kousa*) are also resistant. See table below.

<i>Cornus florida</i>	<i>Cornus kousa</i>	<i>Cornus florida</i> × <i>Cornus kousa</i>
Appalachian Spring	Big Apple China Girl Elizabeth Lustgarten Gay Head Greensleeves Julian Milky Way Steeple Temple Jewel	Aurora Celestial Constellation Ruth Ellen Star Dust Stellar Pink Empire Red Steeple Pam’s Mountain Bouquet

For trees diagnosed with Dogwood anthracnose, carefully prune out all dying and dead twigs and limbs to prevent the disease from spreading to the main trunk. Remove all pruned wood to reduce any inoculum from the area. Spray all plants with a systemic fungicide labeled to control Dogwood anthracnose [examples include fungicides containing propiconazole (e.g., Banner Maxx) or tebuconazole (e.g., Bayer Advanced Disease Control for Roses, Flowers, Shrubs)] at bud break in the spring.

About two weeks after the systemic spray, apply a protectant fungicide labeled to control Dogwood anthracnose containing chlorothalonil (e.g., Daconil products), thiophanate-methyl (e.g., Cleary's 3336, for example) or a product containing both, like Spectro 90 WDG. Complete coverage of the entire tree is essential. Homeowners may need to hire a professional tree care company equipped with commercial sprayers for larger trees. The primary goal of fungicide applications is to protect new tissues of expanding leaves and twigs. Succulent new growth is the most susceptible. Water sprouts (sprouts emerging on the main stem or large branches) should also be removed regularly because of their disease susceptibility.

In a natural setting, the dogwood usually grows as an understory tree in soils with high organic material. Since dogwoods tend to be shallow-rooted, they can be prone to drought stress when grown in full sun conditions. Full morning sun and afternoon shade is ideal. Gardeners should use good horticultural practices for healthy plant growth. Be sure to:

- (1) Select a healthy, well-adapted tree from a reputable nursery.
- (2) Do not transplant a tree from the "wild."
- (3) Choose a well-drained planting site.
- (4) Mulch with 2-3 inches of organic material.
- (5) Water when dry.
- (6) Avoid chemical or mechanical wounding (e.g., mowers and string trimmers).
- (7) Scout trees often for any problems and report those to your county Extension office.

Particular attention should be paid to minimizing the potential for drought stress. Supplemental irrigation may be necessary during periods of hot and dry conditions often experienced during July and August. Drought stress can predispose the tree to many problems including diseases. Gardeners should make an effort to avoid wetting the leaves, especially in shady conditions. If overhead irrigation must be used, water in the early morning so that leaves can dry out during the daytime.

An effective management program begins with an accurate disease diagnosis. For further information about Dogwood anthracnose diseases and other tree diseases, contact the Plant Health Clinic.

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