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DOGWOOD ANTHRACNOSE

Dogwood anthracnose is considered the most serious disease of flowering dogwood (*Cornus florida*) in Connecticut and the Eastern Seaboard. It is also an important disease of Pacific Dogwood (*Cornus nuttallii*) in the West. The causal agent is the fungus *Discula destructiva*, and as the name suggests, this pathogen is highly destructive. It is believed that the fungus was probably simultaneously introduced into the East and West coasts of the United States in the mid-1970s. Since its introduction, dogwood anthracnose has resulted in the death of many dogwoods in forests, woodlots, and landscapes.

SYMPTOMS AND DISEASE DEVELOPMENT:

Initial foliar symptoms develop in May and June as brown spots up to ¼ inch in diameter that are visible on both the upper and lower leaf surfaces (Figure 1). These spots can be circular or irregular in shape and frequently develop distinctive smoky, purple-brown margins (Figure 2).

The flower bracts are also susceptible to infection and develop reddish or brownish spots or blotches. These are most prevalent when wet conditions occur during flowering.

Under certain conditions, pinpoint, brownish-black fruiting structures can be



Figure 1. Necrotic spots on infected leaves.



Figure 2. Diagnostic, smoky, purple-brown margins are visible on foliar lesions.

seen in the centers of the foliar spots or lesions. Spots on the leaves usually become

so numerous that they coalesce, which results in the development of large, dead areas on the leaves.

When entire leaves become necrotic, they usually droop and rather than falling off, they remain on the tree throughout the fall and into the winter. The persistence of infected leaves on the tree during winter is a distinctive characteristic and can help in diagnosis. The presence of infected leaves on the tree also serves as an important source of overwintering inoculum, since fungal spores capable of initiating new infections in spring are produced on these leaves.

When the whole leaf becomes infected, the fungus grows into the petiole and then into the twig where it causes cankers. Cankers are often tan, slightly sunken, elliptical areas of bark and are readily distinguished from surrounding healthy bark. The fungus can also directly infect shoots during spring and fall. These infections develop into very small cankers. If left unchecked, these cankers increase in size and eventually girdle the affected tissues (e.g., twigs, stems, branches, or the main trunk). Symptoms and branch dieback typically begin on the lower limbs and move progressively up the tree (Figure 3). This pattern of dieback appears to be associated with poor air circulation in the lower canopy, which results in tissues staying wet for longer periods of time. This makes them more susceptible to infection. Some trees attempt to compensate for the loss of limbs by sending out sprouts from the trunk (epicormic sprouts) but these sprouts are highly susceptible to infection. Sprout infections usually spread quickly to the trunk and cause severe cankers and splits in the bark. These cankers readily develop into tree-killing cankers.

Dogwood anthracnose is more aggressive on trees that have been predisposed or weakened by environmental and cultural factors. Among some of the more common predisposing factors are drought stress, poor site selection (e.g., full sun, windy or open area, or thin, or rocky soil), mechanical injury (e.g., damage from string trimmers and lawn mowers), and soil compaction.



Figure 3. Dieback of branches progressing from the bottom to the top of the tree.

DISEASE MANAGEMENT STRATEGIES:

The effects of dogwood anthracnose can be minimized by following an integrated approach toward managing the disease.

- Rake and remove fallen leaves to remove important sources of overwintering inoculum.

- Prune and remove cankered limbs and dead wood. This helps to reduce the ability of the fungus to grow into the main trunk where girdling, tree-killing cankers can develop.
- Maintain tree vigor by following sound cultural practices. It is especially important to avoid drought stress so watering the tree during periods of low rainfall is essential. Mulching is also helpful since it helps maintain soil moisture, moderate soil temperatures, and minimize chances for mechanical injuries.
- Provide adequate spacing for good air circulation. Since the fungus requires free water on plant surfaces in order to infect, any practices that reduce periods of wetness can help to minimize chances for infection.
- Control insects and avoid unnecessary mechanical injuries.
- Plant resistant species or cultivars. Although *Cornus kousa* (Kousa Dogwood) is less susceptible to infection than *C. florida* (Flowering Dogwood), it can become infected in years when there is heavy infection pressure and favorable weather for disease development. Breeding programs that have made crosses between *C. florida* and *C. kousa* have yielded promising cultivars such as the 'Stellar' Hybrid series, 'Aurora,' 'Celestial,' 'Constellation,' 'Ruth Ellen,' 'Stardust,' and 'Stellar Pink.'
- Fungicides are another component of disease management. Applications can be made at budbreak, when the bracts fall, and 4 weeks later. A late-summer fungicide application when fruit and leaves begin to color has also been found to be helpful. Among the compounds registered for homeowner use in Connecticut are chlorothalonil, copper hydroxide, mancozeb, and thiophanate-methyl. Organic options for control

include copper products, sulfur, *Bacillus subtilis* QST 713 strain (Serenade®), and potassium bicarbonate. Consult the label for dosage rates and safety precautions.

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