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Dogwood Anthracnose: *Discula destructiva*

Introduction

This disease of Flowering Dogwood (*Cornus florida*) and Pacific Dogwood (*Cornus nuttallii*) has decimated much of the native Dogwood population in the forests of the United States. The fungus that causes the disease, *Discula destructiva*, was probably introduced into the United States near Connecticut and Washington State simultaneously in the mid-1970s. Although it entered the U.S. at two separate points, genetic analysis has shown that the causal organism is the same. The origin of the pathogen is yet unknown, as it has not been identified on any species of Dogwood outside the U.S.

Symptoms and Signs

Shortly after the leaves have expanded (mid-late May and June), spots and blotches of varying shape and size appear on infected trees. These spots have a tan center and a purple or reddish margin (**Fig. 1**). On the opposite side of the leaf, tiny brown or black spots may appear beneath these lesions. The flower "petals" or bracts are also susceptible and show reddish or brownish blotches. Blotches can occur at the tip or along the margin of leaves too. In some cases, entire leaves may become infected and die. Many drooping, brown, dried leaves remain on the stem throughout the fall and winter.

Figure 1: Leaf lesions appear as tan spots with reddish-purple margins. (provided by **Dr. George Hudler, Cornell University**)

When the whole leaf is affected, the infection may spread through the petiole of the leaf to cause cankers on twigs. Cankers are generally tan on healthy gray background and produce the same reproductive structures on their surface as are found on the undersides of leaves. Over time, infection of twigs and shoots by these cankers kills branches, usually beginning with those low on the tree and moving upward (**Fig. 2).** The tree may compensate by sending out sprouts from the trunk, but the fungus easily infects them. Infection of the sprouts usually spreads quickly to the trunk and causes severe cankers with split or buckled bark. Affected trees may die within 1-3 years; saplings may die in the same year they are infected.

Figure 1: Flowering Dogwood with dead lower branches. (provided by **Dr. George Hudler, Cornell University**)

Disease Cycle

Reproductive structures of *D. destructiva* form underneath leaf spots and on the surface of twig cankers.

Huge amounts of asexual spores are formed inside and, in the spring, ooze out in slimy beige clusters. Local dispersal of the spores occurs by splashing rain while long distance dispersal may also occur via insects and birds. Transportation of diseased stock into new areas spreads the disease as well, especially into areas where dogwoods are not native. Spores of the fungus land on shoots or leaves penetrating them directly causing the quick death of the plant tissue due to the production of several toxins by the fungus.

Management Strategies

A combination of practices is recommended for managing this disease. Healthy trees are better able to cope with disease. Keep trees stress free by applying 3 -4 inches of mulch around the base (but keep the mulch off the trunk), watering during dry periods, and fertilizing moderately. Since shady moist conditions favor the development of this disease, avoid overhead irrigation, and plant trees in sunny locations when possible. It is also advisable to avoid fertilizers with high nitrogen content as this promotes the rapid growth of succulent shoots that are extremely susceptible to infection. Avoid mechanical damage to any part of the tree especially by mowers or other equipment. Keep the inoculum levels low by raking and removing leaves in the fall, pruning diseased branches, and pulling adherent dead leaves from the tree. Prune any water sprouts that grow from the trunk. If possible, prune during dry, hot weather and disinfect the pruners blades in a solution of 70 percent rubbing alcohol between cuts.

Fungicides can be applied in the spring, starting at bud break and continuing every 10-14 days until the leaves are fully expanded. Further sprays may be necessary if the summer is unusually wet. Homeowners or professional applicators in New York State should use a fungicide containing one of the following active ingredients: chlorothalonil, myclobutanil, or propiconazole. Propiconazole is a systemic fungicide and may require less frequent applications. Other pesticides may also be available for commercial or professional use. Please refer to the appropriate pest management guidelines, or contact your local Cooperative Extension Office for more information on currently registered products, and be certain any formulation(s) of pesticide(s) you purchase are registered for the intended use. Consult the labels for application information and directions. An application in the fall after the leaves have begun to turn but before they have dropped may also be performed.

To avoid or lower the risk of dealing with this disease, consider using resistant varieties. The white flowering Kousa Dogwoods, *Cornus kousa* have shown good resistance and require less input to maintain a healthy tree. A number of crosses between *C. kousa* and *C. florida* have been made in attempts to produce the flowering characteristics of the Flowering Dogwood with the resistance of the Kousa Dogwood. These cultivars are available on the market and are known as the 'Stellar' Hybrid series, 'Aurora', 'Celestial', 'Constellation', Ruth Ellen', 'Stardust', and 'Stellar Pink'. A resistant Flowering Dogwood cultivar named 'Appalachian Spring' has also been developed from a living tree in an otherwise devastated Maryland forest, and this variety has become available in recent years.

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READ THE LABEL BEFORE APPLYING ANY PESTICIDE! Changes in pesticide regulations occur constantly. All pesticides distributed, sold, and/or applied in New York State must be registered with the New York State Department of Environmental Conservation (DEC). Questions concerning the legality and/or registration status for pesticide use in New York State should be directed to the appropriate Cornell Cooperative Extension Specialist or your regional DEC office.

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