DOGWOOD ANTHRACNOSE

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Dogwood anthracnose was first reported in the northeastern United States on flowering dogwood (*Cornus florida*) in the early 1970s; about that same time, it was detected on the U.S. west coast, infecting Pacific dogwoods (*Cornus nuttallii*). Though not confirmed, it is believed that the fungus may have been introduced into the United States at ports of call in these two areas. The disease was confirmed in northern Georgia, western North Carolina, eastern Tennessee, western South Carolina, Alabama, Kentucky, and Virginia in 1987. The disease has now spread to 81 counties in these seven states. The disease occurs primarily in the mountains and foothills.

The fungus that causes dogwood anthracnose is a *Discula* sp. Dogwood anthracnose should not be confused with the very common disease, spot anthracnose (*Elsinoe corni*). Dogwood anthracnose causes foliage leaf spots, shoot mortality, stem cankers, and eventually significant decline or death of the tree. Initial symptoms include small purple-bordered leaf spots and large scorch tan spots, which may enlarge to blight the entire leaf. Blighted leaves will often cling to stems even after normal leaf drop in the fall. The fungus infects twigs and can move down the limb to infect the main stem. Cankers may form on the main stems and twigs, and they may be detected when the bark is peeled back. Cankers can be readily identified from the healthy cambium tissue by their distinct margins. Trunk sprouts are very common, especially in older dogwoods that have been infected two or more years. It may take up to three to five years to kill a mature dogwood. If trees are infected in the woods environment, there is very little that can be done to discourage the spread of the fungus; however, around locations such as homes and municipal buildings, fungicide applications will help discourage the spread of the disease.

Initially it is best to apply fungicides in early spring at bud-break. and at two-week intervals throughout the spring growing season, and at any time when adequate moisture is available for fungus infection. There is no quick-fix for this problem and, in many areas of the U.S. Northeast, 80 to 90% of the flowering dogwoods have been killed in the forest. As the disease has progressed down the

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east coast, urban and municipal areas have not been subject to the devastation observed in the natural woods environment. This observation has led to epidemiology studies to answer why. It seems the high moisture requirement for fungus infection is lacking in most urban situations because of the reduced overstory. The density of the dogwoods in the urban environment is significantly less than that in the natural woods environment. This may also affect the reduced spread of the disease in urban situations.

Recent research indicates that pH of the rain water has a significant affect on fungus infection. When flowering dogwood leaves are predisposed to acid pH solutions, then infection can be accomplished under laboratory conditions Additional research is presently being conducted on pH of the water and its relationship to onset of the disease.

At the present time the disease has been detected as far south as Atlanta, Georgia. In Georgia, research indicates that Benlate 50 WP at ½ Tbs/gal, maneb 80 WP at 1 Tbs/gal, and Daconil 2787 75% WP, at 1 Tbs/gal have all shown good control if applied at bud break, then applied at 14-day intervals to mid-June, and at any time sufficient moisture is present for infection. Other research indicates growth of the fungus is inhibited at temperatures above 75°F. Additional research is needed to try to anticipate disease development patterns in the southern states.

Do not transplant dogwood trees dug in the woods into urban areas. You may be transporting the disease into the area where it did not previously occur. In several cases thus far, it has been confirmed that this is how the disease entered an area which previously had not had a problem with this disease.

There are many other diseases that show symptoms similar to dogwood anthracnose. Isolation in the laboratory is the only way to confirm infection by *Discula* spp. For confirmation, contact the plant disease clinic at your local university Cooperative Extension Service. Observations indicate that the disease will continue to intensify in areas where it is currently found Damage has been observed to be more severe at higher elevations and in cool, wet areas.

Watersprouts around the base of the tree are extremely susceptible to fungus infection. It has been demonstrated that removing these sprouts may be beneficial. Mulching also appears to be beneficial to the overall vigor of the host. However, mulching may increase the potential for watersprout production. Trees should be monitored and watersprouts removed if this occurs.

The U.S. National Arboretum, Washington, D. C. has checked the resistance in over 60 selections of *Cornus florida* and, to date, no significant resistance has been observed in any of them. The Japanese dogwood, *Cornus kousa*, appears to be resistant to the

disease; however, one of the latest reports indicates that under ideal disease conditions, *Cornus kousa*, may be susceptible to fungus infection. Keeping the dogwood healthy is the best disease control. Below are listed ten steps that should be used to maintain healthy dogwoods:

1) Select healthy trees to plant.
2) Purchase trees from a reputable nursery. Do not transplant trees from the wild.
3) Select good sites for planting.
4) Use proper planting technique.
5) Prune and destroy dead wood and leaves yearly.
6) Water weekly during drought conditions. CAUTION: Do not wet the foliage.
7) Maintain a 4- to 6-in. deep mulch around trees.
8) Fertilize according to soil analysis. Use a low-nitrogen fertilizer on dogwoods infected with anthracnose.
9) Use proper insecticides and fungicides where appropriate.
10) Avoid mechanical and chemical injury to the trees.