Horticulture Diagnostic Laboratory

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Anthracnose of Flowering Dogwood

In the Northeast, the flowering dogwood, *Cornus florida*, showed severe symptoms of decline starting in the late 1970's. Over time, the disease spread into the southeastern and midwestern United States. Dogwoods' overall health has been improving steadily over the past few decades, but we still occasionally see trees with symptoms of this problem on Long Island and in the Hudson Valley.

Dogwoods in natural, understory settings are more susceptible to the disease than those growing as ornamentals in full sun; young trees are susceptible as well as mature specimens. A fungus disease called dogwood anthracnose is the cause of the deterioration of these trees.

Fig. 1. A dogwood tree that has been diseased for some time: notice leaf development in upper crown, bare lower branches and watersprouts forming off the base of the trunk. (Robert L. Anderson, USDA Forest Service, www.Bugwood.org)

Symptoms: The anthracnose disease is often not noticed until one or more of the lower branches of a dogwood are dead, so that they fail to flower or leaf out in the spring (**Fig. 1.**). The earliest sign of trouble and the symptom seen most commonly now, is a spotting and blighting of the foliage by the anthracnose fungus, *Discula destructiva*. Spots are of two types: small, purple-rimmed spots or larger tan blotches (**Fig. 2.**) that may enlarge to kill the entire leaf. The same fungus that causes leaf infections also infects the dogwood twigs. The twigs are killed back several inches and turn tan and dry. Flower bracts may become spotted or blighted if rainy weather conditions prevail during flowering.

Watersprouts frequently appear in great numbers on the trunks and branches of trees with severe leaf and twig infections, and the fungus often kills them. This is especially damaging to the tree, because the fungus may grow down the watersprout into the bark at the base, killing the bark in a patch several inches in diameter, called a canker. Numerous cankers may coalesce to completely girdle and kill a main branch.

In the past, trees often died within a few years of the initial signs of leaf infection. Other fungi frequently would attack trees already weakened by the anthracnose, helping to speed their decline. More recently, the disease has been limited to occasional leaf and twig blight, and rarely requires control actions. If environmental conditions were to shift to favor the disease, severe symptoms might once again become commonplace.

Role of Environmental Factors: Dogwoods, being shallow-rooted trees, are particularly sensitive to summer and autumn droughts. Drought conditions may increase the susceptibility of dogwoods to anthracnose and hasten their death. Extended rainy periods in spring and fall will promote disease development and spread.

Management: Badly diseased dogwood with only a few active branches left probably can not be saved. If your trees are just beginning to show signs of the disease, however, it is important to try to improve their health.

First, prune out any dead watersprouts and lower branches, to reduce the amount of fungus inoculum. Always prune in dry weather. Gathering up fallen leaves from beneath your dogwood trees in the autumn may also help to cut down on the potential for disease next spring.

Fig. 2. Leaf spot and leaf blotch symptoms caused by dogwood anthracnose. Note the tan spots with purple rims in the top photograph. Larger tan blotches are more conspicuous in the middle and bottom photos. (Margery Daughtrey, LI Horticultural Research & Extension Center, Riverhead, NY)

Combating the fungus disease with pruning and fungicide applications will be helpful only if trees are also given the very best of care. Dogwoods must be protected from drought with mulching and supplemental watering during summer and fall dry spells. A mulched area around the base of the tree will reduce the likelihood of lawnmower wounds on the trunk, which predispose the tree to attack by borers (insects that bore in the trunk causing damage to the interior wood).

It is recommended that sufficient levels of all essential elements be maintained so that an acceptable growth rate and condition of health be maintained in the tree. To determine the need for a fertilizer application it is recommended that a soil nutrient analysis be run to determine soil nutrient levels as well as a soil pH analysis to determine soil acidity. In addition a foliar nutrient analysis can determine the nutrient content in the leaves of the tree.

In the absence of soil and/or foliar nutrient analysis a fertilizer ratio of 3:1:1 or 3:1:2 should be used. Fertilizers with slow- or controlled-release nitrogen should be used when fertilizing trees. This will reduce the potential for nitrate leaching as well as reducing problems associated with salt or fertilizer "burn." Fertilizer uptake in deciduous hardwood trees corresponds with the time of root growth. In general, root growth will start before budbreak in the spring and end after leaf drop in autumn. Therefore the maximum nutrient uptake will occur after budbreak in the spring and up to color change in the autumn. Application of quick release (soluble) fertilizers should be avoided when trees are dormant between leaf drop and budbreak because uptake is minimal and leaching potential is greater. In addition, to prevent runoff, avoid fertilizer applications if the ground is frozen. Also avoid fertilizing during periods of drought, when roots will not readily absorb fertilizer and when the potential for damage from fertilizer salts is high. If a subsurface application of fertilizer is being used, the preferred depth of such an application should be 4-8 inches. Deeper applications will be delivering fertilizer beyond the fine roots of most trees.

The preceding information on tree fertilizing was obtained from *Best Management Practices Tree*

and Shrub Fertilization, companion publication to the *ANSI A300 Standard for Tree, Shrub, and Other Woody Plant Fertilization*, International Society of Arboriculture, Champaign, Illinois.

Plant resistant species and cultivars. Most species and hybrids of *Cornus* – except *C. florida* and *C. kousa* `Autumn Rose,' `Moonbeam,' and `Wolf Eyes' - are resistant to this disease. *Cornus florida* 'Spring Grove' and 'Sunset,' and several *Cornus florida* x *Cornus kousa* hybrids such as 'Constellation,' 'Ruth Ellen,' 'Star Dust,' 'Stellar Pine,' and 'Celestial' are also resistant.

Consider using other small flowering trees in the landscape. Some good choices recommended by experts are: *Cornus mas*, the Cornelian cherry; *Oxydendrum arboreum*, sourwood; *Franklinia alatamaha*, Franklinia or Franklin tree; *Styrax japonica*, Japanese snowbell; *Malus* sp., improved disease resistant crabapples; and *Cercis canadensis*, American redbud.

Fungicide recommendations for homeowners: Apply chlorothalonil, myclobutanil, potassium bicarbonate, propiconazole, or sulfur.

Certified pesticide applicators should refer to the most recent copy of *PMG for Commercial Production and Maintenance of Trees and Shrubs*. Contact Cornell Cooperative Extension – Suffolk County to order copies.

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Revised by Margery Daughtrey, Senior Extension Associate - Plant Pathologist, Long Island Horticultural Research & Extension Center, Riverhead, NY, October 2008.

Pesticide and management recommendations obtained from*: Cornell Pesticide Guidelines for Managing Pests Around the Home, Cornell University, 2014*

The New York State Department of Environmental Conservation (NYSDEC) Bureau of Pest Management maintains a web site with a searchable database for pesticide products currently registered in New York State. Individuals who have Internet access can locate currently registered products containing the active ingredients suggested in this diagnostic report at http://www.dec.ny.gov/nyspad/products?0. This replaces the no longer updated (as of August 15, 2016) PIMS website (http://pims.psur.cornell.edu/).

This publication contains pesticide recommendations. Changes in pesticide regulations occur constantly and human errors are still possible. Some materials mentioned may no longer be available, and some uses may no longer be legal. All pesticides distributed, sold 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. Read the label before applying any pesticide.

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