

Dogwood Diseases & Insect Pests

The flowering dogwood (*Cornus florida*) is a small, deciduous ornamental tree that is native throughout the eastern United States. Although dogwoods are well adapted to South Carolina, they can be affected by many pests and diseases. Maintaining healthy dogwood trees by following the recommended cultural practices is the first line of defense in reducing any of these problems. More information about growing dogwoods is available in [HGIC 1010, Dogwood](#).

Diseases

Powdery Mildew: *Erysiphe pulchra* (formerly *Microspheera pulchra*) is the fungus that attacks leaf surfaces and tender shoots and causes powdery mildew. New growth is covered with a fine, white, powdery coating, typically on the upper surfaces of the leaves. Infected leaves exhibit marginal leaf scorch, dead patches, reddish discoloration, yellowing and premature defoliation. Spores are spread by wind to surrounding dogwood plants.



Powdery mildew on dogwood (*Cornus florida*) leaves.
James Blake, ©2007 HGIC, Clemson Extension

Powdery mildew is most common in dense, shady areas where the air circulation is poor. Warm, dry days and cool, damp nights favor disease development.

Prevention & Treatment: Most powdery mildews of landscape trees occur late in the summer and are therefore of little consequence. Infection that begins early in the season can be devastating, and the use of fungicides may be warranted.

Cultural controls should be the first line of defense. Begin by raking up and destroying all fallen leaves. Prune out dead and infected branches and twigs. Improve air circulation and sunlight penetration around the tree by removing overhanging branches and crowding vegetation. Resistant species and cultivars are available and should be considered for new plantings. Cultivars of the oriental dogwood *Cornus kousa* (such as 'Milky Way', 'Milky Way Select', and 'National') and many of the *Cornus florida* x *Cornus kousa* hybrids (such as 'Aurora', 'Constellation', 'Celestial', and 'Stellar Pink') are generally resistant to powdery mildew. The flowering dogwood (*Cornus florida*) cultivars 'Appalachian Joy', 'Appalachian Blush', 'Appalachian Snow' and 'Appalachian Mist' are very resistant to powdery mildew. 'Cherokee Brave', 'Springtime', and 'Pygmy' have partial resistance. All other flowering dogwoods (*C. florida*) are susceptible. Red-twig dogwood (*C. sericea*) is very susceptible to powdery mildew.

If disease is severe enough to warrant the use of fungicides, be sure that the dogwood is a valuable specimen and the spray equipment can provide good coverage. For fungicides to be effective, they must be applied as soon as symptoms are noticed. Very effective fungicides for dogwood powdery mildew control include myclobutanil and propiconazole. Some control can also be obtained

with triadimefon, thiophanate methyl, sulfur, or copper fungicides (see Table 1 for specific products). Product labels will provide information on how often to spray. The first four fungicides listed have systemic properties and can be sprayed less often than sulfur or copper fungicides. When powdery mildew persists and sprays are repeated, it is recommended to alternate fungicides to decrease the chance of fungi developing resistance.

Spot Anthracnose: This disease is caused by the fungus *Elsinoe corni*, one of the most common leaf diseases of flowering dogwoods. The flower bracts are usually attacked first and then the leaves, young shoots and fruit of dogwoods, primarily during wet spring weather. Symptoms are small ($\frac{1}{8}$ inch), tan spots with reddish-purple borders. When infection is severe, these spots can cause flower bracts and leaves to become wrinkled and distorted. As further infections occur, individual spots eventually merge to form larger spots. The centers may drop out. This fungus survives from year to year on infected twigs, fruits and other tissues.



Spot anthracnose on dogwood (*Cornus florida*) petals.
Joey Williamson, ©2009 HGIC, Clemson Extension

Frequent rains or extended periods of high humidity are needed for disease development. When dry weather follows bud swell and bloom, the symptoms are rarely seen on the flower bracts. If spotting does not appear on the bracts, the disease may not be severe on the leaves.

Prevention & Treatment: In most cases this disease doesn't result in significant damage, but severe and repeat infections each year can significantly weaken a tree. Thin the canopy to increase air movement. Planting species and cultivars with some degree of disease resistance is an excellent option for managing this problem in the landscape.

The disease-tolerant and resistant varieties 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'
- Rutgers Hybrid - 'Stellar Pink'

The worst spot anthracnose has been reported on *Cornus florida* 'Rainbow' and 'Cherokee Daybreak'.

If spotting becomes severe, fungicides can be used in the spring starting at bud break and continuing until leaves are fully expanded. Fungicides available for use include chlorothalonil, mancozeb, propiconazole, thiophanate-methyl or copper fungicides (see Table 1 for specific products). Fungicides for spot anthracnose will also control dogwood anthracnose (canker anthracnose). Apply all chemicals according to directions on the label.

Dogwood Anthracnose (Discula Anthracnose):

This is a relatively new disease of dogwood in South Carolina, and it is caused by the fungus *Discula destructiva*. Dogwood anthracnose is most severe only in areas of the state that are higher than 2000 feet. A few cases have been reported at lower elevations where dogwoods are grown in very cool, moist, shady locations. It is a serious disease capable of killing large numbers of trees and most *Cornus* species can become infected.

The first symptoms that appear in the spring are spots on the leaves and flower bracts. Leaf symptoms develop first in the lower canopy and progress up the tree. Infected leaves have tan spots with purple edges, dry brown margins or large blotches on them. Blighted gray or drooping leaves hang on the twigs and are often the first symptoms noticed during cool, wet weather.



Symptoms of *Discula* anthracnose on dogwood (*Cornus florida*) leaves.
Joseph O'Brien, USDA Forest Service, www.ipmimages.org

Infection spreads into the shoots, main branches, and trunk causing brown sunken areas (cankers) to occur. Cankers can girdle and kill individual branches or twigs. Multiple cankers can girdle the main trunk and eventually kill the tree. Diseased trees produce numerous epicormic shoots or "water sprouts" on the lower trunk and lower limbs, which soon become infected.



Canker on dogwood (*Cornus florida*) caused by *Discula* anthracnose (bark removed).
Joseph O'Brien, USDA Forest Service, www.ipmimages.org

Prevention & Treatment: Planting resistant species and cultivars is an excellent option for managing this disease in the landscape. Kousa dogwood (*Cornus kousa*) is generally resistant to dogwood anthracnose and is a better choice for replanting in sites where dogwoods have died from this disease. Crosses between *Cornus kousa* and *Cornus florida* (Rutger's Hybrids) have greater disease resistance to dogwood anthracnose and include: 'Aurora', 'Celestial', 'Galaxy', 'Ruth Ellen', 'Star Dust', 'Stellar Pink' and 'Constellation'. *Cornus florida* 'Appalachian Spring' has a high level of resistance to anthracnose.

A combination of cultural and chemical measures is necessary to control this disease. Effective control may be possible if the disease is detected before branch dieback begins.

During hot, dry summer weather, prune and dispose of all dead or cankered twigs and limbs. Remove all "water sprouts." Rake and remove fallen leaves. Do not leave dead leaves attached to the tree. Improve air circulation and light penetration by removing understory plants and crowding vegetation.

Avoid high applications of nitrogen fertilizer, since this can promote very succulent (susceptible) new shoots. Maintain healthy dogwoods by following recommended cultural practices.

Avoid transplanting dogwood seedlings from the woods as these plants may harbor the fungus.

Fungicide sprays to protect the new leaves and shoots need to begin at bud break in early spring. Fungicides for spot anthracnose will also help to control dogwood anthracnose. These include: chlorothalonil, mancozeb, propiconazole, thiophanate-methyl or copper fungicides (see Table 1 for specific products). Maintain a protective covering of fungicide when new growth is present. Apply all chemicals according to directions on the label.

Cercospora & Septoria Leaf Spots: These leaf spot diseases are caused by the fungi *Cercospora cornicola* and *Septoria* species, respectively. They most commonly occur during the wet summer months, and may become so numerous that they cover the leaves by the end of summer. Heavily spotted leaves may be shed early. The light spotting seen on leaves of dogwood usually has little impact on tree health, but repeated years of early leaf drop can weaken the tree.

Cercospora and *Septoria* leaf spots are very similar in size and appearance. Both are small ($\frac{1}{8}$ to $\frac{1}{4}$ inch), angular to irregularly shaped and usually bordered by leaf veins. Spots caused by *Cercospora* species have tan-brown areas with diffuse borders. *Septoria* leaf spots are a dark brown purple in color, later developing light brown or gray centers with dark borders.



Septoria leaf spots on dogwood (*Cornus florida*).
Division of Plant Industry Archive, Florida Department of
Agriculture and Consumer Services, www.ipmimages.org

Prevention & Treatment: Clean up and dispose of infected leaves on the ground and on the tree, if possible, since this is where these fungi survive the winter. For severe infections, fungicides containing chlorothalonil, thiophanate-methyl, or mancozeb can be applied (see Table 1 for specific products).

Insects & Other Pests

Although insects often damage dogwood trees, the damage is usually minor. If the tree is planted in full sun with limited water or under other stress, the damage can be serious. Most insect damage occurs on the trunk and branches of dogwoods. Commonly occurring insect pests of dogwood include the dogwood borer, dogwood club-gall midge and scales.

Dogwood Borer: The dogwood borer (*Synanthedon scitula*) is the larva (immature form) of a clearwing moth that resembles a wasp. The borer is off-white in color with a reddish-brown head. It is about 5/8-inch long at maturity. The female moth lays eggs on the bark.

The borers can become established only if they locate a wound or opening in the bark. Inside the tree, they feed on the cambium, which is where water and food-carrying structures of the tree are produced. If the cambium is destroyed, branches or the entire tree will die. Leaves of dogwoods infested with the dogwood borer will often turn red and drop early. Bark sloughs off around holes on the trunk or branches. In late summer, a brown sawdust-like

borer frass (insect waste) may be seen near or below the holes. Infested young trees can be killed in one to two seasons. Large, established trees that are infested often lack vigor and have rough, knotty areas on the trunk and large branches.



Dogwood borer adult.
James Solomon, USDA Forest Service, www.ipmimages.org

Prevention & Control: The best prevention is to keep trees healthy by fertilizing and watering. In addition, protect the trees from unnecessary wounding, such as from lawn mowers and string trimmers, as this will reduce the chances of infestation. Permethrin is labeled for use by the homeowner against dogwood borer (see Table 1 for specific products). Since dogwood borer adults may be present from late April through July, several applications may be needed for good control. Begin treatment in early May and repeat four times at three-week intervals. Thoroughly spray the trunk, major branches and any wounds on the bark. Read and follow all label instructions and precautions.

Dogwood Club-Gall Midge: The dogwood club-gall midge (*Resseliella clavula*) is a small fly, about 1/16-inch long. The female lays eggs in tiny terminal leaves of the dogwood. The larva hatches and enters the shoot. In response to the feeding and growth of the larva, a 1/2-1 inch long club- or spindle-shaped tubular swelling (gall) forms at the tip or along the stem. The twig beyond the gall may die. In early fall, the larvae make exit holes in the galls. They drop to the ground where they survive the winter. An early symptom of a club-gall midge presence is a wilted, deformed leaf. A light infestation is not serious. A heavy infestation can stunt a tree.



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Damage on dogwood (*Cornus florida*) caused by dogwood club-gall midge.

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Control: Twigs with galls should be cut off and burned before larvae make their exit holes.

Scales: Several scale insects are pests of dogwood. Scales are unusual insects in appearance. They are small and immobile, with no visible legs. Scales vary in appearance depending on age, sex and species. They may be found on leaves or stems and look like small brownish, grayish or blackish bumps. They feed on sap by piercing the leaf or stem with their mouthparts and sucking. If infestations are very heavy, they may cause leaf yellowing, stunting or branch dieback. Adult scales are relatively protected from insecticides by their waxy covering. However, immature forms, called crawlers, are susceptible.

Control: For heavy infestations, spray with horticultural oil in the spring to kill many adults and eggs by smothering them. Oil should be applied before new growth begins and again after flowering. Be sure to thoroughly coat all of the branches. Avoid using insecticides unless the plant is very valuable and in serious danger from scale. The use of the horticultural oil is a safer alternative to insecticides for spraying upward into a large tree (see Table 1 for specific products).

Insecticides will often kill the naturally occurring enemies of scale. If insecticides are going to be

used, spray when crawlers are observed. Monitor the crawler emergence with sticky cards, double-faced tape wrapped around a branch, or by putting an infested shoot or leaf into a baggie and watching for crawler movement. Crawler activity often coincides with the flush of new plant growth in the spring. However, some scale species may have overlapping generations with an extended crawler emergence period, such as along the coast. Insecticides labeled for use by homeowners against scale crawlers on dogwood include cyfluthrin, permethrin, lambda cyhalothrin, malathion, and carbaryl (see Table 1 for specific products). Repeat treatments in 10 days. Read and follow all label instructions and precautions.

Other Problems

Poor leaf color, unhealthy plant growth, twig dieback, and even tree death are typical symptoms of distressed dogwoods. A number of factors other than insects or diseases can contribute to the decline of dogwoods in the landscape, especially mower injury, over-fertilization and poor growing conditions.

Leaf Scorch: Leaf scorch is caused by environmental conditions that are too dry. Leaves have dry and browning edges. On severely stressed trees, drying and browning of the areas between the veins and leaf drop can occur.



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Leaf scorch caused by drought stress on dogwood (*Cornus florida*).

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This condition looks just like a disease, but it isn't. Dogwoods have a very shallow root system, and thus are very susceptible to drought stress, especially newly planted trees in full sun.

Prevention & Treatment: Watering during dry spells is the key to avoiding leaf scorch. After transplanting, be sure to water as needed during the first summer and fall to avoid leaf scorch. Apply a thick layer of mulch (3 to 4 inches) that extends out beyond the foliage of the tree. Do not grow grass over the root system area.

Caution: Pollinating insects, such as honey bees and bumblebees, can be adversely affected by the use of pesticides. Avoid the use of spray pesticides (both insecticides and fungicides), as well as soil-applied, systemic insecticides unless absolutely necessary. If spraying is required, always spray late in the evening to reduce the direct impact on pollinating insects. Always try less toxic alternative sprays first for the control of insect pests and

diseases. For example, sprays with insecticidal soap, horticultural oil, neem oil extract, spinosad, *Bacillus thuringiensis* (*B.t.*), or botanical oils can help control many small insect pests and mites that affect garden and landscape plants. Neem oil extract or botanical oil sprays may also reduce plant damage by repelling many insect pests. Practice cultural techniques to prevent or reduce the incidence of plant diseases, including pre-plant soil improvement, proper plant spacing, crop rotation, applying mulch, applying lime and fertilizer based on soil test results, and avoiding over-head irrigation and frequent watering of established plants. Additionally, there are less toxic spray fungicides that contain sulfur or copper soap, and biological control sprays for plant diseases that contain *Bacillus subtilis*. However, it is very important to always read and follow the label directions on each product. For more information, contact the Clemson Extension Home & Garden Information Center.

Table 1. Insecticides & Fungicides to Control Dogwood Insect Pests & Diseases.

Insecticides & Fungicides	Examples of Brand Names & Products
Carbaryl	Garden Tech Sevin Bug Killer Concentrate
Chlorothalonil	Bonide Fungonil Multi-Purpose Fungicide Hi-Yield Vegetable, Flower, Fruit & Ornamental Fungicide Southern Ag Liquid Ornamental & Vegetable Fungicide Tiger Brand Daconil Garden Tech Daconil Fungicide Concentrate Ortho Max Garden Disease Control Tiger Brand Daconil Ferti-lome Broad Spectrum Landscape & Garden Fungicide Conc.
Copper-based Fungicides	Bonide Liquid Copper Concentrate Camelot O Fungicide/ Bactericide Concentrate Natural Guard Copper Soap Liquid Fungicide Concentrate Southern Ag Liquid Copper Fungicide Monterey Liqui-Cop Fungicide Concentrate
Cyfluthrin	Bayer Advanced Vegetable & Garden Insect Spray Concentrate
Horticultural Oil	Bonide All Seasons Spray Oil Concentrate Ferti-lome Horticultural Oil Spray Concentrate Southern Ag Parafine Horticultural Oil Monterey Horticultural Oil Concentrate
Lambda Cyhalothrin	Spectracide Triazicide Insect Killer for Lawns & Landscapes Concentrate

Malathion	Bonide Malathion 50% Insect Control Concentrate Ortho Max Malathion Plus Insect Spray Concentrate Southern Ag Malathion 50% EC Spectracide Malathion Insect Spray Concentrate Hi-Yield 55% Malathion Spray Martin's Malathion 57% Concentrate Tiger Brand 50% Malathion Gordon's Malathion 50% Spray
Mancozeb	Bonide Mancozeb Flowable Southern Ag Dithane M-45
Myclobutanil	Spectracide Immunox Multi-Purpose Fungicide Concentrate Ferti-lome F-Stop Lawn & Garden Fungicide
Permethrin	Bonide Eight Insect Control Vegetable Fruit & Flower Conc. Bonide Total Pest Control – Outdoor Concentrate Hi-Yield Indoor/ Outdoor Broad Use Insecticide Tiger Brand Super 10 Concentrate Martin's Vegetable Plus Concentrate
Propiconazole	Bonide Infuse Fungicide Ferti-lome Liquid Systemic Fungicide Banner Maxx Fungicide Martin's Honor Guard PPZ Martin's Systemic Fungicide RTS (Ready to Spray)
Thiophanate-methyl	Southern Ag Thiomyl Systemic Fungicide Cleary's 3336-WP Turf & Ornamental Fungicide

Pesticides updated by Joey Williamson, HGIC Horticulture Extension Agent, Clemson University, 10/16. Revised by Joey Williamson, HGIC Horticulture Extension Agent, Clemson University, 11/13. Images added 10/14. Originally prepared by Nancy Doubrava and J. McLeod Scott, HGIC Horticulture Extension Agent; James H. Blake, Extension Plant Pathologist; and Clyde S. Gorsuch, Extension Entomologist (Emeritus), Clemson University, 09/99.

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