



Disease and Insect Resistant Ornamental Plants

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CORNUS

Dogwood

Cornus is a genus of about 60 species of mostly shrubs and small trees commonly known as dogwoods. This genus includes many ornamentals, but the most popular is the flowering dogwood, *Cornus florida*. Native to the Eastern United States, these distinctive small trees are widely grown in Zones 5-9 and are known for their showy bracts, red fruit, horizontal branching habit and fall color.

The emergence of dogwood anthracnose in the 1970's and powdery mildew in the 1990's devastated *C. florida* in forest, landscape and nursery settings and they remain serious problems in many parts of the country. Host resistance is a key management strategy in areas where these diseases are prevalent.



DISEASES

Powdery Mildew is a disease of *Cornus* caused primarily by the fungus *Erysiphe pulchra*. During prolonged periods of warm days, cool nights and high humidity, the fungus forms whitish patches on leaves, stems and buds of susceptible plants. Repeated infections that begin early in the season can seriously damage trees and make them susceptible to other pests and problems. Trees in shady sites with poor air circulation are more likely to suffer damage.

Except for the Appalachian series from the University of Tennessee, most cultivars of *C. florida* are susceptible. *Cornus nuttallii* (Pacific dogwood), the West Coast equivalent of *C. florida*, is also susceptible. Cultivars of the kousa dogwood, *C. kousa*, are generally more resistant to powdery mildew than *C. florida*. There are also resistant hybrids developed by Dr. Elwin Orton at Rutgers University. These include the *C. florida* x *C. kousa* Stellar® Series and *C. florida* x *C. nuttallii* Jersey Star® Series.

Powdery Mildew				
Species	Cultivar	Reference		
		Resistant	Intermediate	Susceptible
<i>Cornus alba</i>		13, 24		
<i>Cornus alba</i>	Bud's Yellow	23		
	Ivory Halo			23

Powdery Mildew				
Species	Cultivar	Reference		
		Resistant	Intermediate	Susceptible
<i>Cornus alternifolia</i>		13, 15, 23, 24		
<i>Cornus controversa</i>		7, 13, 23		
<i>Cornus florida</i>	Appalachian Joy	13, 20		
	Appalachian Spring			5
	Autumn Gold			7, 24
	Barton			10, 15
	Cherokee			15
	Cherokee Brave	2, 6, 7, 24, 25	10, 15	4, 23
	Cherokee Chief	7		10, 15
	Cherokee Daybreak			24
	Cherokee Princess			4, 15, 24
	Cherokee Sunset			15, 23, 24, 25
	Cloud 9			4, 10, 15, 23
	Dixie Colonnade			5
	Double Delight			24
	Dwarf Pink	15		
	Dwarf White			7
	Emerald Star	15		
	First Lady			7
	Fragrant Cloud		15	
	Girard's Pink			24
	Gold Star	15		
	Green Glow			24
	Head Quarters			24
	Hog 1			24
	Hog 2			24
	Jean's Appalachian Snow	13, 25		
	Karen's Appalachian Blush	13, 14, 18, 25		
	Kay's Appalachian Mist	13, 25		
	Little Princess		15	5, 14
	Northern Providence			24
	Ozark Spring			15, 24
	Plena			5, 15
	Pink Beauty		15	7
Pink Flame			7, 24	
Poinsett			24	
Presidential			24	
Purple Glory			7, 15	

Powdery Mildew				
Species	Cultivar	Reference		
		Resistant	Intermediate	Susceptible
<i>Cornus florida</i>	Pygmy		15	24
	Rainbow			15, 24
	Red Beauty			15, 24
	Red Pygmy			5, 14
	Rubra			4, 14, 15
	Rubra Pink			7
	Snow Princess			24
	Spring Time			24
	Sterling Silver			15
	Stokes Pink			7
	Sweet Water Red			24
	Weaver's White	7		
	Welch's Bay Beauty	7		
	Wonderberry			15, 24
	World's Fair	14	15	
<i>Cornus kousa</i>		13		
<i>Cornus kousa</i>	Agate	15		
	Angustata	24		
	Autumn Rose	15, 24		
	Beni Fuji	24		
	Big Apple	5, 15, 18		
	Blue Shadow	5, 14, 15, 18, 24		
	Bodent Form	24		
	Bush's Pink	24	15	
	China Girl	15, 18, 24		
	Doubloon	24		
	Elizabeth Lustgarten	24		
	Emerald Star	15, 24		
	Empire	21		
	Gay Head	18		
	Greensleeves	18		
	Japanese Cornel	15		
	Julian	15		
	Lustgarten Weeping	5, 15		
	Milky Way (seed-produced cultivar; highly variable)	7, 10, 14, 15, 18, 24		
	Milky Way Select	7, 18, 24		
Moonbeam	15, 24			

Powdery Mildew				
Species	Cultivar	Reference		
		Resistant	Intermediate	Susceptible
<i>Cornus kousa</i>	National	7, 10, 24		
	Pam's Mountain Bouquet	21		
	Porlock	24		
	Red Steeple	21		
	Satomi	7, 15, 24		
	Scarlet Fire® ('Rutpink')	16		
	Snow Flake	15		
	Spring Grove		15	
	Square Dance	15		5
	Temple Jewel	18		
	Trinity Star	15		
	Willamette	24		
	Wolf Eyes	15		
<i>Cornus kousa</i> var. <i>chinensis</i>		15		
<i>Cornus mas</i>		13		
<i>Cornus mas</i>	Aurea	23		
	Golden Glory	10, 15, 23, 24		
	Redstone	15		
	Reston	23		
<i>Cornus sericea</i>		13, 24		
<i>Cornus sericea</i>	Cardinal	15		
	Isante	15		

Powdery Mildew				
<i>C. florida</i> x <i>C. kousa</i>				
Hybrids	Stellar® Series	Reference		
		Resistant	Intermediate	Susceptible
<i>Cornus x rutgersensis</i> 'Rutban'	Aurora®	4, 6, 7, 13, 14, 15, 18		
<i>Cornus x rutgersensis</i> 'Rutdan'	Celestial® (originally trademarked as Galaxy)	4, 6, 7, 13, 14, 15, 18	10	
<i>Cornus x rutgersensis</i> 'Rutcan'	Constellation®	4, 6, 7, 13, 14, 15	10	18
<i>Cornus x rutgersensis</i> 'Rutlan'	Ruth Ellen®	6, 7	15	4, 13, 14, 18
<i>Cornus x rutgersensis</i> 'Rutfan'	Stardust®	7, 13	10	15, 18
<i>Cornus x rutgersensis</i> 'Rutgan'	Stellar Pink®	4, 6, 7, 13, 14, 15, 18		

Powdery Mildew			
<i>C. florida</i> x <i>C. nuttallii</i>			
Hybrids	Jersey Star® Series	Reference	
		Resistant	Susceptible
<i>Cornus</i> x 'KN4-43'	Starlight®	5, 14	
<i>Cornus</i> x 'KN30-8'	Venus®	5, 14	

Powdery Mildew			
<i>C. florida</i> x <i>C. nuttallii</i>			
Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>C. florida</i> x <i>C. nuttallii</i>	Eddie's White Wonder		7, 23, 24

Anthracnose is a disease of *Cornus* caused by the fungus *Discula destructiva*. Infection generally occurs during cool, moist conditions in spring and early summer and is more likely to be severe in shaded sites. Symptoms typically start as leaf lesions or blotches. The disease may spread from leaves to twigs and trunks causing dieback and cankers. In severe cases, cankers girdle the trunk and eventually kill the tree.

C. florida and *C. nuttallii* are the primary hosts (19). *C. kousa* is generally more resistant (2, 3, 9), but susceptibility in some cultivars has been reported.

Anthracnose			
Species	Cultivar	Reference	
		Resistant	Susceptible
<i>Cornus canadensis</i>		3	
<i>Cornus florida</i>	Appalachian Spring	3, 19, 22	
<i>Cornus kousa</i>	Autumn Rose		18
	Elizabeth Lustgarten	18	
	Empire	21	
	Milky Way	18, 19	
	Moonbeam		18
	Pam's Mountain Bouquet	21	
	Red Steeple	21	
	Scarlet Fire® ('Rutpink')	16	
	Steeple	18, 19	
Wolf Eyes		18	
<i>Cornus mas</i>		3, 19	

Anthracnose			
<i>C. florida</i> x <i>C. kousa</i>			
Hybrids	Stellar [®] Series	Reference	
		Resistant	Susceptible
<i>Cornus x rutgersensis</i> 'Rutban'	Aurora [®]	2	
<i>Cornus x rutgersensis</i> 'Rutdan'	Celestial [®] (originally trade-marked as Galaxy)	2, 18, 19	
<i>Cornus x rutgersensis</i> 'Rutcan'	Constellation [®]	2	
<i>Cornus x rutgersensis</i> 'Rutlan'	Ruth Ellen [®]	2	
<i>Cornus x rutgersensis</i> 'Rutfan'	Stardust [®]	2, 18, 19	
<i>Cornus x rutgersensis</i> 'Rutgan'	Stellar Pink [®]	2, 18, 19	

Spot Anthracnose is a common disease of *C. florida* caused by the fungus *Elsinoe corni*. Other species such as *C. kousa* and *C. mas* can also be affected, but it is usually not significant (19). The disease is favored by wet, humid weather and is worse on trees growing in full sun than in shade. Reddish-purple lesions with tan centers infect leaves, bracts and fruit. Repeated infections can weaken trees and cause sparse flowers and foliage.

Spot Anthracnose			
Species	Cultivar	Reference	
		Resistant	Susceptible
<i>Cornus controversa</i>		7	
<i>Cornus florida</i> *	Barton White		7
	Cherokee Brave	4, 6, 7	
	Cherokee Chief	6	
	Cherokee Princess	19	6
	Cherokee Sunset		15
	Cloud 9		6, 9
	Dwarf White		7
	First Lady	19	
	Fragrant Cloud	19	
	Little Princess		15
	Ozark Spring		7
	Plena	19	
	Purple Glory	19	
	Rainbow		7, 15
	Rubra		6
	Springtime	19	7
Weaver's White	6		
Welch's Bay Beauty	6		
<i>Cornus kousa</i>	Lustgarten Weeping		15
	Milky Way	7	

**C. florida* cultivars with pink bracts less often disfigured than those with white bracts (19).

Spot Anthracnose			
Species	Cultivar	Reference	
		Resistant	Susceptible
<i>Cornus kousa</i>	Milky Way Select	7	
	National	7	
	Satomi	7	15
	Wolf Eyes		15
<i>Cornus mas</i>	Golden Glory		15

Spot Anthracnose			
<i>C. florida</i> x <i>C. kousa</i>			
Hybrids	Stellar [®] Series	Reference	
		Resistant	Susceptible
<i>Cornus x rutgersensis</i> 'Rutban'	Aurora [®]	4, 6, 7	
<i>Cornus x rutgersensis</i> 'Rutdan'	Celestial [®] (originally trade-marked as Galaxy)	4, 6, 7	
<i>Cornus x rutgersensis</i> 'Rutcan'	Constellation [®]	4, 6, 7	
<i>Cornus x rutgersensis</i> 'Rutfan'	Ruth Ellen [®]	4, 6, 7	
<i>Cornus x rutgersensis</i> 'Rutlan'	Stellar Pink [®]	4, 6, 7	

Spot Anthracnose			
<i>C. florida</i> x <i>C. nuttallii</i>			
Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>C. florida</i> x <i>C. nuttallii</i>	Eddie's White Wonder		7

Cercospora Leaf Spot is a disease of *C. florida* caused by the fungus *Cercospora cornicola*. Prevalent during and following wet spring weather, leaves develop brownish spots. Minor infections may diminish aesthetic value but will not cause lasting damage. However, severe infections that cause repeated defoliation over several years can reduce tree vigor.

Cercospora Leaf Spot				
Species/Hybrids	Cultivar	Reference		
		Resistant	Intermediate	Susceptible
<i>Cornus florida</i>	Cherokee Brave		1	6
	Cherokee Chief		1	
	Cherokee Princess		1	6
	Cloud 9		1	6
	Little Princess			1
	Pumpkin Patch	1		
	Pygmy	1		
	Red Pygmy	1		
	Rubra			6

Cercospora Leaf Spot			
<i>C. florida</i> x <i>C. kousa</i>			
Hybrids	Stellar® Series	Reference	
		Resistant	Susceptible
<i>Cornus x rutgersensis</i> 'Rutban'	Aurora®	6	
<i>Cornus x rutgersensis</i> 'Rutdan'	Celestial® (originally trademarked as Galaxy)	6	
<i>Cornus x rutgersensis</i> 'Rutcan'	Constellation®	6	
<i>Cornus x rutgersensis</i> 'Rutfan'	Ruth Ellen®	6	
<i>Cornus x rutgersensis</i> 'Rutlan'	Stellar Pink®	6	1

INSECTS

Dogwood Borer, *Synanthedon scitula*, is the larval stage of a clearwing moth that resembles a wasp. It has multiple landscape plant hosts and is the most serious insect pest of *C. florida*. *C. kousa* is reported as resistant (11) but susceptibility of some cultivars has been observed (10).

Larval feeding in phloem and cambium tissue interferes with transport of water and nutrients. Weakened trees may die within in a couple of seasons. The best ways to reduce infestation are to maintain healthy trees and avoid wounding such as from lawn mowers. Any opening in the bark can provide access to larvae. A study at the University of Kentucky found trees planted in full sun had an increased probability of borer attack (17).

Dogwood Sawfly, *Macremphytus tarsatus*, is a native insect that relies on *Cornus* sp. for larval development. Feeding injury can skeletonize and defoliate infested trees. Gray dogwood, *C. racemosa*, is a primary host (11, 12). Tatarian dogwood, *C. alba* 'Sibirica', and redosier dogwood, *C. sericea* 'Flaviramea' have also been reported as preferred hosts—*C. florida*, *C. kousa* and *C. mas* appear to be resistant (12).

Japanese Beetle, *Popillia japonica*, is a common defoliator of many landscape plants. *C. florida* is reported to be resistant (8).

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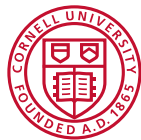
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