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POWDERY MILDEW OF DOGWOOD

Dogwoods (*Cornus* spp.) are very popular trees in the landscape because of their showy bracts, red berries, and fall color. Powdery mildew is a common fungal disease that damages its natural beauty and also reduces its winter hardiness.

SYMPTOMS AND DIAGNOSTICS

The symptoms of the disease first appear as circular, white patches consisting of fungal mycelia and spores on upper leaf surfaces (Figure 1). As the fungus grows and produces spores, leaves may be covered by white mildew and develop mottled yellow or brownish patches. When new leaves are infected, they curl upward and shoot growth is stunted (Figure 2). Although powdery mildew damage appears to be cosmetic, the disease can result in loss of aesthetics as a result of stunted, distorted growth. Red-brown blotches may develop on leaves during hot, dry summers. Late in the season, light brown to black fungal fruiting bodies called chasmothecia (previously called cleistothecia) form in white mycelial patches on leaf surfaces (Figure 3).

DISEASE DEVELOPMENT

Powdery mildew of dogwood is caused by the fungus *Erysiphe pulchra*. The fungus has two distinctive reproductive stages. In the sexual stage, the fungus produces ascospores in

Figure 1. Early stages of powdery mildew appear as white patches (arrow) on leaves.

Figure 2. Curling and distortion of new leaves (arrows) covered with white mold.

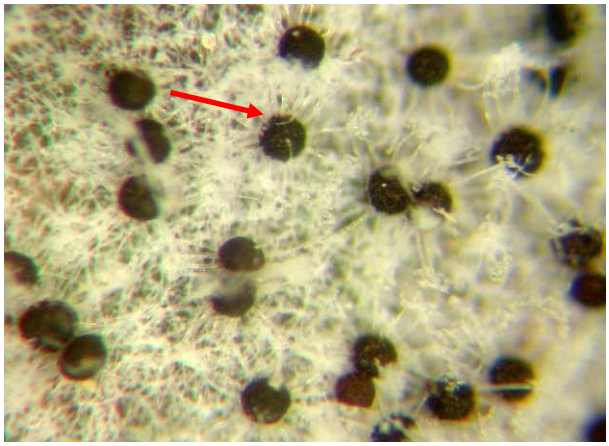

Figure 3. Small, black fungal fruiting bodies (arrow), chasmothecia, in white mold in fall.

chasmothecia that may overwinter. In spring or early summer, these airborne ascospores initiate primary infections on susceptible leaves. Secondary infections may be initiated by conidia, the asexual spores that form in the white fungal patches on infected leaves. Secondary infection cycles cause epidemics of the disease throughout the growing season. Germination of ascospores and conidia generally do not require a film of water on leaf surfaces, but need high relative humidity. Powdery mildew will develop rapidly during extended periods of warm and humid conditions that promote heavy morning dews.

MANAGEMENT

Resistant species and varieties: Several species in the genus of *Cornus* such as *C. kousa*, *C. sericea*, *C. mas*, *C. alternifolia*, *C. alba*, and *C. controversa* are highly resistant to powdery mildew. Flowering dogwood (*C. florida*) is the most popular ornamental dogwood, but powdery mildew resistance is limited in this species. However, some hybrids of *C. kousa* × *C. florida* such as 'Stellar Pink,' 'Stardust,' 'Galaxy,' 'Constellation,' and 'Aurora' are highly resistant to powdery mildew. Recently, resistant flowering dogwood varieties, 'Jean's Appalachian Snow,' 'Key's Appalachia Mist,' 'Karen's Appalachian Blush,' and 'Appalachian Joy' were released from the University of Tennessee.

Proper cultural practices: Collect and dispose of fallen leaves at the end of the season to reduce the primary inoculum for the next season. Prune plants adequately to allow better air circulation. Mulch and water adequately to prevent root stress. Maintain plants in high vigor to withstand disease attack.

Fungicide applications: Fungicide applications may be needed for seedlings in nurseries and for valuable trees in the landscape. Initiate fungicide applications when the first symptoms of powdery mildew are observed. Fungicides that are registered for use on dogwoods in Connecticut include copper products, chlorothalonil, myclobutanil, propiconazole, and thiophanate-methyl. Some biorational products such as Neem oil, insecticidal soap, potassium bicarbonate, potassium salt of fatty acid, and horticultural oil are also effective in reducing disease severity. The fungicide label will contain information on dosage rates, application intervals, and safety precautions.

October 2012