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POWDERY MILDEW OF WOODY ORNAMENTALS

Powdery mildews are common diseases of a wide variety of woody ornamentals in nurseries and landscapes. Although powdery mildews rarely kill plants, severe infections can result in unsightly appearance and aesthetic value losses of ornamental plants. In Connecticut, powdery mildews are common on lilac, hydrangea, rose, ninebark, winterberry, dogwood, maple, oak, sycamore, and magnolia. Several fungal species in genera *Erysiphe, Phyllactinia, Podosphaera*, and *Golovinomyces* cause powdery mildew on different wood ornamentals. Each of these fungal species is highly specific to a few closely related host species.

SYMPTOMS AND DIAGNOSTICS

Common symptoms of powdery mildew include small yellow spots or blotches (Figure 1) and white powery substance (conidia and mycelia) on the upper surface of leaves (Figure 2). For some powdery mildews, white mildew may be found on the lower surface of leaves (Figure 3). New growth and water sprouts with tender leaves and stems are more susceptible to powdery mildews. Infected new growth may become distored and curled upward (Figures 4, 5, and 6). In late summer or early fall, some powdery mildew fungi form tiny, spherical, orange/or black fungal fruiting bodies (chasmothecia) whithin white mildews (Figure 3).

DISEASE DEVELOPMENT

The pathogens overwinter as mycelia in dormant buds or as chasmothecia on plant debris. In the spring, dormant hyphae in buds resume growth and infect the new leaves, and mature chasmothecia release ascospores that initiate primary infection on susceptible leaf tissues. During the growing season, the pathogens produce conidia periodically on diseased leaves, which is responsible for

Figure 1. Yellow spots and blotches on maple leaves.

Figure 2. White mildew on the upper side of hydrangea leaves.

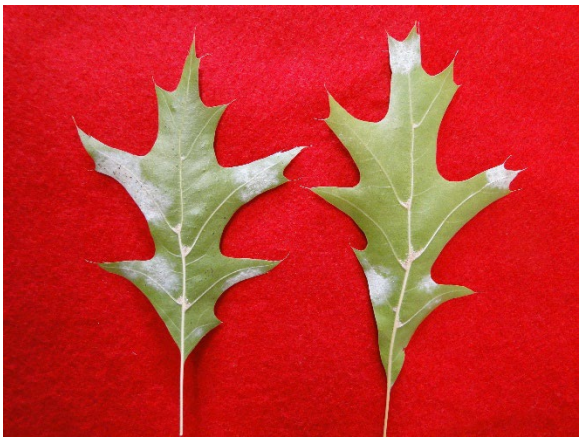

Figure 3. White mildew and chasmothecia (arrow) on the lower side of oak leaves.

Figure 4. Stunted growth of young maple leaves.

Figure 5. Distorted new growth and leaf curling of dogwood.

Figure 6. White mildew on leaves and stems of a young rose shoot.

repeated secondary infections and spread of powdery mildews. Both ascospores and conidia are dispersed through wind and air movement. Moderate temperatures (60°-80°F), high relative humidity (RH 60-100%), and shady conditions are favorable for powdery mildew development. Spore gemination and infection of powdery mildews require high humidity, but not free water on leaves and shoots. Extreme heat (above 90°F) may suppress powdery mildew development.

MANAGEMENT

Resistant cultivars: Plant species and varieties vary in their susceptibility to powdery mildews. Whenever available, use resistant or tolerant species or varieties.

Cultural practice: Aoid new plants in shaded areas with poor air circulation. Remove and destroy fallen leaves at the end of the growing season.

Fungicide treatment: For valuable plants, preventative fungicide applications are suggested at first disease onset and throughout the growing season as the label recommended intervals. Fungicides that are registered for powdery mildew include thiophanate methyl, chlorothalonil, potassium bicarbonate, neem oil, sulfurs, and coppers. Always read and follow the label instructions.