Virginia Cooperative Extension

Plant Disease Fact Sheets

2000 PUBLICATION 450-603W

Powdery Mildew of Ornamental Plants

Mary Ann Hansen*

Powdery mildew fungi attack a variety of ornamental plants grown in Virginia. Photinia, crape myrtle, dogwood, lilac, Japanese euonymus, wintercreeper euonymus, and many crabapple cultivars are highly susceptible and can be seriously damaged by powdery mildew infection. Many herbaceous ornamental plants are also susceptible to powdery mildew.

Cause

The fungi that cause powdery mildew all belong to the family, Erysiphaceae. Some powdery mildew fungi attack several different host plants, but most attack only a single host or, at most, only a few species. Most powdery mildew fungi produce a conspicuous white to grayish growth of fungal mycelium on the surface of the diseased plant part. Conidia, or spores of the fungus, are produced on the mycelium. In late summer most powdery mildew fungi also produce fruiting bodies called cleistothecia, which are dark-colored at maturity and about the size of coarse grains of pepper. These appear as dark specks on the white mycelium.

Symptoms

The prolific growth and sporulation of the fungus on the surface of leaves and other plant parts give the affected tissue a talcum powder-like appearance, hence the name "powdery mildew" (Fig. 1). The new growth of infected plants may be completely covered with powdery mildew. As a result, new growth may be dwarfed, and the leaves, stems and young shoots may be curled. In addition, shoot tips may be killed and buds may fail to open (Fig. 2). Powdery mildew can also be severe on older leaves or plant parts. Leaves that are heavily infected with powdery mildew may become chlorotic and senesce early. The unattractive appearance of nursery plants infected with powdery mildew may make them unsaleable.

Disease Cycle

As a general rule, powdery mildew diseases are most severe under dry climatic conditions; however, fog or high relative humidity are necessary for spore germination. Free water on the leaf surface actually inhibits spore germination of most powdery mildew fungi;

Fig. 1. Leaves of crape myrtle infected with powdery mildew. (Photo by R. C. Lambe)

Fig. 2. Flower buds and leaves of rose infected with powdery mildew. (Photo by R. C. Lambe)

*Extension Plant Pathologist, Department of Plant Pathology, Physiology and Weed Science, Virginia Tech

however, splashing water can spread spores. Warm, dry days and cool nights are most conducive to infection. On dry days conidia can be blown to healthy tissue. As air cools at night and humidity rises, the spores absorb moisture, germinate, and infect. Under favorable climatic conditions, a single spore can cause a new visible, sporulating lesion in 3-5 days. Thus, the disease can appear to develop very rapidly.

In geographical areas with mild winters, the mildew fungus overwinters as conidia or mycelium in infected buds, or on leaves, stems, and other plant parts. The fungus resumes its growth the following spring and is first observed on the new growth. In areas where winters are severe, the fungus overwinters as cleistothecia on plant debris. In spring the cleistothecia produce ascospores, which, like conidia, are blown to healthy tissue and cause new infections.

Control

Cultural Control

Cultural practices that reduce humidity, such as pruning for improved air circulation and avoiding shady locations, help prevent powdery mildew.

Chemical Control

Frequent application of fungicides throughout the period of the year when the plant is making rapid growth minimizes serious damage. A number of fungicides have proven effective for control of powdery mildew diseases. Some fungicides that have a broad label for control of powdery mildews on many different ornamental species include triadimefon (e.g. Bayleton, Strike), myclobutanil (e.g. Systhane), propiconazole (e.g. Banner), triflumizole (e.g. Terraguard), funginex (e.g. Triforine), thiophanate methyl + mancozeb (e.g. Zyban), dodemorph (e.g. Milban), trifloxystrobin (e.g. Compass), Neem oil extract (e.g. Triact 70), and potassium bicarbonate (e.g. Remedy, First Step, Armicarb 100). Several of these fungicides, including triadimefon, triforine, dodemorph, propiconazole, myclobutanil, and triflumizole, have systemic and curative activity; others have only protectant activity. Fungicide labels should be consulted for instructions for use on specific ornamental species. Details can also be found in the current Virginia *Pest Management Guide for Home Grounds and Animals* (VCE Publication 456-018) or the Virginia *Pest Management Guide for Horticultural and Forest Crops* (VCE Publication 456-017), http://www.ext.vt.edu/pubs/pmg/. For information on the proper use of pesticides and fungicides, refer to any current VCE pest management guide.

Resistance

Cultivars with resistance to powdery mildew are available for some ornamental species. Because chemical control for powdery mildew often involves season-long applications, use of resistant cultivars is highly desirable. On cultivars with high levels of resistance, sprays for powdery mildew may be reduced or even eliminated, but fungicides may still be necessary to control other diseases. Consult VCE Publication 450-616W, *Powdery Mildew-Resistant Woody Ornamentals*, for more information on cultivars of woody ornamentals with resistance to powdery mildew.

Adapted from previous publication by R. C. Lambe and C. R. Drake.