

Diseases of Landscape Plants

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Powdery Mildew

Janna Beckerman

Department of Botany and Plant Pathology, Purdue University

Powdery mildews are common diseases on ornamental plants in the urban landscape. A variety of microscopically distinct fungi cause these diseases, so while all the white growth covering different plants may look the same to the naked eye, the fungi causing powdery mildew on one plant are usually different than those on another plant. This publication examines the symptoms, disease cycle, and management options of powdery mildew for ornamental plants in a home setting.

Symptoms

Powdery mildews frequently infect lilac, azalea, tulip-tree, alpine currant, rose, numerous perennials, and many other shrubs. In most cases (some perennials being the exception), the pathogen is host specific, meaning that the rose powdery mildew pathogen cannot infect lilac, or vice versa. Powdery mildew rarely causes serious damage to its host, but this disease can discolor leaves that defoliate or die, disfigure shoots, and deform flowers (Figure 1). Although unsightly, powdery mildew is rarely fatal.

Infected plants often turn yellow, and may even blacken from infection. When young shoots are infected, common symptoms include etiolation, resulting in longer, weaker stems, fewer leaves, and leaf discoloration. Dieback is rare.

Powdery mildew is easily diagnosed on most plants by its characteristic coating of “powder,” that consists of the disease-causing fungus (Figure 2).

Disease Cycle

In the spring, *cleistothecia* (specialized spore structures that look like Koosh balls) that developed on previously infected plant material, rupture and release fungal spores (Figure 3). Wind carries these spores to newly emerging, susceptible tissues where they begin to grow on the surface, and into the upper layer of the leaf. Successful infection results



Figure 1. Although rarely fatal, powdery mildew can discolor leaves, as on this honeysuckle.

Photo by Janna Beckerman



Figure 2. The most distinguishing characteristic of powdery mildew is the powder-like appearance of disease-causing fungus as seen on these rose leaves.

Photo by Janna Beckerman

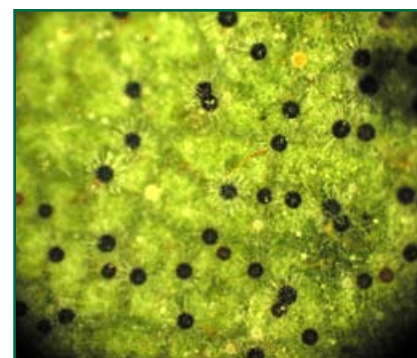


Figure 3. Cleistothecia are specialized spore structures that release fungal spores.

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Figure 4. Leaves infected with powdery mildew have a white-to light gray dusting.

in asexual reproduction, with the fungus producing columns of spores capable of causing repeated infections.

Fungal growth, coupled with spore production throughout the growing season, give infected leaves a white- to light gray characteristic dusting (Figure 4). Powdery mildew is most prevalent when temperatures are cooler and humidity is high, or when it is extremely dry. Powdery mildew pathogens are some of the only fungal organisms that can germinate and infect in the absence of free water.

Management

Cultural practices aimed at alleviating high humidity can help prevent the disease or decrease its severity. Such practices involve increasing air circulation and light penetration by pruning and thinning plants to reduce overcrowding in the landscape.

When selecting new plants, choose those that have powdery mildew resistance. There are powdery mildew resistant varieties of crabapples (rarely a problem in the Midwest), lilac, dogwood, azalea, and rose. When planting these new plants, allow for adequate spacing in the appropriate site. Too much or too little sunlight can stress plants and predispose them to severe disease.

Water inhibits spore germination for most powdery mildews, so overhead watering of the leaves during the day and when humidity is low greatly inhibits infection and can protect the plant. Using water to control powdery mildew is moderately effective only if other leaf diseases are not a problem. Because most other pathogens do require water on the leaf surface to infect, take care not to prevent powdery mildew at the expense of causing another foliar disease.

Powdery mildew seldom warrants chemical control in the home landscape. However, in those instances where control is desired, materials with low environmental impact, such as horticultural oils, neem oil, or antitranspirants (like Vapor Gard® or Wilt Pruf®) can prevent infection when applied to green tissue on the plant. Such applications can remain effective up to 30 days in the home landscape. Do not apply

Table 1. Midwest landscape plants that can be infected by powdery mildew.

Annuals and Perennials			
Achillea	Campanula	Helianthus	Pulmonaria*
Aquilegia	Centaurea	Heliopsis	Rudbeckia*
Ajuga	Coreopsis	Knautia	Salvia*
Aster*	Dahlia	Lupinus	Scabiosa
Begonia	Delphinium*	Monarda*	Solidago*
Calendula	Eupatorium	Penstemon	Stokesia
Chrysanthemum*	Gaillardia	Phlox*	Verbena*
Cineraria (and other daisies)	Gerbera	Polemium	Veronica*
Cosmos	Geranium*	Prunella	Zinnia*
Shrubs			
Amelanchier	Euonymous	Pyracantha (Firethorn)	Spiraea
Azalea*/Rhododendron	Lonicera (Honeysuckle)	Ribes (Alpine Currant)*	Syringa (Lilac)*
Cornus*(Dogwood)	Potentilla	Rose*	Viburnum
Cotinus (Smoke-tree)	Prunus (Flowering cherry, plum, etc)	Hydrangea, Snowball	Wisteria

*Resistant varieties of this plant have been reported.

these products when it is above 85°F. Always read and follow product labels to make sure the crop is on the label. Apply a fungicide on a regular schedule as the label recommends until conditions change.

Most products labeled for powdery mildew control are available only to certified commercial applicators, not homeowners. Table 2 lists all fungicides labeled for powdery mildew. Products set in bold are available for homeowner use.

Chemicals are not available for use on many susceptible landscape plants. For deciduous shrubs that have repeated, yearly infections, a dormant fungicide such as lime-sulfur may be applied in the fall, and again in early spring before new growth begins (do not use lime-sulfur on sulfur-sensitive plants like viburnum, grape, and many garden vegetables.). Read all chemical labels for recommended plants for treatment before purchasing and using. Label information is the final authority. Read all fungicide labels carefully and apply only as directed.

Figure 2. Products labeled for powdery mildew control.

Common Name	Trade Name
<i>Fungicides</i>	
strobilurin: azoxystrobin, trifloxystrobin, pyraclostrobin,	Compass [®] , Heritage [®] , Insignia [®]
DMI: fenarimol	Rubigan [®]
DMI: triadimefon	Bayleton [®] , Strike [®]
DMI: triforine	Triforine[®] , Funginex [®]
DMI: triflumazole	Terraguard [®]
myclobutanil	Eagle [®] , Systhane [®] , Immunox[®]
multisite: chlorothalonil	Daconil[®] , PathGuard [®]
multisite: thiophanate methyl + mancozeb	Zyban [®] , Duosan [®]
<i>Organic and Biological Control</i>	
<i>Ampelomyces quisqualis</i>	AQ-10 [®] (biological control)
horticultural oil, paraffinic oil	SunSpray Ultrafine oil[®]
potassium bicarbonate	Remedy [®] , Arbicarb [®] , Kaligreen[®] , FirstStep[®]
potassium salts of fatty acids	M-Pede [®]
sulfur*	MicroThiol [®] , Sulfur

* Do not use sulfur on sulfur-sensitive plants such as viburnum.

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