

Powdery Mildew

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Plant Disease Management: Horticultural Crops

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Pathogen

Species of fungi in the genera *Erysiphe*, *Sphaerotheca*, *Uncinula*, *Microsphaera*, *Phyllactinia*, *Podosphaera*, *Leveillula*, all known as powdery mildews

Host

Vegetables, landscape plants, fruit trees, grapes

Symptoms/signs

White, powdery spots or large blotches appear on the surface of leaves, stems and fruits of most plants. The white powdery growth consists of the fungal mycelium and reproductive spores. In some cases on tomatoes, eggplant and peppers, yellow patches are produced on leaves, but there is no powdery growth of the fungus on leaf surfaces.

Environmental conditions

Unlike many pathogens, powdery mildew fungi grow and infect their hosts in the absence of free water. Disease is favored by moderate or high humidity and low light intensity, conditions which are often prevalent on lower plant parts or in thick foliage. Powdery mildew is found throughout the low desert areas most of the year. At higher elevations, disease appears as host plants begin to grow or develop new foliage. It is favored by warm temperatures and is one of the few foliar diseases that is prevalent in the desert areas.

Disease

The different genera or groups of powdery mildew fungi are very specialized and infect only certain groups of plants. For example, the powdery mildew on watermelon will not infect roses, but infects cantaloupe and other cucurbits. Fungal spores on the leaf surface are easily carried in wind to new hosts. Spores germinate on the surface of plant parts and

develop into a mycelium that grows over the surface. Spores will not germinate in free water. In most annual plants and shrubs, disease appears on the upper surface of older leaves first. These leaves turn brown and die when heavily infected. In fruit trees, grape, and berries, new shoots may be infected and killed.

Powdery mildew fungi survive in low deserts as short-lived windborne spores or as mycelium in host plant tissue. The mycelium cannot survive unless it is in living host tissue. In colder areas where freezing temperatures are common throughout the winter months, powdery mildew fungi may survive by forming a sexual stage that is resistant to drying, cold temperatures and survives outside the living hosts for long periods of time.

Prevention/control

RESISTANT VARIETIES

In some plant groups such as cucurbits, varieties resistant to powdery mildew are available. Check seed packets for resistance information. When planting trees and shrubs, look for varieties of plants that are suited to the area and avoid those that are most susceptible to powdery mildew.

At a Glance

- Powdery mildew appears as white, powdery spots on the leaf surface of many different kinds of plants.
- Powdery mildews are specific to their hosts and one type will infect only certain plants, usually those in the same or closely related plant families.
- Disease is favored by warm temperatures, moderate to high humidity, low light intensity, and poor air flow.
- Resistance is available in some plant species; sulfur compounds give good control but should be used carefully to avoid plant toxicity.

CULTURAL PRACTICES

With good general cultural practices using plants in the landscape that are not highly susceptible, powdery mildew is not a problem in most cases. The following practices reduce incidence in all but the most susceptible plants.

Recommended practice	Comments
plant in full sun	plants susceptible in sunny locations include zinnas, euonymous, roses, grapes
use overhead irrigation	consistent application of free water will inhibit spore germination or kill spores
create good air flow on the canopy	careful pruning in grapes, fruit trees and susceptible shrubs will open the canopy, increasing light and decreasing humidity

CHEMICAL

Timely applications of fungicides can prevent or control powdery mildew. Chemicals may be necessary for very susceptible plants such as grapes and cucurbits. Sulfur is very effective for preventing infection. Caution must be taken with sulfur applications since some plant species, especially some varieties of cucurbits, are easily damaged by sulfur. Other contact and systemic fungicides are available, and their application rates will vary according to plant type and severity of disease. The table below lists some commonly used compounds.

Compound	Trade Name	Comments
wettable sulfur	many brands	use with caution above 90°F
dusting sulfur	many brands	use with caution above 90°F
triadimefon	Bayleton	grapes
mycobutanil	Rally	fruit trees and grapes
fenarimol	Rubigan	ornamentals, grapes, fruit trees

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