

Powdery mildew

Although the dusty coating looks similar, several different species of fungi cause powdery mildew. On woody plants, the most common powdery mildew fungal genera include *Erysiphe*, *Microsphaera*, *Phyllactinia*, *Podosphaera*, *Sphaerotheca*, and *Uncinula*.



Host plants:

Many woody plants are susceptible to infection by powdery mildew fungi. Common woody hosts include birch (*Betula*), dogwood (*Cornus*), lilac (*Syringa*), maple (*Acer*), oak (*Quercus*), rose (*Rosa*), and sycamore (*Platanus*). Some species of powdery mildew infect only closely related host plants, while others infect many different plants. For example, *Sphaerotheca pannosa* infects only rose and peach, while *Phyllactinia guttata* grows on a number of host plants.

Description:

Powdery mildew seldom causes trees and shrubs to die, but it causes infected plants to be unsightly as well as hasten leaf loss and plant dormancy. Powdery mildew grows on the surface of leaves, green shoots, and buds as a dusty, gray to white coating. Powdery mildew obtains their carbohydrates from living host plants using tiny tube-like structures. As the fungus grows over the surface of the plant, it extends the tube-like structures into the plant cells where they absorb material from the plant. The first evidence of powdery mildew is visible in late spring depending on the weather conditions and the manner in which the fungus survives the winter. These fungi cause chlorosis and purpling of foliage as well as puckering, brittleness, and premature leaf loss.



Powdery mildew in late summer on flowering dogwood



Chlorosis and cupping of leaves due to powdery mildew on London planetree

Photos: M. Daughtrey (left) and E. M. Dutky (right), *Diseases of Woody Ornamentals and Trees*. APS Press.

On green shoots and buds, they cause curling and stunted growth. Late in the growing season, some powdery mildew fungi form minute, dark colored winter survival structures on the surface of infected plant parts.

Disease cycle:

Powdery mildew survives the winter within buds and within resistant fungal structures. When temperatures moderate in the spring the fruiting structures release spores that blow and splash through the air onto nearby leaves and green shoots. In addition, powdery mildew fungi that spent the winter within buds resume growth into newly developing leaves shoots, flower parts, and foliage. Powdery mildew disfigures, stunts, and grows over the surface of plant parts that develop from infected buds. Powdery mildew fungi produce repeating spore cycles on the plant surfaces throughout the growing season. These fruiting structures release spores into the air and spread the disease to close by vulnerable parts of plants. Humid conditions, overcrowding and excessive shading keeps plants cool and damp promotes extensive powdery mildew outbreaks. Many, but not all,

powdery mildew fungi begin to form numerous cold resistant fungal structures in the late summer on infected leaves. Other powdery mildew fungi survive the winter by infecting primordial leaves, shoots, or flower parts within buds.

Management strategies:

Usually, the damage caused by powdery mildew is of minor consequence to healthy plants and does not warrant chemical control if unsightliness is not a critical concern. Furthermore, limiting powdery mildews by chemical applications alone is seldom successful. Proper cultural practices are important to manage the disease effectively. Where powdery mildew is a regular problem grow resistant cultivars and species of plants. When the fungus over winters on fallen leaves, collect and dispose of these leaves to reduce inoculum available to start infections next spring. Likewise, where powdery mildew survives winter in infected buds, remove and dispose of diseased twigs and branches. This practice is particularly important on plants such as rose and crabapple. Prune plants and space them well to promote good air circulation and sunlight penetration. Where appearance is critical or unacceptable damage is occurring, chemical treatment along with suitable cultural practices achieves satisfactory control. Chemical spray programs are most effective when begun just as symptoms of powdery mildew begin to show.

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