



# The Plant Doctor's LANDSCAPE TIPS

By David L. Roberts, Ph.D, Michigan State University



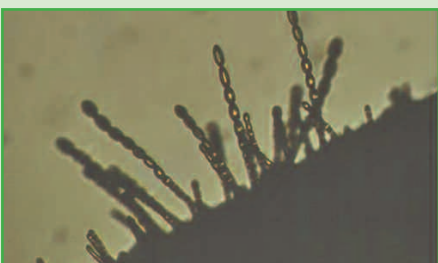
**Photo 1.** Certain varieties of tall phlox appear to be highly susceptible to powdery mildew, regardless of the environmental conditions. Use resistant or tolerant varieties where possible.



**Photo 2.** In recent years, powdery mildew seems to be increasingly common on certain types of maple trees, especially on "Crimson King."



**Photo 3.** In general, the fungi that cause powdery mildew are highly specific for the particular host plant they infect. Hence, the powdery mildew fungus on maple is different than the mildew on lilac and different from the species of mildew fungus on tall phlox. It is even possible that the mildew on this "green leaf" maple is different than the mildew on "purple leaf" varieties, as in Photo 2.



**Photo 4.** From a microscopic view of the leaf surface, the powdery mildew fungus produces chains of spores (conidia) that break off and blow in the wind to infect other susceptible plants.

## POWDERY MILDEW OF LANDSCAPE PLANTS

### INTRODUCTION:

Powdery Mildew is a plant disease caused by a variety of fungi. Some of the more common powdery mildews are caused by fungal genera names such as *Podosphaera* spp., *Erysiphe* spp., and *Sphaerotheca* spp.. Many broad leaf plants and grasses are affected by powdery mildew; a short list includes roses, apple, grape, lilac, maple, cucurbits, and many annuals and perennial plants. Conifers are not susceptible to powdery mildew. Unlike many plant disease organisms, the powdery mildew fungi are obligate parasites, meaning they must have a living host plant to survive and reproduce. Also unusual compared to many other fungal disease organisms whose spores require free moisture on the plant surface to germinate and infect plant tissue, the powdery mildew fungi only need high humidity, generally above 90%, to germinate and infect plant tissue. Of particular importance in understanding powdery mildew diseases, some have fairly extensive host ranges while many others are highly specific for their own host plant. Hence, the powdery mildew that occurs on apple is usually not the same fungus that occurs on lilac, which is not the same fungus that occurs on phlox, and so forth. Despite their somewhat objectionable appearance, powdery mildews are generally not lethal or all that harmful to ornamental plants. In rare situations, such as an introduced powdery mildew on dogwood (*Cornus florida*), powdery mildew may be very harmful.

### SYMPTOMS AND DISEASE CYCLE:

Powdery mildews are easily diagnosed by the white powdery appearance on the upper surfaces of leaves (Photos 1-3). The white powder is composed of many microscopic spores and mycelia (fungal body). The white powdery masses of spores are quite conspicuous with most powdery mildew diseases; however, some powdery mildews may cause sickly appearance of plant foliage without producing abundant spores and mycelium.

The powdery mildew fungus usually overwinters as tiny specialized reproductive structures on decomposing foliage from the previous season. These specialized sexual reproductive structures are called cleistothecia for many powdery mildew fungi and may be visible as tiny black spherical objects with the aid of a magnifying device. During typical spring weather conditions, these cleistothecia produce spores that are wind-disseminated to foliage, where they germinate and infect the upper leaf surfaces. After colonizing the leaf tissues, chains of asexual spores (conidia) are produced throughout the balance of the season as the fungus continues to reproduce and spread (Photo 4). Spores of the powdery mildew fungi may be disseminated great distances by wind. Later in the season, as temperatures cool, the specialized structures (cleistothecia) are again produced for overwintering. In warmer climates or for certain species of powdery mildew fungi, the fungus may overwinter as the asexual spore type known as conidia.

### POWDERY MILDEW MANAGEMENT:

In many landscape situations, powdery mildew needs little concern. The presence of abundant powdery mildew on a variety of plants in a landscape usually indicates excessive humidity and moisture: those landscapes that receive daily irrigation are more prone to powdery mildew diseases. Landscape designs that promote good light and good aeration tend to discourage powdery mildew. Hence, good landscape design with good light and aeration for susceptible plants, along with proper moisture management, will reduce the development of powdery mildew. However, some plants are highly susceptible and chronically affected by powdery mildew. Incorporating less susceptible species or varieties of plants may be advisable where powdery mildew is a serious issue on a particular plant. In some cases, broad spectrum fungicides may be warranted. Fungicides can be applied preventatively or at the first sign of mildew, to help prevent further mildew development. Fungicides should be rotated every few years to reduce the potential for fungicide resistance development. ■



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