Powdery Mildew


Powdery Mildew on Dogwood Leaf

Powdery mildews are diseases that affect a large number of plants. Over 1600 species of fungi cause powdery mildews. The fungi produce a white, powdery coating on leaves, buds, shoots, and flower petals. The entire surface of the leaf may be covered with a cottony spider webbing, most of which consists of spores ready to be blown to an uninfected leaf. Infected leaves are often distorted, and may be smaller than normal. Severely infected leaves may yellow, then brown, and gradually shrivel and die.

Although powdery mildews attack a wide range of plants, only flowering plants are infected. The fungi that cause powdery mildews typically live on the outer surface of the plant, obtaining their nutrients from the host plant. The fungi often survive the winter tucked away in the scales of the buds. Therefore, the first infections of the mildew are often seen on the tips of new shoots.

The white mildew on the plant surface is composed of the threads (mycelium) and asexually produced spores (conidia) of the powdery mildew fungus. The spores are wind blown to other parts of the same plant or other plants of the same species. Powdery mildew fungi are quite host specific; for example, the mildew on roses will not spread to dogwood or lilac, and vice-versa. They are obligate parasites, meaning that they can only grow on living plant tissue.


Close-up of Powdery Mildew on Dogwood Leaf

Powdery mildew spores are unique in that they require no external moisture for germination, as do most other fungi. They flourish when days are warm and nights are cool and when dew forms on the leaves. They favor moderate temperatures (68–86 degrees Fahrenheit) and humid conditions. At higher temperatures, some mildew spores die. Shade also contributes to the growth of powdery mildew fungi. The disease is more prevalent in crowded plantings with poor air circulation, as well as in damp, shaded areas. It is most severe on young, succulent tissue that results from heavy nitrogen fertilization and watering.

The best control is through the use of resistant plants. Another good control method is making environmental conditions less favorable for the disease. Provide good air circulation, avoid poorly drained soils and shady damp areas, and don't apply too much fertilizer and water. Clip out the infected areas, rake and burn infected leaves and stems, rather than composting. Be sure to clean your tools after use. Powdery mildew conidia (spores) cannot survive in a film of water because they absorb so much water they rupture; therefore, spraying a plant with water can

noticeably reduce the amount of mildew. When the disease becomes severe and immediate action is desired, chemical control is effective. Since most powdery mildews are external infections, this is one of the few diseases that can be controlled after infection has occurred.

Consult your local Cooperative Extension office to determine the recommended chemical controls.

References

Powdery Mildews. Extension Bulletin 1054, Washington State University

Powdery Mildew. Michigan State University Extension, 1996

Jones, R.K. and D.M. Benson. Powdery Mildew of Ornamentals and Shade Trees. North Carolina State University, Plant Pathology Extension, 1999