



Diagnosis and Management of Powdery Mildew Disease

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ABOUT THE STUDY

Powdery mildew, plant disease of worldwide occurrence that causes a powdery growth on the surface of leaves, buds, young shoots, fruits, and flowers. Powdery mildew is caused by many specialized races of fungal species in the genera *Erysiphe*, *Microsphaera*, *Phyllactinia*, *Podosphaera*, *Sphaerotheca*, and *Uncinula*. Hundreds of species of trees, shrubs, vines, flowers, vegetables, fruits, grasses, field crops, and weeds can be affected by powdery mildew. Common on many plants and easily recognized, powdery mildew is a fungal disease found throughout the United States. It is caused by a variety of closely related fungal species, each with a limited host range. Low soil moisture and high plant surface moisture favor the disease.

The appearance of white powdery mildew is due to the large number of fine spores carried in chains. These wind-carried spores do not require free water for germination and infection. New conidia can be generated every 3-14 days. In severe illness, the moldy part of plant becomes dysgenetic and can become dysgenetic. The leaves are usually yellow wilted, the flowers are distorted or few in number, and the yield and quality of the fruit are reduced. Powdery mildew is worst in crowded, shaded, poorly ventilated areas when the nights are cool and the days are warm. At maturity or in the fall, powdery mildew may form round black spots. This is a sexual fruiting body known as a cleaver. In the spring, the cysteria ruptures, releasing one or more sporangia containing ascospores, bleeding to areas near the plant and initiating infection. Overwintering also occurs as a mycelial mat for crops and weeds.

CAUSES

Powdery mildew infections favor high temperature and high

humidity conditions. In warm and dry conditions, new spores form and the disease is more likely to spread. The symptoms of powdery mildew first appear in Minnesota from mid-summer to late summer. Older leaves are more sensitive and are the first to suffer from powdery mildew. The wind blows away the spores produced by the leaf spots and infects other leaves. Under favorable conditions, powdery mildew spreads very rapidly and often affects all leaves. Powdery mildew mainly affects leaves and vines, but occasionally cucumber and melon fruit infections occur. Powdery mildew does not directly attack pumpkin fruits.

SYMPTOMS

Symptoms usually appear later in the growing season of outdoor plants. Powdery mildew begins as a blistering area of raised young leaves that curls and exposes the surface of the lower leaves. Infected leaves are usually on the upper surface and covered with white to gray powdery growth. Mildew grows on unflowered buds and may not bloom. The leaves of heavily infected plants turn brown and fall off. The disease prefers young and juicy growth. Old leaves are usually unaffected. Fungal spores overwinter with leaf buds and other plant debris. Wind, water and insects spread spores to other nearby plants. Zucchini, beans, cucumbers, squash, tomatoes, roses and zinnias are especially susceptible.

Proper spacing, plant staking, and weed control improve the movement of air around the plant. Fungicides may be needed if susceptible varieties are growing in areas where powdery mildew has a history of causing reduced yields. Once you find the first spot of powdery mildew, apply a fungicide. Home gardeners can apply sulfur products to both the top and bottom of the leaves.

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