



POWDERY MILDEW OF STONE FRUITS

Powdery mildew of stone fruits occurs on apricot, cherry, nectarine, peach, and plum worldwide. This is a fungal disease caused by *Sphaerotheca pannosa* and *Podosphaera* species. *Sphaerotheca pannosa* also causes powdery mildew on roses. Powdery mildew develops on leaves, young shoots, and fruits. Crop losses resulting from fruit infections may reach to more than 50%. Powdery mildew, however, is not among the most economically important diseases of stone fruits in Illinois.

Symptoms

Peaches and nectarines.

Sphaerotheca pannosa infects peaches and nectarines. Infected leaves may become covered with white, mealy mycelium and may curl and become stunted (Figure 1). On older leaves, the mycelium is white and patch. Fruits are susceptible from the early stages of growth until pit-hardening. White, circular spots are the first symptoms of fruit infection, which may enlarge, coalesce, and cover the

entire fruit (Figure 1). Young fruits may be deformed. On older peach fruits, infected areas may be scabby and necrotic, but on nectarine, they remain green. Mycelium usually is absent at this stage.

Cherries. Foliage, shoots, and fruits of cherries are susceptible to powdery mildew (Figure 2), caused by *Podosphaera clandestina*. Initial symptoms, usually observed several days after bloom, are light, circular lesions on leaf surfaces in the canopy. Severally infected leaves are frequently blister and pucker. Severely infected shoots are stunted and may be blighted.

Powdery mildew is diagnosed by white, powdery mold on plant tissues. Powdery fungal growth develops on both leaf surfaces, petioles, and stems. The disease first appears on lower stems and

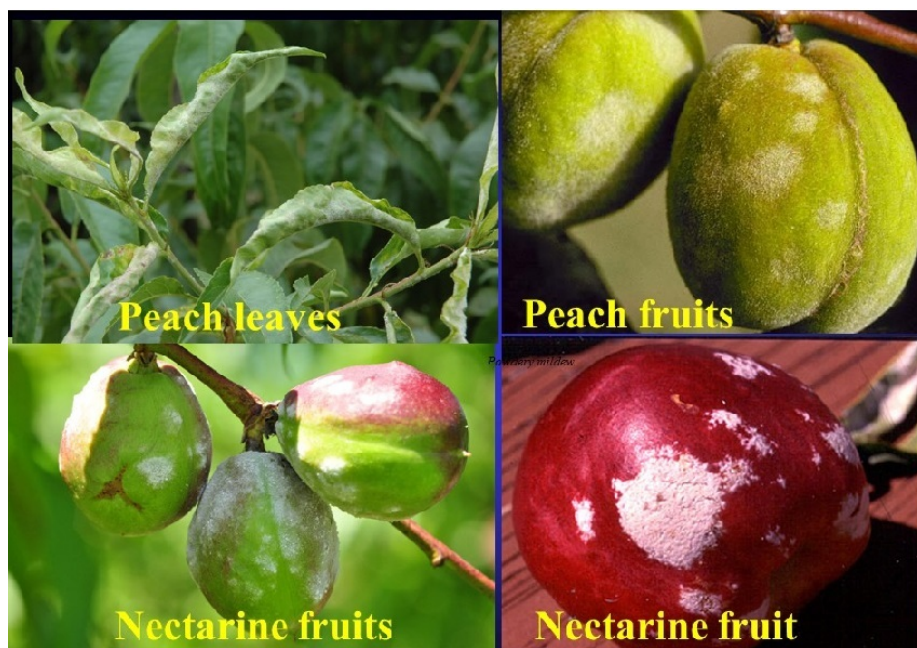


Figure 1. Powdery mildew on peaches and nectarines.

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petioles (Figure 1). As the disease continues to develop, the white, moldy spots occur on the underside of leaves (Figure 2), then on the upper leaf surfaces (Figure 3). Yellow spots may form on the upper leaf surfaces opposite to powdery mildew colonies on the underside of leaves. Severely infected leaves gradually turn yellow, then wither, die, and finally become dry and brittle. Under favorable conditions the causal fungus may reproduce so rapidly that an entire field may appear white within a week to ten days.

Disease Cycle

Peaches and nectarines.

Sphaerotheca pannosa overwinters as mycelium in inner bud scales of peach bud. Leaves become infected as they merge from buds. Secondary infection of the foliage occur throughout the growing season. Conidia are readily produced and wind-spread. Germination of conidia occurs from 36 to 97°F (optimal at 70°F) [2 to 37°C (Optimal at 21°C)]. Foliage are more susceptible to infection at night, when humidity is high.



Figure 2. Powdery mildew on cherries.

Cherries. *Podosphaera clandestina* overwinters as cleistothecia (ascocarps: sexual reproduction bodies) (Figure 2) on the orchard floor, trapped in detritus in tree crotches, or in bark fissures. Ascospore released from ascocarps infect leaves. The optimum temperature for ascospore release is 60°F (15°C). Secondary foliar infection by conidia (asexual spores) (Figure 2) progress throughout the fruit development period and after harvest. All terminal shoots may become infected. Conidia germinate best on green fruit and less well as fruit as sugar concentration increases up to 15%, beyond which almost none occurs. The optimum temperature for germination of conidia is 68°F (20°C).

Disease Management

Management of powdery mildew of stone fruits can be achieved by planting less susceptible varieties, cultural practices, and fungicide applications.

Peaches and nectarines. Removing infected shoots in winter, removing affected fruitlets during thinning, keeping irrigation to minimum, using resistant varieties, and application of effective fungicides are recommended. Susceptibility of peach and nectarine varieties to powdery mildew in Illinois has not been determined. Several effective fungicides, including sulfur and myclobutanil can be used to control powdery mildew. For the up-to-date recommendation on fungicide application for managing powdery mildew of stone fruits, refer to the Midwest Fruit Pest Management Guid (<https://ag.purdue.edu/hla/Hort/Documents/ID-465.pdf>). Home gardeners can follow the recommendations in the Illinois Pest Management for the Home Landscape.

Cherries. Management of powdery mildew in cherries is by applications of effective fungicides. Several fungicides are available [Midwest Fruit Pest Management Guide (<https://ag.purdue.edu/hla/Hort/Documents/ID-465.pdf>)], among which sulfur, myclobutanil, and fenarimol can be mentioned. In addition, water sprouts with initial signs of powdery mildew should be removed from trees between bud burst and full leaf growth stages. Cultural practices that promote low orchard humidity should be considered.