



Stone Fruit IPM for Beginners

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Chapter 16

Powdery mildew

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Powdery mildew

There are multiple genera and species.

Hosts

Apricot, nectarine, peach, plum, sweet and tart cherry.

Time of concern

For crops affected by foliage infection, infection can occur from shuck fall until shoots stop growing. For peach, nectarine and apricot, fruit infection can occur from shuck fall to pit hardening.

Damage, symptoms and disease cycle

Powdery mildew refers to a complex of fungal species that infect apricots, nectarines, peaches, plums, sweet cherries and tart cherries. These fungi can infect foliage and fruit of susceptible stone fruits. Some of these stone fruits are susceptible to multiple powdery mildew species and multiple species may be present at the same time on these crops. Furthermore, whether foliage or fruit are susceptible to certain powdery mildew species is crop-specific.

Early symptoms of powdery mildew on green tissue of cherry manifest as a network of fine, white, thread-like mycelia. In more advanced infections, colonies of conidia may be present. Deformed or puckered leaves, chlorosis and abscission of leaves may occur if infection on the leaves is severe. On peaches and nectarines, the most common symptom is a superficial circular white fruit spot appearing two to four weeks after shuck fall. Under conducive weather, spots or lesions can expand to cover much of the fruit. The white color is later replaced by a brown to orange colored russet—a somewhat smooth spot that is more conspicuous on non-blush areas of the fruit.

Affected areas on peach fruit generally have less fuzz. Some species of powdery mildew also cause only foliage symptoms on peach, similar to cherry. Infection by powdery mildew on apricot are less common and can consist of foliage symptoms similar to cherries and fruit spot symptoms similar to peaches and nectarines.



Peach leaf tissue infected with powdery mildew.

William Shane, MSUE



Peach fruit infected with powdery mildew.

William Shane, MSUE

Various life stages of powdery mildew fungi overwinter on infected leaves and in bark and bud crevices. In cherries, cleistothecia (chasmothecia) overwinter in these locations, while in peaches, powdery mildew primarily overwinter as mycelia in inner bud scales. Free water such as rain or heavy dew in the spring triggers the release of ascospores that can initiate primary infection on leaves and developing fruit, depending on mildew species and crop. Symptoms are often first visible in cherries on the leaves of inner canopy trunk sprouts, branches near main scaffolds and those positioned above tree crotches.

Tissues infected during the primary cycle serve as the inoculum source of secondary infections throughout the season. Alternative hosts may also play an important role. For example, a species of powdery mildew that infects apples can also infect some peach varieties and is known as rusty spot. Additionally, another species of powdery mildew that causes foliage symptoms on peaches can also infect roses.

IPM steps for beginners

Powdery mildew is effectively managed through using well-timed fungicide applications or using resistant or more tolerant varieties. In susceptible varieties, the key to managing this disease is to prevent the fungus from getting a foothold by beginning management programs before symptoms appear and at specific crop stages. Furthermore, select a fungicide that targets multiple diseases that may be a concern at specific timings.

- ▶ For example, in cherries, powdery mildew management often begins with an application of an efficacious fungicide at first cover timing. Commercial growers will often use a fungicide that targets cherry leaf spot and powdery mildew or use a tank-mix of chemistries to target diseases at this timing.
- ▶ Managing rusty spot on peaches and nectarines focuses on sprays from shuck split to pit hardening. Most peach and nectarine varieties are resistant to rusty spot. However, peaches significantly susceptible to rusty spot (John Boy, Loring, Bounty, Laurol, Redskin, Raritan Rose, Victoria, Jerseyglo, Autumn glo and Suncrest) require fungicide treatment directed at this disease. In general, rusty spot symptoms tend to be worse on peach varieties with showy (large) bloom.
- ▶ Powdery mildew tends to be worse in low areas with higher relative humidity, so it is a good strategy to put varieties with greater susceptibility in higher areas where the humidity tends to be lower and away from alternative hosts that may be harboring the pathogen.



William Shane, MSUE

Peach fruit infected with a species of powdery mildew commonly referred to as rusty spot.



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Advanced symptoms of powdery mildew growth on tart cherry leaves.