

COLORADO STATE
UNIVERSITY

EXTENSION

Contact your local county Extension office through our [County Office List](#).[Online Directory](#) COLORADO STATE UNIVERSITY
EXTENSION

CSU Extension - A division of the Office of Engagement.
Providing trusted, practical education to help you solve
problems, develop skills and build a better future.

Established 1908[Home](#)[Topics](#)[Ask an Expert](#)[Publications](#)[About Us](#)[Donate](#)[News](#)[Español](#)[Store](#)

970-491-6281

Powdery Mildews – 2.902 >>

[Print this fact sheet](#)

by S. Newman and L.P. Pottorff* (5/13)

Quick Facts...

- Powdery mildew is one of the most widespread and easily recognized plant diseases.
- Powdery mildews are characterized by spots or patches of white to grayish, talcum-powder-like growth.
- Powdery mildews are severe in warm, dry climates.
- Many plants have been developed to be resistant or tolerant to powdery mildew.
- Succulent tissue is more susceptible to infection. Once the disease is a problem, avoid late summer applications of nitrogen fertilizer.
- Plant resistant varieties if available.
- Chemicals are most effective when combined with cultural controls.

Search the Site

Blogs

[Live Smart Colorado](#)[CSU Horticulture Agents
and Specialists Blog](#)

Powdery mildews are one of the most widespread and easily recognized plant diseases. They affect virtually all kinds of plants: cereals and grasses, vegetables, ornamentals, weeds, shrubs, fruit trees, and broad-leaved shade and forest trees. In Colorado, powdery mildews are common on ash, lilac, grape, roses, turfgrass, vegetables (such as cucurbits and peas), euonymus, cherry, apple, crabapple, pear and Virginia creeper, among others.



Symptoms

Even though there are several types of powdery mildew fungi, they all produce similar symptoms on plant parts. Powdery mildews are characterized by spots or patches of white to grayish, talcum-powderlike growth. Tiny, pinhead-sized, spherical fruiting structures that are first white, later yellow-brown and finally black, may be present singly or in a group. These are the cleistothecia or overwintering bodies of the fungus.

The disease is most commonly observed on the upper sides of the leaves. It also affects the bottom sides of leaves, young stems, buds, flowers and young fruit. Infected leaves may become distorted, turn yellow with small patches of green, and fall prematurely. Infected buds may fail to open.

Conditions That Favor the Disease

The severity of the disease depends on many factors: variety of the host plant, age and condition of the plant, and weather conditions during the growing season.

Powdery mildews are severe in warm, dry climates. This is because the fungus does not need the presence of water on the leaf surface for infection to occur. However, the relative humidity of the air does need to be high for spore germination. Therefore, the disease is common in crowded plantings where air circulation is poor and in damp, shaded areas. Incidence of infection increases as relative humidity rises to 90 percent, but it does not occur when leaf surfaces are wet (e.g., in a rain shower). Young, succulent growth usually is more susceptible than older plant tissues.

Recent Extension Posts

Capric Acid: A Promising Next-Generation Herbicide for Organic Specialty Crop Production

Columnar and Fastigate Trees for CO Landscapes

Management-intensive Grazing (MiG) on Irrigated Pasture

Pulse Crops and their Key Role as Staple Foods in Healthful Eating Patterns

Integrated Hive Management for Colorado Beekeepers

Management-intensive Grazing (MiG) and Soil Health

People & Predators

About the Fungi

Powdery mildews are host specific – they cannot survive without the proper host plant. For example, the species *Uncinula necator*, which causes powdery mildew on grape and linden, does not attack lilac. Similarly, *Microspheea alni* affects elm, catalpa, lilac and oak but not turfgrass.

Powdery mildews produce mycelium (fungal threads) that grow only on the surface of the plant. They never invade the tissues themselves. The fungi feed by sending haustoria, or root-like structures, into the epidermal (top) cells of the plant. The fungi overwinter on plant debris as cleistothecia or mycelium. In the spring, the cleistothecia produce spores that are moved to susceptible host tissue by splashing raindrops, wind or insects.

Control

Cultural

Several practices will reduce or prevent powdery mildews. Many plants, such as roses, vegetables and Kentucky bluegrass, have cultivars, which have been developed to be resistant or tolerant to powdery mildew. Inquire about resistant varieties before a purchase. If resistant varieties are unavailable, do not plant in low, shady locations.

Once the disease becomes a problem:

- Avoid late-summer applications of nitrogen fertilizer to limit the production of succulent tissue, which is more susceptible to infection.
- Avoid overhead watering to help reduce the relative humidity.
- Remove and destroy all infected plant parts (leaves, etc.). For infected vegetables and other annuals, remove as much of the plant and its debris in the fall as possible. This decreases the ability of the fungus to survive the winter. **Do not compost infected plant debris.**
- **Temperatures often are not hot enough to kill the fungus.**
- Selectively prune overcrowded plant material to help increase air circulation. This helps reduce relative humidity and infection.

Chemical

If cultural controls fail to prevent disease buildup or if the disease pressure is too great, an application of a fungicide may be necessary. These include:

These include:

- sulfur
- neem oil (Rose Defense, Shield-All, Triact)
- triforine (Ortho Funginex), ornamental use only
- potassium bicarbonate (Kaligreen, First Step)

Chemicals are most effective when combined with cultural controls. Apply fungicides at seven to 14-day intervals to provide continuous protection throughout the growing season. Follow the instructions on the fungicide label for use on specific plant species, varieties, rates to be used, timing of applications, and waiting periods before harvest.

An alternative nontoxic control for mildew is baking soda (similar to the potassium bicarbonate listed above) combined with a lightweight horticultural oil (Sunspray). Researchers at Cornell University have discovered the fungicidal properties of this combination against powdery mildew on roses. Applications of one tablespoon baking soda plus 2.5 tablespoons of Sunspray oil in 1 gallon of water are still experimental. Use it at your own risk.

¹* S. Newman, Colorado State University Extension specialist, greenhouse crops, and professor. Originally written by Laura Pottorff, former plant pathologist and horticulturist, Integrated Pest Management Program, Jefferson County. 10/99. Revised 5/13.

Colorado State University, U.S. Department of Agriculture and Colorado counties cooperating. Extension programs are available to all without discrimination. No endorsement of products mentioned is intended nor is criticism implied of products not mentioned.

Go to [top of this page](#).

About Extension

Wherever you live, Extension's job is to determine what issues, concerns and needs are unique to each community, and offer sound and effective solutions. We have 6

Other Information

- [Calendar](#)
- [Field Offices](#)
- [FileShare](#)
- [Related Websites](#)
- [Staff Resources](#)

Resources For:

- [Agricultural Producers](#)
- [Agricultural Financial Crisis](#)
- [Colorado Crisis Services](#)
- [Communities](#)
- [Disaster Preparedness](#)

GIVE NOW

regions. [Learn more about us](#) or [about our partners](#).

Our physical location is 1311
College Ave, Fort Collins, CO.

- [Epsilon Sigma Phi – Zeta Chapter – Colorado](#)

Opportunities

- [Employment](#)
- [Volunteer](#)

- [Educators & Youth](#)
- [Families & Consumers](#)
- [Gardeners](#)
- [Homeowners & Landowners](#)
- [Resources for Depression](#)

[Employment](#) | [Equal Opportunity](#) | [Disclaimer](#) | [Non-Discrimination Statement](#) | [Privacy Statement](#) | [Webmaster](#) | [Apply to CSU](#) | [CSU A-Z Search](#)
©2021, Colorado State University Extension, Fort Collins, Colorado 80523 USA