## ASK A MASTER GARDENER Fighting powdery mildew



**Bonnie Courter** Master Gardener

**QUESTION:** I've noticed this white coating all over my squash leaves in the garden – like someone came by and sprinkled them with powdered sugar. Is this some kind of disease, and how can I get rid of it?

**NSWER:** Just before the arrival of these lovely fall rains, my squash had the same appearance. It's something that crops up in my garden at the end of every hot, dry summer, and yes, it is a plant disease.

Powdery mildew, aptly named for the powdered sugar look it gives the leaves, is a fungus that thrives in warm, dry conditions where there is high humidity and ideal temperatures around 68-81 degrees Fahrenheit.

You might think of mildew as occurring in wet, damp basements, but powdery mildew likes dry conditions, not needing the presence of water on the leaf surface for infection to occur. But for spore germination, the fungus does need relative high humidity in the air. So you will find this infection on plants that are shaded due to crowded plantings or weed infestation, which creates that high humidity environment.

Powdery mildews are host-specific, so you will find a different mildew on your lilac than that found on your melons or squash. Grape mildews will not infect rose mildews. The symptoms are similar, however, characterized initially by pale yellow leaf spots turning to white to a grayish, talcum-powder-like growth that spreads to cover the top of the entire leaf surface, and spreading throughout the plant.

Tiny spherical fruiting structures are first white, then turn yellow-brown and finally black. These are the overwintering bodies of the fungus.

Infected leaves may become twisted, disfigured or break off prematurely. Infected buds may fail to open and fruit becomes less and smaller in size. Fruit can become sunburned due to the shriveled leaves or they will ripen prematurely.

Because the mildew is feeding on the plant, it is taking away the plant's nutrients, causing it to bloom less and become weaker over all. The disease is rarely fatal, but by stressing and weakening the plant, it exposes it to other diseases and insect damage.

It attacks young, succulent growth too, though the older leaves will show the first signs of infection. The fungus produces mycelium (fungal threads) that grow only on the surface of the plant, never invading the tissues themselves. Root-like structures called haustoria only grow into



The symptoms of powdery mildew are characterized initially by pale yellow leaf spots turning to white to a grayish, talcum-powder-like growth that spreads to cover the top of the entire leaf surface before spreading throughout the plant.



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At left, powdery mildew, aptly named for the powdered sugar look it gives the leaves, is a fungus that thrives in warm, dry conditions where there is high humidity and ideal temperatures around 68-81 degrees Fahrenheit. At right, powdery mildews are host-specific, so you will find a different mildew on your lilac than that found on your melons or squash.

the top cell layers of the plant, then when the leaves fall to the ground, the fungi overwinter on the plant debris as mycelium.

Come spring, the fungi then produce spores that are moved to a susceptible host tissue by raindrops, wind or insects.

So what to do? Well, "defense is the best offense" as they say. Don't give this fungi favorable conditions to take hold in the first place.

There are varieties of plants and vegetables that are powdery mildew-resistant that should be considered in selecting your seeds or transplants. Plants should be spaced apart for good air circulation, and you should thin and prune your plants to prevent dense humidity pockets.

Keep plant debris cleaned up under your plants to discourage any environment for the fungal spores to overwinter. Remove any infected leaves and cut back portions of the plant that have the mildew, bagging them and taking them to the landfill.

Never add infected plant material to your compost bin. Because powdery mildew prefers young foliage, avoid late-summer applications of nitrogen fertilizer which produces tasty, succulent tissue for the fungus.

Avoid overhead watering which produces high humidity, but rather use drip irrigation techniques that deliver water directly to the plant's roots.

Should the infection become too aggressive, application of a fungicide may be helpful. Fungicides such as sulfur, Neem oil, triforine (ornamental use only) and potassium bicarbonate can be applied according to the label, which you should always read and follow carefully.

You can make your own bicarbonate

solution by mixing 1 teaspoon baking soda with 2.5 tablespoons of sunspray oil (or 1 tsp. of liquid dish detergent) to 1 gallon of water. Spray all leaf surfaces, even those that don't appear infected, reapplying weekly throughout the growing season.

Chemicals are most effective if combined with the above cultural controls.

Powdery mildew is one of the most widespread, easily recognized plant diseases. With a little prevention planning and good gardening practices, it can be brought under control.

Do you have a gardening or insect question? Contact the Douglas County Master Gardeners at douglasmg@oregonstate. edu or 541-672-4461 or visit 1134 S E Douglas Ave., Roseburg. Douglas County Master Gardeners are trained volunteers who help the OSU Extension Service serve the people of Douglas County.