Powdery Mildew: a Perennial Problem that I Don't Usually Mind

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I have to admit I get somewhat excited when I see the first fuzzy powdery mildew spots of the season appear. It's almost like playing the plant pathology lotto, betting when the environmental conditions (warm, dry days followed by cool, humid nights) are just right for the fungi to causing disease. This year, I saw the first spots on roses in mid-June. I had just received a photo from a client with a strange white growth on her rosemary transplant, and I initially thought it was too early for a powdery mildew diagnosis. But alas, I was wrong.

The first thing to understand about powdery mildew is that it is a disease caused by several different species and genera of fungi. Though you may see powdery mildew on herbaceous perennials, vegetables, and woody ornamentals, each species of powdery mildew fungi is actually quite host specific. The powdery mildew on your cucumber plant is not causing powdery mildew on your maple tree. Instead, you hit the powdery mildew jackpot and happen to have more than one species in your yard. In the lab, we identify the fungus to genus based on characteristics of their chasmothecia, or overwintering structure.

One of the most common questions we get in the Home & Garden Education Center is about chemical treatments for powdery mildew. Due to the biology of powdery mildew fungi, we don't usually recommend spraying anything and here is why: on woody ornamentals and herbaceous perennials, powdery mildew only causes aesthetic damage and will not jeopardize the health of your plants. The fungi are obligate parasites, meaning they require a living host plant to grow, obtain nutrients, and thrive. As such these fungi have a biological incentive to keep their host plant alive; if they kill their host plant, they would not survive. It'd be more useful for you to save money and not spray a product unnecessarily into the environment that will have very little success at controlling the disease.

The answer is a bit different for fruit and vegetable crops such as apple, grape, and cucurbits. While powdery mildew doesn't necessary kill the host plants, the disease can present challenges for fruit quality, consistency, yield, and taste. Fruit can be deformed, have blemishes, or other markings that render them unmarketable, and produce far less than normal. In these cases, we may recommend a sulfur, neem oil, triforine, or potassium bicarbonate product. Always read the

pesticide label before applying any product, and please note that chemical controls are usually only effective when appropriate cultural controls are taken as well.

So, what are these cultural controls?

- **Start off with resistant cultivars.** Selecting plant varieties that have resistance to powdery mildew is one of the most important strategies to help prevent infection during the season. There are many options to choose from, and require you to plan ahead before you begin planting. Garden centers and seed catalogues can be very helpful.
- **Space plants adequately.** Dense plantings spacing can increase humidity, which can in turn increase disease development. Remove plants to improve airflow.
- **Avoid overhead watering.** Using a soaker hose, drip irrigation, or watering plants only at the base can help decrease humidity in the planting.
- **Thoroughly clean up all infected plant parts at the end of the season.** Many herbaceous perennials are left by gardeners to maintain fall habitat for pollinators. However, removing all infected plant parts at the end of the season will decrease the inoculum able to overwinter and infect plants the following year. Do not compost infected plants as at-home compost systems do not reach temperatures high enough to kill the fungus.

One other note about diseases in the garden: powdery mildew mycellium (a mat of fungal growth; the "fuzzy" growth you see) typically grow on the upper leaf surfaces of plants, and unlike other fungi, will not grow when a film of water is present on the leaves. Occasionally mycelium will grow on the lower leaf surface, but that is less common. If you're seeing powdery white-grey spots *only* on the lower leaf surface, more than likely you're seeing **downy mildew,** which is a far more serious and more destructive disease to be worried about. Downy mildew is caused by an oomycete rather than a fungus, and spreads when water is present. Early action is required to save your plants.

If you have questions about powdery mildew or on any other home or garden topic, feel free to call the UCONN Home & Garden Education Center, toll-free, at 877.486.6271, visit their web site at www.ladybug.uconn.edu or contact your local Cooperative Extension Center.