

# Garden Bad Guys – Downy Mildew

*By Nanette Londeree*

We've been blessed with abundant rain this winter, most of it coming in intense, soaking bursts followed by stretches of dry, mild weather. From the gardeners' perspective, winter doesn't get much better than that. If the trend continues as we head into spring, moderate temperatures and light rain will keep things looking green and vibrant, though may present conditions that can wreak havoc on plants with a plethora of plant maladies. And downy mildew is one of the worst. If you've never experienced this disease first hand, consider yourself fortunate.



Downy mildew refers to any of several types of oomycete fungi (water molds) that infect plants. They are primarily foliage blights that, under optimum conditions, can defoliate some types of plants in just a day or two. They affect ornamental plants, fruit and vegetable crops and grains and can especially be a plague to roses, grapes, hops and cucurbits (e.g., cantaloupe, cucumber, pumpkin, squash, watermelon) - it is one of the most important diseases of cucurbits worldwide.

Its name aptly describes one of the main symptoms that appear on a number of types of plants – soft, fluffy gray, purplish or light brown growth on the undersides of leaves and sometimes on stems, canes or buds. The upper surface of leaves can have yellow, purplish-red to brown irregularly shaped blotches between the veins resulting in a mottled appearance. In some plant species the fungus can become systemic (capable of moving through the vascular system of the plant) when young shoots are infected, resulting in stunted, malformed, yellowish growth. While the disease may not kill the plant, it can completely defoliate it, making the plant more vulnerable to attacks by other pests or diseases.



Perfect conditions for the growth and spread of this disease are wet weather, with humidity above 90% and temperatures between 65 – 75°F; early spring and late fall in our climate are the most favorable. Like other water molds, spores of the fungus are carried by air currents, rain splash or irrigation from hoses and sprinklers. A wet leaf surface is required for infection; spores landing on a susceptible host germinate and infect within 8 – 12 hours. Spores are produced only on living plants; they can remain dormant for long periods of time until weather conditions favor their growth and reproduction. Infection is sometime carried in seeds or bulbs.

Downy mildew is easily confused with powdery mildew, though there are some very key differences – both visual and cultural. Grayish patches of downy mildew are almost always limited to the undersides of the leaves, while the talcum-powder like growth of powdery mildew is common on both sides of the leaves with no clear veinal delineation as there is in downy mildew infections. Downy mildew requires the presence of water for infection – the exact opposite of powdery mildew which favors low humidity. In fact, one preventive control measure for powdery mildew is to wet leaves early in the day.

This disease is hard to eradicate without the use of fungicides. The best method of control is prevention. Provide good air circulation around plants and maintain low

humidity, spacing plants to reduce density and canopy. Avoid wetting foliage; use drip instead of overhead irrigation where feasible. Dig out infected plants as soon as possible to reduce the spread of disease. Promptly remove and dispose of any infected foliage. One good note, spores become inactive when humidity drops below 85% and can be killed when temperatures stay at more than 80°F for several days, pretty typical summer weather for much of our area.

*Top photo of cantaloupe leaf courtesy UC IPM website; bottom photo of rose leaf courtesy of Baldo Villegas*