

Powdery Mildew

Warm days and cool nights. . . aaahh! paradise-for powdery mildew, that is.

While it seems that we live in the powdery mildew capital of the world, the reality is that the disease is present wherever there are roses. The first historical account of powdery mildew on roses dates from around 300 B.C., making it one of the oldest plant diseases on record.

You know you've got it when your garden looks as if some lunatic has gotten loose and sifted flour over your rose bushes. The disease appears as a white to grey powdery growth on leaves, shoots, sepals and buds. The first symptoms are small, reddish blisters on the leaf, accompanied frequently by purpling and curling. Tender, new leaves are the most susceptible. Severe build-up of the disease on the sepals will distort the bud and may even prevent the bloom from opening. A favorite place for spores to congregate is on the stem immediately under a bud, which can twist the stem so that the rose juts off to look at you from a 45-degree angle.



Powdery mildew on roses is caused by a parasitic pathogen-*Sphaerotheca pannosa* var. *rosa*. The airborne fungus lives primarily on the outside surface and has a high demand for nutrients, which it obtains from the plant cells by means of small, root like organs that feed within the leaf coating. The covering of the leaf by the fungus reduces the surface area available for photosynthesis. Although powdery mildew rarely kills a plant, infection reduces its vigor, not to mention being very unattractive.

Modern rose varieties with glossy leaves, and shrub (landscape) show the best resistance to mildew. A variety that is resistant in one geographical area may not be in another. The pathogen does not require water to develop-in fact a thorough foliage shower in the morning or at midday will interrupt the daily spore-release cycle. Picking and discarding diseased leaves will help limit infestation. Planting roses where they will get their minimum six hours of sunlight a day and maintaining good air circulation in and through the center of the bushes are also vital steps toward decreasing the incidence of disease.

It's easier to forestall an outbreak of powdery mildew than it is to eradicate it and, for the most part, commercial fungicides are preventatives, not curatives. One exception seems to be Eco E-rase, a contact fungicide registered in 1996 by IJO Products of Fresno, Calif. Eco E-rase has curative as well preventative properties. It is sprayed once you actually see that powdery mildew has entered your garden. Eco E-rase is also registered as an insecticide against whitefly.

The biopesticide is derived from the jojoba (pronounced ho ho ba)-a shrub native to the Sonoran desert. Jojoba seeds contain a unique oil which chemists call "liquid wax." It kills powdery mildew by smothering the spores; furthermore the waxy residual continues to discourage and suppress disease spores after application. Because it is a contact fungicide rather than a local systemic, it stays on the surface of the leaves rather than being absorbed by the plant.

Jim Delahanty, who heads up our local cadre of consulting rosarians, is using Eco E-rase in his garden. He suggests that the mixture be prepared with warm water to prevent clogging the sprayer. He has also heard stories of roses being disqualified by rose show judges with whom the product's waxy residue registers as the forbidden "foreign substance."

Even though it is listed with Organic Materials Review Institute, Eco E-rase should be used with all of the customary precautions accorded toxic materials. AgRx in Somis stocks Eco E-rase-\$22.76 for one quart.

There's a buzz down south about a new product being prepared for market called Citrall. Manufactured by Cal Crop USA, Citrall is (or will be) an organic, general purpose fungicide. Garden Compass magazine has already jumped on the bandwagon, advising in its March garden checklist, "Citrall may be the most complete fungicide on the market." (March/April 2002 issue)

Jack Shoultz, president of the East County Rose Society in La Mesa, Calif., has been following the product with interest. He reports that respected San Diego rosarian Phil Ash has turned his rose garden over to Citrall and is working with the manufacturers on adjusting the dosage for optimum results before Cal Crop USA commits to large-scale production and distribution.

Many gardeners use homemade baking soda mixtures to fight mildew. Here's a typical recipe: one rounded tablespoon of baking soda plus one tablespoon of horticultural oil per gallon of water; spray weekly.

There are a variety of synthetic fungicides available commercially. Because mildew spores are somehow clever enough to build up immunity to a fungicide, it's helpful to alternate among various treatments. All of these preparations-even the baking soda-can burn leaves. Apply in the early morning, and not at all during hottest (90+ degrees) weather.

Regardless of toxicity, remember that these chemical compounds are designed to kill. Follow the instructions on the product label and wear the prescribed protective clothing.

Caution, slightly toxic:

Compass-1/8 teaspoon per gallon, every 2 weeks.

Eco E-rase-4-5 teaspoons per gallon when mildew appears.

Immunox (systhane formula)-1 tablespoon per gallon, weekly.

Rose Defense (Neem oil extract)- 2 tablespoons per gallon, weekly.

Rubigan- 1/2 teaspoon per gallon every 2 weeks.

Warning, moderately toxic:

Banner Maxx-1/3 teaspoon per gallon, every 2 to 3 weeks.

Daconil-2-1/2 teaspoons per gallon, weekly.

Danger, highly toxic:

Funginex (triforine)-1 teaspoon per gallon, weekly.

Phyton-27-1-1/2 teaspoons per gallon, weekly.