

POWDERY MILDEW DISEASES OF ORNAMENTALS

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Powdery mildew causes serious damage to many floral and ornamental crops in both greenhouses and landscapes. The diseases are very similar with symptoms initially appearing as small white, powdery or dusty colonies (1/4 to 1/2 inch) that form in circular patches on upper or lower sides of leaves, stems, petioles and even flower petals and in severe infections, the entire leaf surface can become covered with the white spores (conidia) of the fungal pathogen. Although the powdery mildew diseases are similar in many respects, the species that infects roses will not infect crape myrtle.

Powdery mildew fungi (*Oidium*, *Sphaerotheca* and *Erysiphe*) are obligate parasites that cannot live without the presence of a susceptible plant. For some powdery mildew fungi this makes control easier since they have only a few plants they can infect while others can infect a huge range of our ornamentals.

Infections can escape detection unless plants are carefully examined periodically. The conditions that favor powdery mildew development are moderate temperatures and high relative humidity. Free water on leaves from overhead irrigation or rainfall deter some of the powdery mildew fungi.

The first recorded fungicide applied to control powdery mildew was a combination of sulfur and soap in 1824. Since that time, many other chemicals have been developed for control of powdery mildews. It is interesting, however, that some of the most recent techniques used to control powdery mildews in modern production of floral crops is soap products applied as sprays and elemental sulfur applied by heating as a vapor.

One of the newest products is a bio-protectant called Milsana that is extracted from giant knotweed. It is grown in North Carolina. Milsana has given us very good to excellent control of a variety of powdery mildew diseases (Table 1). And some rust diseases.

Rotation of fungicides products is a special concern for any disease that makes as many spores as powdery mildew fungi. The products listed in Table 2 are grouped by chemical class and switching from one to another would be an effective rotation for this disease.

Disease control strategies remain the same for most ornamentals. The most important method is careful examination of new plants as they come into the nursery. Maintain a strict scouting and roguing program to identify and destroy disease outbreaks before they become widespread.

Some Key Points About Powdery Mildew Control:

1. Powdery mildew colonies appear on both surfaces of leaves, petioles, stems and flowers.
2. Powdery mildew fungi are host specific - the one on rose cannot attack Gerber daisies and visa versa.
3. Powdery mildew is most common in the spring and fall.
4. Powdery mildew spores move by air currents (wind or fans from heating and cooling).
5. Use only healthy plants for cuttings.
6. Discard severely infected plants.
7. Use preventive fungicides on highly susceptible crops (rose, gerber daisy).
8. Use a wetting agent with fungicides to improve cover age and penetration of mildew.
9. Rotate fungicide classes (2 or 3 different ones - Table 2)
10. Save big guns for last.

Table 1. Efficacy of Milsana bio-protectant on powdery mildew on ornamentals.

Product	Rate/100 gal	Mini-roses	Gerber daisy	Crape myrtle
Water	—	4.8 ab	12.2 b	105.5 b
Compass	1 oz	—	0.5 a	2.7 a
Milsana	0.5%	7.5 b	2.2 a	18.4 a
Milsana	1%	2.8 a	1.5 a	24.6 a
Milsana	2%	3.8 ab	1.6 a	14.1 a
Rubigan	4 oz	—	0.5 a	—

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Table 2. Efficacy of fungicides for powdery mildew based on chemical grouping.

Class	Fungicide	Result
Sterol Inhibitor	Banner Maxx	Excellent
	Eagle	Excellent
	Strike	Very good to excell.
	Systhane	Very good to excell.
	Terraguard	Very good to excell.
Pyrimidine	Rubigan	Excellent
Strobilurin	Compass	Excellent
	Cygnus	Very good to excell.
	Heritage	Very good to excell.
Botanical extract	Erase	Excellent
	Milsana	Very good to excell.
	Triact	Very good to excell.
Copper	Camelot	Good
	Phyton 27	Very good to excell.
Bicarbonate	Kaligreen	Excellent
	Milstop	Excellent
Piperalin	Pipron	Very good to excell.