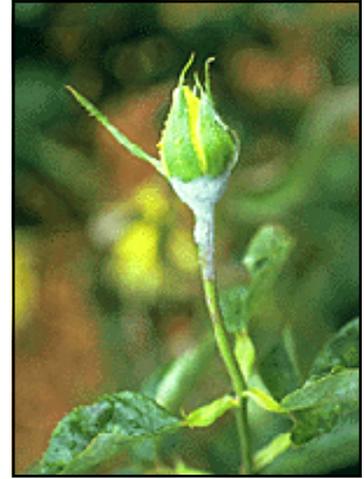


# That "Blooming" Mildew

By Elaine Pawlikowski, ARS Consulting Rosarian  
Central Florida Rose Society



Fall brings to our rose gardens the cooler temperatures we have been anticipating, but with it also comes the possibility of powdery mildew. Powdery mildew is a fungus that belongs to a group of plant pathogens termed obligate parasites. These parasites can only grow and reproduce on or in a living host – in this case your rose bushes. For centuries many types of plants have fallen prey to the several genera of fungi that cause powdery mildew; but the one we are interested in, the one that attacks our roses, is *Sphaerotheca pannosa* var. *rosa*.

Thousands of powdery mildew spores are always present in your garden – laying in wait. When the conditions are right they will germinate. The optimum conditions for the growth of powdery mildew are nighttime temperatures near 60 degrees with humidity of 90% or above, followed by daytime temperatures near 80 degrees with 40-47% humidity. Several day and night cycles under these conditions are necessary for powdery mildew to “bloom”. These optimum conditions occur in our central Florida gardens from mid fall through early spring.

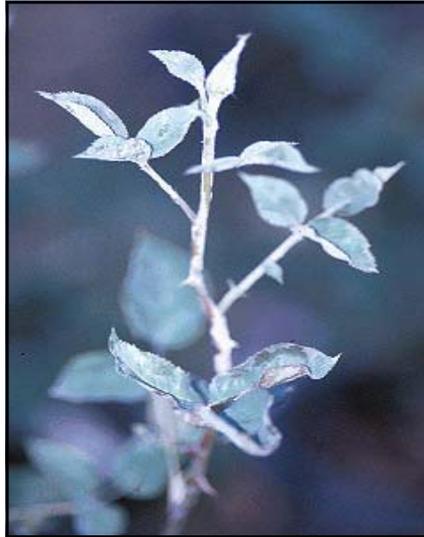
Powdery mildew spores are airborne; they drift around and settle on the delicate and most susceptible new growth at the top of the bush. In order for powdery mildew to proliferate, it inserts small root like structures (hyphae), called haustoria, into the outer layers of your rose leaves, stems and flowers and steals nutrients from the bushes. The older leaves generally do not show initial signs of powdery mildew as those leaves have formed a thicker epidermal “skin”, or outside layer, which is not so easily invaded. Therefore, watch for the first signs of powdery mildew on the new growth. The very first symptoms of powdery mildew are apparent on the leaves, which will be curled along the sides. At this point you will not notice any white substance (specialized aerial hyphae producing conidia – the spores), which will appear in advanced stages. Rather the leaves will have a green grayish appearance on the underside of the curl. As the fungus progresses, the entire leaf surface will become distorted, with severely wrinkled and crinkly leaves or twisted peduncles below the buds. In advanced stages of the disease the mildew’s spores, the

conidia, will appear as a light powder residue. It can cover the leaves, stems and foliage. Powdery mildew will not generally kill a bush, but severe infections may kill the tips of tender young canes. As the fungus spreads, it weakens the bushes, damaging new growth and robs the bush of its vigor. Needless to say, powdery mildew can make your bushes very unattractive – it’s pretty ugly.

So how can you **prevent** powdery mildew in your rose garden? In most cases, good cultural practices will adequately control powdery mildew. Here are a few basic precautions you can take when planning your defense:

- Plant your roses where they will receive full sunlight. Do not plant roses in shaded spots, especially in areas that tend to dry out slowly in the morning. Roses in shady areas are especially prone to powdery mildew.
- Spacing is also important – give the bushes plenty of room – don’t crowd them. One of the best ways to keep mildew under control is to keep good air circulation around the plants. Finger prune the bushes to keep their centers open to light and air. Climbers on a closed wall or fence may also not be getting enough air through them and should be pruned more openly.
- Water your roses early in the day so the area will have a chance to dry before the evening. This will help lower the humidity levels in the bed during the night.
- Powdery mildew thrives where high rates of nitrogen have been used. High nitrogen promotes tender leaf formation, causing excessive growth that is more susceptible to infections. Adequately fertilize, but avoid stimulating too much succulent new growth. Organic fertilizers and slow-release formulations are good choices.

- Keep notes on which varieties in your garden are prone to powdery mildew – and keep an eye on them when the conditions are optimum for an outbreak. These “indicator varieties” will signal you that it is time to take preventative measures. You might ask other rosarians in your area which varieties in their gardens succumb to mildew. But remember, a variety that is disease resistant in one garden may be disease prone in another. Resistance is usually determined by planting locations and cultural practices. There are a few varieties that are notably mildew prone such as Garden Party, Nightingale, Tiffany Lynn and Else Poulsen.



*Advanced Stages of Powdery Mildew*

- In severe cases of powdery mildew it is recommended to prune away the infected areas and place the cuttings in a sealed bag or garbage can. Do not put the cuttings in a compost pile. Pick up fallen leaves around the bushes and keep the garden clean.



- Powdery mildew can be prevented with water. Yes, water. You might be thinking, “What about keeping the humidity down, the bushes dry, etc.”. It does seem a little contradictory. It is important to lower the humidity surrounding the bushes, especially at night. But an **early morning** shower with the hose or sprinklers actually washes the spores from the bushes and keeps powdery mildew from germinating. Let me stress that this is to be done in the early morning, giving the bushes plenty of time to dry before nightfall.

If, after following the above recommendations, powdery mildew still plagues your garden, preventative spraying may be your best course of action. Preventing mildew is much easier than eradicating it. Therefore, when the conditions are right for the development of powdery mildew (usually in central Florida from October to late April), I suggest you begin a program of preventative spraying rather than waiting to see powdery mildew appear by adding a mildewcide to your weekly fungicidal spray program. There are mildewcides specifically intended for management of powdery mildew on roses.

Most mildewcides, such as Rubigan, Eagle, Nova, Rally and Systhane can be added to your weekly spray tank. They do not need to be sprayed separately. These mildewcides are useful to prevent and stop the spread of the fungus, but cannot cure what has already attacked the plant.

In our garden we’ve had very good luck adding Systhane (also known as Eagle, Nova or Rally) at the lowest application rate of ¼ teaspoon per gallon to our weekly fungicidal spray program as a preventative. If using Systhane as an eradicant, the rate will need to be increased to ½ to 1 teaspoon per gallon. While the old standby, lime sulfur, is a good mildew protectant fungicide, it has a tendency to burn foliage under warm conditions.

For those of you with smaller gardens, Immunox can provide good control. Immunox is less expensive than the above chemicals and is available at most garden centers. If using Immunox it is suggested that it be sprayed separately. It is reported that leaf burn may result if Immunox

is mixed with other chemicals.

When spraying for powdery mildew, be sure to get good spray coverage on the top new growth. Fungicides in a wettable powder formulation may provide better coverage if used with a spreader sticker. Most flowable formulations already have this property.

Armed with the above information you should be able to stop powdery mildew before it flourishes in your garden ... and Hopefully ...

**The only thing blooming on your rose bushes will be roses!**

**References:** Horst, R.K., 1983. *Compendium of Rose Diseases*. The American Phytopathological Society, St. Paul, Minnesota. Pg. 5-7.