

# Fungal Diseases on Roses

Powdery mildew, *Sphaerotheca pannosa rosae*, and Black spot, *Diplocarpon rosae*

## Host/Site

Roses (some varieties are resistant, see below)

## Identification/appearance

**Black Spot:** Circular, black spots 1/16 to 1/2 inch on leaves (sometimes with fringed edges) will be combined with leaf yellowing or leaf drop. Plants can defoliate. Spots may coalesce to form large irregular lesions. Canes may also show small purplish-black spots.

**Powdery Mildew:** Attacks leaves, stems, and flower parts. Usually young growth is most severely affected. Reddish, blister-like areas on the upper side of leaves are followed by powdery white growth, which can appear on either side of the leaf or on stems and flowers. Infected young leaves are often distorted. Flowers and stems also display the white growth. Some varieties of roses may drop infected leaves, while others are more resistant to powdery mildew. The disease is most active during cool, dry, humid weather.



Black spot

## Life Cycle

Both diseases produce spores that overwinter and reintroduce the disease the following year. Spores do not survive on soil but on plant parts. Black spot spores overwinter on fallen leaves and on infected canes. Powdery mildew spores overwinter inside leaf buds and are dispersed by wind. Spores are splashed in water droplets, or spread by people during cultivation, by wind, or by insects.

## Natural Enemies

Not applicable.

## Monitoring

Begin in spring when temperatures approach mid-60s. When humidity and rainfall are high, black spot is the more likely disease because spores can infect leaves after only 6 to 9 hours of leaf surface being wet; drier weather favors powdery mildew.

**Black spot:** look for dark colored spots on leaves near the ground, young leaves, stalks, and flower buds.

**Powdery mildew:** check young growing tips for signs of powdery growth. Prune off affected parts immediately and begin controls described in Cultural/Physical Controls.

## Action Threshold

Because both powdery mildew and black spot are difficult to treat with low-toxicity materials, the action threshold for cultural/physical controls can be any sign of symptoms, or weather conducive to the diseases. Affected leaves can be removed immediately. Relatively benign chemical controls such as sulfur, baking soda, or fungicidal soaps can be used as a preventative measure. Conventional fungicides can be used after powdery mildew is visible, but for black spot waiting for visible symptoms to appear will be too late for chemical control to be effective.

## Cultural/Physical Controls

**For both diseases:** Plant disease-tolerant or disease-resistant varieties (see list of disease-resistant varieties on the back of this sheet).

Plant roses in sunny areas where leaves can dry during the day. Space plantings and prune to improve air circulation. Good air circulation limits disease development. Pruning in spring helps remove infection. Remove all leaves up to 1 to 1-1/2 feet from ground to prevent water from splashing spores onto lower leaves. Remove diseased leaves and canes when pruning in spring. Do not compost diseased material. Rake and destroy all fallen leaves from under plants as they fall; don't wait for the end of the season. Pick off all leaves in late November to remove infections and force plants into winter dormancy. Watch for signs of infection during appropriate weather conditions.

**Powdery Mildew only:** Avoid over fertilizing, which encourages susceptible new growth. Use a slow-release or low-nitrogen formula. Some sources recommend periodic rinsing of new leaves (in morning or early afternoon, on dry days) with a strong water spray to suppress mildew. This practice can, however, aggravate black spot.

**Black Spot only:** Avoid overhead watering. If overhead watering is necessary, water during the morning hours so leaves can dry quickly. Use soaker hoses at ground level to avoid overhead watering.

## Biological Controls

None.

(continued/over)



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## Chemical Controls

Diseases can be managed only with regular monitoring and timing of treatments.

**Surfactants:** Fungicidal soap (e.g. *Safers*) can prevent both black spot and powdery mildew on roses, but cannot control black spot once it appears. Preventative treatments need to be frequent, probably about weekly. Be sure to treat emerging foliage.

**Sulfur:** *Safers Garden Fungicide* is labelled for control of both black spot and powdery mildew on roses. Label advises spraying at 7 to 10 day intervals.

**Neem:** *Green Light Rose Defense* is a new product based on neem oil as the active ingredient. Neem oil, extracted from the Neem Tree, has a number of pesticidal properties, including fungicidal action. It is registered for use on black spot. Apply to new growth before infection is visible. Product is 90% oil and may clog sprayer nozzle unless care is taken. Shake sprayer periodically to keep oil droplets in suspension.

**Baking soda:** Baking soda has been used for many years to treat these fungal diseases on roses. Research at Cornell University has demonstrated that a mixture of 1 teaspoon baking soda and a few drops of surfactant (such as dishwashing liquid) in a quart of water is reasonably effective against powdery mildew, especially if applied weekly before or during the early stages of the disease. EPA has registered commercial products based on potassium bicarbonate, a close relative of baking soda (sodium bicarbonate). Remedy and Kaligreen are two products currently available.

**Conventional fungicides:** Most are quite hazardous, especially in concentrate form. The Green Gardening Program discourages the use of rose care products containing mixtures of fungicides or insecticides with fertilizers because they result in the unnecessary use of toxic chemicals and can harm beneficials. Many combination products are quite toxic.

## Disease-resistant rose varieties

Name	Type	Characteristics
'Cecile Brunner'	polyantha	multiple pale pink flowers
'Queen Elizabeth'	hybrid tea	large deep pink flowers
'Sexy Remy'	floribunda	striking big pink flowers
'Souvenir de la Malmaison'	old rose	shrubby, pink flowers
<i>Rosa rugosa</i>	shrub	magenta or white flowers, edible fruit
'Altissimo'	climber	deep red
'Europeana'	floribunda	dark red
'Fantin la Tour'		lavender
'Fragrant Cloud'		red-orange, stunning fragrance
'Just Joey'	hybrid tea	big peach colored blooms
'Climbing America'	climber	orange
'Iceberg'	floribunda	vigorous white blooms
'Pascali'	hybrid tea	pristine white