

## LESS-TOXIC CHEMICAL CONTROLS

If disease or pest problems can't be managed by good garden housekeeping, you may want to use a less-toxic pesticide. Because these products prevent but do not cure disease, treatments must begin before symptoms are widespread. To avoid burning leaves and flowers with chemical spray, water plants the day before you treat them and test a few leaves and petals before spraying the whole plant. Be sure to coat both sides of the leaves.

- Horticultural oils help protect roses from fungal diseases. They create a thin coating that keeps spores from infecting the leaves. Treatment should begin when new leaves appear in spring and must be repeated whenever you see new growth.
- Biofungicides attack fungal diseases like powdery mildew and black spot.
- Neem oil can help prevent powdery mildew, black spot, and rust. Neem oil is toxic to bees, so it is safest to spray it in the evening.

- Plant-based insecticides with garlic extract both kill and repel insect pests such as aphids and rose slugs (sawfly larvae). Apply early in the morning or at dusk, to prevent leaf burn.



*Rose varieties with fewer petals, like the native Rosa californica, grow better in cool summer areas.*

- Potassium bicarbonate, similar to common baking soda, can prevent powdery mildew. It must be applied weekly. Or, use this baking soda mixture: 1 tablespoon baking soda, plus 2 tablespoons horticultural oil in 1 gallon of water. Spray when you first detect disease, and repeat when new symptoms appear.
- Sulfur can be effective against black spot, powdery mildew, and rust. Do not use when temperatures are higher than 85°F to avoid burning leaves.



# GROWING BEAUTIFUL ROSES

## KEEP YOUR ROSES HEALTHY WITH THESE ECO-FRIENDLY PRODUCTS

Anti-transpirant	Cloud Cover, Wilt Pruf
Biofungicide ( <i>Bacillus subtilis</i> )	Serenade Garden Disease Control, Bayer Advanced Natria Disease Control
Horticultural Oil	Bonide All Seasons Horticultural and Dormant Spray Oil, Monterey Horticultural Oil, Summit Year Round Spray Oil
Neem Oil	Bonide Neem Oil, Bonide Rose RX 3 in 1, Garden Safe Fungicide 3, Monterey 70% Neem Oil, Natria Neem Oil
Plant-based insecticide	Dr. Earth Final Stop Yard and Garden Insect Killer, Dr. Earth Final Stop Rose and Flower Insect Killer (both in concentrate or ready to use spray)
Potassium Bicarbonate	Monterey Bi-Carb Old Fashioned Fungicide, Organic Labs Organocide Organic Fungicide
Slow Release Fertilizer	Dr. Earth Organic Rose and Flower Fertilizer, E.B. Stone Organics Rose and Flower Food, Osmocote
Soil Probe	Several brands at your local nursery

## CHOOSING THE RIGHT ROSE

Do some homework before you choose! Before buying a rose, find out whether it's a good match for your garden. Learn how much sun the rose needs, how well it will tolerate your garden's climate, and whether it is prone to diseases such as rust and powdery mildew.

- No roses are completely disease-free, but many can be grown with minimal care. Choose rose varieties that are disease-resistant and suited to your garden's climate. Some roses will not grow well in areas that are cool in summer and get a lot of fog. Rose varieties with fewer than 30 petals grow better in cool-summer areas.
- Visit a local rose garden during the growing season to see what different kinds of roses look like and to learn about how they grow and what they need to stay healthy.
- Ask local gardeners for suggestions. Contact local garden clubs, rose societies, nurseries, and Master Gardeners for lists of roses they recommend for your area.

You can grow beautiful roses without insecticides and fungicides that can kill beneficial insects and pollute local creeks, rivers, bays, and the ocean. These tips will help you to protect your family's health and the environment while you grow strong, healthy roses with glorious blooms.

- When you buy a new rose, be sure to start with a healthy plant. Either buy bare-root plants (usually sold in December and January), or buy grown-on plants in peat pots. Look for glossy foliage and an evenly moist rootball. Avoid root-bound plants with spindly stems or discolored or spotted leaves. Potted roses can stay in their pots for several months, as long as you give them enough water.

[WWW.OURWATEROURWORLD.ORG](http://WWW.OURWATEROURWORLD.ORG)

Common home and garden pesticides are found in stormwater runoff, treated wastewater, and in local waterways, sometimes at levels that can harm sensitive aquatic life. **Our Water Our World** is a joint effort by water pollution prevention agencies, participating retail stores, and pesticide distributors and manufacturers—working together to reduce the risks associated with pesticide use.

**Our Water Our World** fact sheets and store displays educate residents about less-toxic pest management. For the rest of the series of fact sheets, visit [www.OurWaterOurWorld.org](http://www.OurWaterOurWorld.org). Look for the **Less Toxic • Eco-friendly** tag next to less-toxic products in participating stores and nurseries. See the *Pesticides and Water Pollution* fact sheet for information on active ingredients in common pesticides that may cause water quality problems.

Pest control strategies and methods described in this publication are consistent with integrated pest management (IPM) concepts, and are based on scientific studies and tests in actual home and garden settings. Use suggested products according to label directions and dispose of unwanted or leftover pesticides at a household hazardous waste collection facility or event. For more information on pesticide disposal, visit [www.earth911.com](http://www.earth911.com). No endorsement of specific brand name products is intended, nor is criticism implied of similar products that are not mentioned.

For more information, contact:

Bio-Integral Resource Center (BIRC), 510.524.2567, [www.birc.org](http://www.birc.org)

University of California Cooperative Extension Master Gardeners in your area

University of California IPM website, [www.ipm.ucdavis.edu](http://www.ipm.ucdavis.edu)





## PLANTING ROSES

Before you buy, be sure you have a good spot in your garden for your new rose.

- Roses need at least six hours of direct sunlight per day for most of the growing season. Sunlight encourages blooms and discourages disease.
- Give roses room to grow. Good air circulation is very important for preventing disease.
- Consider planting roses in mixed beds (with other flowers and vegetables). Growing different types of plants in your garden attracts beneficial insects and helps roses stay pest and disease-free.
- Roses need good drainage. In the spot you've chosen for planting, dig a hole the size of a gallon jug and fill it with water. If the hole doesn't drain in an hour or less, choose another spot or build a raised bed for your roses.

## CARING FOR YOUR ROSES

### Water

It is important to give your roses the right amount of water. Waterlogged soil will kill roses, and drought conditions can stress plants, making them more susceptible to pests and diseases.

- Keep the soil moist. Use your finger or a soil probe to test the soil beneath the surface. Check roses in pots at least twice a week.
- Roses grown in sandy soil will need to be watered more often than roses grown in clay soil.
- Watering with soaker hoses or a drip irrigation system delivers water to the soil without wetting the leaves. This can help prevent fungal diseases such as powdery mildew and black spot. If you water with a sprinkler, water early in the day so the foliage will dry out before evening.
- During drought, extreme heat, windy weather, or when roots have been disturbed by transplanting, roses may wilt. An antitranspirant spray coats leaves with a film that helps the plant retain moisture. Do not spray flowers or buds. Reapply on new growth.

### Fertilizer

Roses prefer slightly acidic soil (pH 6.2 to 6.8) that is not high in salt.

- Use slow-release fertilizers such as compost or alfalfa meal, cottonseed meal, blood meal, or bat guano to acidify the soil and release nutrients slowly over a long period. This helps prevent too much new growth, which attracts aphids and diseases. Compost and organic natural fertilizers will also improve your soil.
- Avoid animal manure fertilizers, which are often high in salts.

- Fertilize during the growing season after the soil has warmed up. Plants will not take up fertilizer well when the soil is cold.
- If you use granular fertilizer, water it in with a hose. Drip systems don't provide enough water to dissolve the granules.
- The amount of fertilizer you need will depend on the kind of soil you have. If you have sandy soil that doesn't have a lot of nutrients and organic matter, you may need to fertilize every month during the growing season. (Note that a slow-release fertilizer like Osmocote does not have to be applied every month.) If you have clay soil, you may need to fertilize only once a year.
- Avoid using fertilizer/systemic insecticide combinations. These can cause stunted and deformed leaves, especially when the weather is cool. They may also harm soil-dwelling organisms.

If you are concerned about the quality of your soil, have it tested by a professional lab. The lab will recommend ways to improve your soil so that you don't need to use a lot of fertilizer. Ask your nursery or garden center to recommend a soil-testing lab, or contact your county agricultural extension office. To find your office, go to [http://ucanr.edu/County\\_Offices/](http://ucanr.edu/County_Offices/).

### Mulch

Mulching with organic materials, like compost and shredded bark or leaves, helps to keep soil moist, control weeds, and improve soil structure. Mulching also keeps roots cool in summer heat. Mulch can prevent the spread of diseases like black spot by keeping fungus spores in the soil from splashing up onto the plant. Spread a two- to four-inch layer of mulch around each plant. Keep the mulch a few inches away from the trunk.

### Pruning

Careful pruning helps keep roses healthy and prevents disease and pest problems. Pruning allows you to remove dead, spindly, or diseased parts of the plant, shape plants and promote flowering and new growth, and ensure good air circulation to discourage diseases. Use sharp tools so you won't tear the bark or damage the cane.

- In most parts of California, you will want to prune roses most severely in January. Hybrid Tea roses and Floribundas only produce flowers on new growth so prune to remove last year's wood. Cut these bushes back every winter, leaving about 1/3 of the canes' height. Remove all leaves, cut off any dead canes or stems, and prune to shape the plant.
- How far back you cut will depend on the type of rose. Check a rose book or look online for instructions for your kind of rose. Fertilizing when you prune in winter will get your rose off to a strong start for the season.

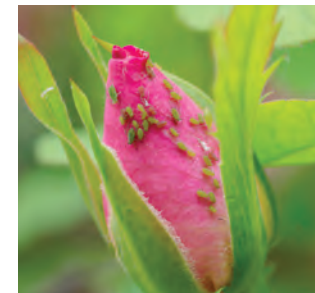
- During the growing season, remove any leaves and shoots affected by disease but do not prune too much. Too much pruning will cause too much new growth that can attract aphids and powdery mildew.
- Remove all diseased prunings and rake up any diseased leaves and blossoms as they fall. Do not compost them unless you have hot compost that you turn regularly. Diseases can be transmitted from stems, leaves, and petals on the ground, and from diseased plant material.

## MANAGING COMMON ROSE PESTS AND DISEASES

Many common pests and diseases that affect roses can be controlled without resorting to chemical pesticides. Inspect plants regularly to detect any diseases or pests before they become a problem. Become familiar with the pests and diseases that are common in your area. Before you treat plants for insect problems, look for beneficial insects (good bugs) such as ladybugs, lacewings, syrphid flies, and orange-and-black soldier beetles. If you see these natural enemies of rose pests in your garden, don't use an insecticide, because you are likely to kill more beneficial insects than pests. (See *Less-toxic Chemical Controls*.)

### Aphids

Tiny (1/8"), sucking insects that feed on plant sap. Often found in groups on new shoots and flower buds, especially on over-fertilized plants. May cause leaves to discolor or turn black as sooty mold grows on the honeydew that aphids deposit. Natural predators can reduce aphids' numbers. **Control:** Wipe off by hand or spray off with water, prune off infested growth, or spray with insecticidal soap or horticultural oil. Use slow-release fertilizers to prevent growth spurts, as aphids are attracted to tender young plant growth.



### Rose Slugs

Sawfly larvae feed on rose leaves beginning in mid-spring. Look for white spots, which become holes in leaves. Larvae are very small and difficult to see, but you may be able to find them in folded-over leaves. **Control:** Pick off larvae by hand or spray



the plant with a sharp stream of water to dislodge them. If you must use a pesticide, try a plant-based insecticide with garlic extract, and apply it in early morning or at the end of the day so that leaves won't burn in the hot sun.

### Black Spot

Fungal disease that shows as circular black spots with fringed edges on leaves and stems. Leaves may yellow and drop. **Optimum conditions for infection:** 64°F to 75°F and 95 percent relative humidity, so it is more common near the coast. Spores must be continuously wet for 7 hours for infection to occur.

**Control:** Choose resistant varieties. Strip leaves and/or prune away and destroy infected plant material, increase air circulation, and mulch to prevent spread of spores.



### Powdery Mildew

Fungal disease that causes curled leaves and a white or gray powdery coating on leaves, shoots, and flower buds. **Optimum conditions for infection:** Night temperatures around 61°F and 95 to 99 percent relative humidity; daytime temperatures up to 81°F

and 40 to 70 percent relative humidity. Grows well on young leaves and buds. **Control:** Plant disease-resistant rose varieties, wash leaves in early afternoon with a strong spray, avoid heavy fertilization or heavy pruning that causes spurts of new growth.



### Rust

Fungal disease that causes orange or yellow spots on any green portion of the plant, showing first on the undersides of leaves. Leaves may drop. **Optimum conditions for infection:** 64° to 70°F and continuous moisture for 2 to 4 hours. Less likely in areas with cold winters and very hot summers. **Control:** Choose resistant rose varieties, remove and destroy infected and fallen leaves, mulch to prevent spread of spores, remove and destroy infected shoots (look for dark, corky spots). Use soaker hoses or drip irrigation.

