



Roses: Cultural Practices and Weed Control

Integrated Pest Management for Home Gardeners and Landscape Professionals

Roses in the garden and landscape grow as part of an environment that includes other plants, weather and other natural conditions, pests, and other organisms. Through careful selection of plant varieties and management of growing conditions, beautiful roses can be grown with a minimum of pest problems.

Initial placement of roses into a suitable site (Figure 1) gives plants the best opportunity for growth with minimal maintenance. Once established, roses provided with appropriate fertilizer and irrigation are less susceptible to some pest problems. Sanitation efforts such as picking up fallen leaves and winter prunings can help reduce disease severity and insect populations in spring. Weeds should also be managed to reduce competition and provide an attractive landscape.

For details on insect and mite pests and their management, see *Pest Notes: Roses: Insects and Mites*. To find out more about diseases of roses and how to prevent them, see *Pest Notes: Roses: Diseases and Abiotic Disorders*. Both publications are listed in References.

CULTIVAR SELECTION

Roses have been cultivated in garden settings since antiquity, and Roman writings refer to the use of rose flowers for decoration and fragrance. Perhaps the earliest specific use of roses as landscape plants in the United States occurred in the late 1800s and early 1900s. Hybrids of *Rosa rugosa*

roses from China and Japan were extensively planted as hedges around farmsteads on the Great Plains. Although the flowers of *Rosa rugosa* cultivars are small, the ability of plants to survive, even in temperatures of -30°F , made them a welcome and colorful addition to the landscape.

Modern roses are classified based on lineage and flowering characteristics. Hybrid teas and grandifloras (Figure 2) were developed primarily for their large, showy flowers. Because of their profuse bloom and disease resistance, the cluster-flowered floribundas (Figure 3) and polyanthas (Figure 4) are more suitable for landscape use than hybrid teas and grandifloras.

Hybridizing with floribunda varieties has resulted in the relatively recent development of landscape roses, also called shrub roses, which are cultivars selected specifically for use



Figure 1. Roses in a traditional garden setting.



Figure 2. Hybrid teas and grandifloras.

Author:

John F. Karlik, UC Cooperative Extension, Kern County.

as flowering shrubs in the landscape (Figures 4, 5, and 6). These varieties have enhanced disease and insect resistance and require less pruning than traditional garden varieties of roses. Planting and care are also easier because thorns are smaller and less numerous than found on traditional varieties. Because petals and spent flowers separate from the stems on their own, deadheading (the removal of old flowers) is not required, though this practice can speed up rebloom for some varieties. In cold-weather areas, the own-root propagation of landscape roses means plants can regenerate true-to-type from roots even if killed to the ground by cold temperatures.

Landscape roses are available in three approximate growth forms: upright plants, mounding shrub roses, and ground covers. Some examples are listed below, but new cultivars are developed and released on an annual basis.



Figure 3. The rose variety 'Iceberg,' a cluster-flowered floribunda.



Figure 4. The polyantha rose variety 'The Fairy.'

- Upright plants (Figure 5) grow as medium-to-large shrubs with uniform foliage and bloom. These varieties can be used as border plantings, screens, or for vertical accents in a landscape design. Multiple plantings can be maintained as an informal hedge. Varieties include 'Flutterbye,' 'Pink Meidiland,' 'Sevillana,' and the 'Simplicity' series.
- Mounding shrub roses (Figure 6) are more rambling than upright varieties. These can be used as borders and mass plantings. Varieties include 'Bonica,' 'Lady of the Dawn,' 'Lavender Dream,' 'Knock Out,' 'Scarlet Meidiland,' and the 'Drift' roses.
- Ground covers (Figure 7) are low-growing varieties that are useful as covers for sloping banks, borders for walkways, or cascades over walls. Some varieties reach 2 feet in height. Varieties include 'Alba Meidiland,' 'Baby Blanket,' 'Carefree Delight,' 'Eyeopener,' 'The Fairy,' 'Flower Carpet,' 'Ralph's Creeper,' 'Red Ribbons,' 'Red Meidiland,' and 'Sea Foam.'

CULTURAL PRACTICES

Establishment

Roses are often purchased in late winter or early spring as bare-root plants. To maintain plant health prior to sale, these plants should be held in the nursery under cool conditions with their roots kept moist. Packaged plants should also be kept cool because warm temperatures hasten loss of carbohydrate reserves and contribute to gradual desiccation of wood, resulting in difficulty in establishment. After purchase, these plants should be kept shaded and moist and planted into the garden as soon as possible. Plant roses at about the same height they were growing in the production field or container, with the graft union (if present) above the soil surface. Compost should not be added to soil in most situations, since compost can affect water movement and impede drainage.



Figure 5. Upright landscape rose varieties such as Pink Simplicity, shown here, are medium to large shrubs.

Establishment from bare-root stock becomes more difficult as day temperatures rise above 70°F in late spring. To increase the percentage of survival when planting bare-root stock in May or June, mist the wood once or twice per day and place mulch around the base of the plant to increase humidity.

Roses may be planted throughout the summer from nursery containers. However, the current season's stock is preferred to container stock held over from the previous year. With the exception of miniatures and smaller cultivars, roses generally do not perform well when maintained in nursery pots for more than one season.

Planting sites may have full sun to partial shade; however, roses do best with 6 hours or more of direct sun. In addition, locating the plants so that they are exposed to good air movement is useful for reducing disease susceptibility. Diseases are less common in California's dry interior valleys than in areas with more humid climates.

Irrigation

Roses need to be irrigated in most locations in California. Drought stress leads to defoliation and sunburn of canes, and may contribute to spider mite problems. However, overwatering or poorly drained soils may lead to root disease and nutritional deficiencies.



Figure 6. Mounding landscape shrub roses, such as ‘Coral Drift,’ are more rambling than upright varieties.



Figure 7. Groundcover roses such as ‘Ralph’s Creeper,’ shown here, are useful for covering banks or walls.

Frequency and duration of irrigation will depend on weather conditions and soil texture. Roses do best when 50% of available water is depleted between irrigations. Checking after irrigation to determine soil moisture status and rate of depletion is helpful in scheduling irrigation.

Daily irrigation should not be necessary even in the desert areas of California. For example, in the Central Valley, rose plants in production fields are irrigated, at most, at 8-day intervals

during the warmest months. Irrigation twice per week is usually satisfactory for roses in landscapes.

Water may be supplied via overhead sprays, flood irrigation, or drip tubing. Irrigation with over-the-top delivery should take place in the morning so foliage dries during the day.

Mulches help to decrease water loss from the soil through evaporation and may enhance growth of the root system.

Soil and Nutritional Requirements

Roses prefer well-drained soil with a pH near the neutral value of 7.0. Many California soils are still suitable despite a pH above 7.0, but the likelihood of micronutrient deficiencies becomes greater as pH increases, especially for pH values above 7.5.

Roses are not salt-tolerant, so electrical conductivity (ECe) values, which measure the level of salt ions in the soil, should be less than 2.0 decisiemens per meter (dS/m). Soil test values suitable for roses are given in Table 1.

Nitrogen is the nutrient typically in shortest supply. Although nitrate levels may be lower than the suggested soil test value, this nutrient is easy to add so that a low soil level of nitrate is usually not problematic. For young landscape plantings or home gardens, adding nitrogen at the rate of 1 pound of nitrogen per 1,000 square feet (or proportionally less for smaller gardens) twice per year in spring and fall should provide an adequate amount of this nutrient. This may only be necessary if roses show symptoms of nitrogen deficiency, such as poor overall growth or chlorosis of the lower leaves. Slow-release fertilizers may be used. In locations with cold winters, use an immediate release form in early fall to allow for proper winter hardening of the plants.

Table 1. Suggested soil pH, electrical conductivity (ECe), and nutrient levels for growing roses.

Soil Characteristics	Unit	Low	High
pH (acidity/alkalinity)	—	6.0	7.5
ECe (electrical conductivity)	dS/m	0.5	2.0
NO3-N (nitrate-N)	ppm	35	150
NH4-N (ammoniacal-N)	ppm	0	20
P (phosphorus)	ppm	5	50
K (potassium)	ppm	50	300
Ca (calcium)	ppm	40	200
Mg (magnesium)	ppm	20	100
B (boron)	ppm	0.1	0.75
Fe (iron)	ppm	0.3	3.0
Mn (manganese)	ppm	0.2	3.0
Cu (copper)	ppm	0.001	0.5
Zn (zinc)	ppm	0.03	3.0
Mo (molybdenum)	ppm	0.01	0.10

Table 2. Suggested values for nutrient levels in rose tissue.

Nutrient (unit)	Low	High
N (%)	3.0	5.0
P (%)	0.2	0.3
K (%)	2.0	3.0
Ca (%)	1.0	1.5
Mg (%)	0.25	0.35
Zn (ppm)	15	50
Mn (ppm)	30	250
Fe (ppm)	50	150
Cu (ppm)	5	15
B (ppm)	30	60

For sandy soils and for soluble fertilizers, split the seasonal application into two parts, 1 month apart. For mature plantings, adding nitrogen only in spring may be sufficient. Too much nitrogen may shift plants into vegetative growth at the expense of flowers.

Although tissue tests are not normally needed for roses in landscape settings, they may be used to provide information on the current nutritional status of the rose plant. Suggested nutrient levels are presented in Table 2.

Pruning

Pruning provides an opportunity to direct growth and invigorate rose plants. Pruning requirements vary among types of rose plants. Hybrid teas, grandifloras, and many floribundas benefit from annual pruning in which most top growth and dead wood is removed leaving 3 to 5 canes in a vase-shaped configuration (Figure 8). Landscape varieties may be hedged or left unpruned, although rejuvenation pruning or removal of older stems and dead wood every 2 to 3 years will renew vigor in the planting.

In most of California, pruning should be done in winter before buds swell, although it may be delayed where late spring frosts are common. A starting point in pruning is to remove diseased and damaged wood. Between one- to two-thirds of healthy wood may be removed through a combination of heading and thinning cuts, which ideally should be within ¼ inch above outwardly growing lateral buds or branches (Figure 9).

Removal of more wood results in fewer but larger flowers with longer stems suitable for cut flowers. Less pruning preserves the size of plants and results in a greater number of smaller flowers which can result in a pleasing landscape display. Pruning paint or other wound dressings are not necessary.

During the growing season, the rule-of-thumb for cutting blooms on first-year plants is to make the cut above the first outwardly-facing 5-leaflet leaf. On



Figure 8. Rose bushes pruned in a vase-shaped configuration.

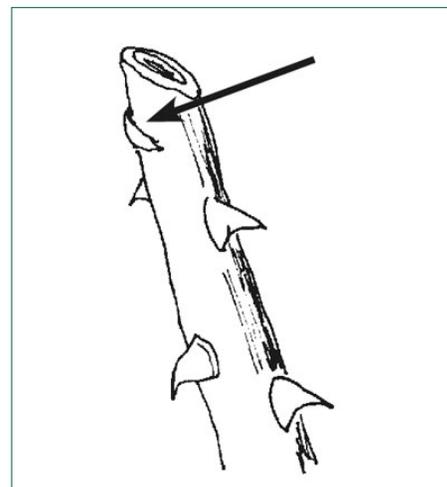


Figure 9. Pruning cuts should be made cleanly above a lateral bud (arrow) or branch.

well-established plants, cut blooms somewhat lower to ensure new canes can support the weight of the blooms.

Removal of spent rose blossoms allows the plant to conserve energy and leads to further flower production. To deadhead a rose plant, use the same guidelines as those for cutting blooms.

WEED MANAGEMENT

Weeds are common in many landscape situations including around rose plantings. Mulching with 2 to 4 inches of organic material such as wood chips will reduce annual weeds and make

hand-weeding easier. Woven landscape fabrics (Figure 10) placed under organic mulch will provide weed control for several years.

In most home gardens, mulches supplemented with regular hand-weeding or roguing (digging out the entire plant, roots and all) should provide satisfactory weed control. Mechanical cultivation devices such as hoes must be used with care because roses are shallow-rooted. In extensive plantings or professionally managed public or commercial landscapes, mulches and hand-weeding can be supplemented with herbicides. Some of the herbicides



Figure 10. Different types of fabric mulch weed barriers. Woven barriers provide best weed prevention.

below may be available only to professional applicators and not to home gardeners. Be sure to consult current product labels for permitted sites and rates.

Preemergence herbicides can be used around roses before weeds emerge or after weeds are removed, but before others germinate. While these herbicides primarily control grasses, they also control broadleaf plants such as chickweed, fiddleneck, knotweed, lambsquarters, pigweed, prostrate spurge, oxalis (from seed),

and purslane. These herbicides will not control established weeds. The preemergence herbicides oryzalin (Surflan) and pendimethalin (Pendulum) were effective in field trials and did not injure roses.

To control established grasses, the postemergence herbicides fluazifop-p-butyl (Fusilade) and clethodim (Envoy) were effective in field trials. When these herbicides are used according to label directions, they will not injure rose plants.

Roses are sensitive to postemergence broadleaf herbicides that may be used in landscapes, such as 2,4-D, triclopyr, and dicamba; these should not be used in or near planting beds with roses. Generally, use broadleaf herbicides with great care when rose plants are present in nearby landscapes so as not to cause damage from drift.

Roses are also very sensitive to glyphosate (Roundup and many other trade names), which can be absorbed through the green stems in addition to the leaves. Glyphosate damage (Figures 11, 12) may appear at budbreak the following spring after a summer or fall application that contacts leaves or stems; symptoms include a proliferation of small, narrow shoots and leaves.

For more information on weed control in the landscape, see *Pest Notes: Weed Management in Landscapes* listed in References.



Figure 11. Landscape rose with chlorotic, underdeveloped blossom and puckered needlelike shoots caused by the herbicide glyphosate.



Figure 12. Landscape rose with small, needle-like shoots typical of injury from the herbicide glyphosate.



REFERENCES

Flint ML, Karlik JF. 2019. *Pest Notes: Roses: Insects and Mites*. UC ANR Publication 7466. Oakland, CA.

ipm.ucanr.edu/PMG/PESTNOTES/pn7466.html (accessed July 18, 2019)

Flint ML, Karlik JF. 2009. *Healthy Roses*. UC ANR Publication 21589. Oakland, CA

Karlik JF. 1998. Weed management for roses in landscape plantings. *Proc. 50th Annual Calif. Weed Sci. Soc.*, pp. 12–14.

Karlik J, Harwood C. 1991. Landscape roses bred for performance. *Calif. Landscape Mag.* 16(3):28–29.

Karlik JF, Flint ML. 2020. *Pest Notes: Roses: Diseases and Abiotic Disorders*. UC ANR Publication 7463. Oakland, CA.

ipm.ucanr.edu/PMG/PESTNOTES/pn7463.html (accessed January 17, 2020).

Karlik JF, Tjosvold SA. 2003. Integrated Pest Management (IPM) for Roses. In *Encyclopedia of Rose Science*, A.V. Roberts ed. Amsterdam, Netherlands: Elsevier Science.

Wilen CA. 2018. *Pest Notes: Weed Management in Landscapes*. UC ANR Publication 7441. Oakland, CA.

ipm.ucanr.edu/PMG/PESTNOTES/pn7441.html (accessed July 18, 2019).

WARNING ON THE USE OF PESTICIDES

Pesticides are poisonous. Some pesticides are more toxic than others and present higher risks to people, nontarget organisms, and the environment. A pesticide is any material (natural, organic, or synthetic) used to control, prevent, kill, suppress, or repel pests. "Pesticide" is a broad term that includes insecticides, herbicides (weed or plant killers), fungicides, rodenticides, miticides (mite control), molluscicides (for snails and slugs), and other materials like growth regulators or antimicrobial products such as bleach and sanitary wipes that kill bacteria.

Always read and carefully follow all precautions and directions provided on the container label. The label is the law and failure to follow label instructions is an illegal use of the pesticide. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, and animals. Never place pesticides in food or drink containers. Consult the pesticide label to determine active ingredients, correct locations for use, signal words, and personal protective equipment you should wear to protect yourself from exposure when applying the material.

Pesticides applied in your garden and landscape can move through water or with soil away from where they were applied, resulting in contamination of creeks, lakes, rivers, and the ocean. Confine pesticides to the property being treated and never allow them to get into drains or creeks. Avoid getting pesticide onto neighboring properties (called drift), especially onto gardens containing fruits or vegetables ready to be picked.

Do not place containers with pesticide in the trash or pour pesticides down the sink, toilet, or outside drains. Either use all the pesticide according to the label until the container is empty or take unwanted pesticides to your local Household Hazardous Waste Collection site. Contact your county agricultural commissioner for additional information on safe container disposal and for the location of the Hazardous Waste Collection site nearest you. Follow label directions for disposal of empty containers. Never reuse or burn the containers or dispose of them in such a manner that they may contaminate water supplies or natural waterways.

Produced by the **Statewide Integrated Pest Management Program**, University of California, 2801 Second Street, Davis, CA 95618-7774.

Technical Editor: K Windbiel-Rojas

ANR Associate Editor: AM Sutherland

Editor and Designer: B Messenger-Sikes

ILLUSTRATIONS: Figures 1-3, 5, 7, 8, and 12: JF Karlik; Figure 4: K Ziarnek, Wikimedia; Figure 6: Kelvinsong, Wikimedia; Figure 9: Karen Ling; Figures 10 and 11: Jack Kelly Clark.

This and other Pest Notes are available at ipm.ucanr.edu.

For more information, contact the University of California Cooperative Extension office in your county. See your telephone directory for addresses and phone numbers, or visit: ucanr.edu/County_Offices.

University of California scientists and other qualified professionals have anonymously peer reviewed this publication for technical accuracy. The ANR Associate Editor for Urban Pest Management managed this process.

To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned.

This material is partially based upon work supported by the Extension Service, U.S. Department of Agriculture, under special project Section 3(d), Integrated Pest Management.

Suggested citation: Karlik JF. 2019. UC IPM *Pest Notes: Roses: Cultural Practices and Weed Control*. UC ANR Publication 7465. Oakland, CA.