



ROSES

Roses have many landscape uses. They can be placed as accent plants or used to form hedges or ground covers. They offer a rainbow of colors and a variety of forms and fragrances, and their sizes range from miniatures to tall climbing plants. Roses may be grown under many climatic and soil conditions and, with care, thrive and produce flowers for many years.

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Rose Classifications

Because roses are highly cross-bred, classification lines and gradations are not clear so a functional system is used to classify them. How roses are used depends on their growth habits (as bushes, hedges, shrubs, climbers) and flowering characteristics (number of flowers per stem, single versus double flowers, fragrance). The following classifications are based on the functional uses of outdoor roses.

Bush Roses

Bush roses are self-supporting and grow upright. They bear flowers primarily at the top of the plant. The four types of bush roses are hybrid teas, floribundas, grandifloras, and miniatures.

Hybrid teas are nearly always double-flowered, but some are semi-double-flowered or single-flowered. In most cases, the flowers are borne singly. Buds are usually long and pointed. Hybrid teas grow from 2½ to 5 feet tall, and their stems tend to be long, making them excellent for flower arrangements.

Hybrid teas do not produce as many flowers as some other rose

types. They also do not form a strong bush, but many canes arise from the plant base. They vary in hardiness and frequently need winter protection. Many are fragrant.

Floribundas are probably the most popular class of roses worldwide because of their profuse blooming. Their relatively large flowers are borne in clusters.

Floribunda stems are shorter than those of hybrid teas, making them less suitable for flower arrangements. The plants are bushier in appearance than hybrid teas and ideally are planted in groups of three or more. Fifty plants massed in a bed create a real show.

Grandifloras are vigorous plants with the free-flowering, clustering characteristic of floribundas and the perfect form of hybrid teas. Their flowers are larger than those of floribundas but not quite as large as those of hybrid teas. The plant is taller than floribundas and hybrid teas (5 to 6 feet tall) and makes a good background plant. Flower colors are not quite as vivid as those of hybrid teas, but they provide a mass of color for garden decoration and have individual stems long enough for cutting.

Miniature roses (patio roses) are compact, well-branched, dense plants with leaves and flowers that complement their small size. They flower profusely, and many are hardy. Miniatures are used as both garden and indoor plants. Since miniature roses have come on the market, everyone—even people who live in apartments or on small lots—has room for roses. Any niche of soil measuring 6 inches or more across and at least 6 inches deep, whether in a permanent bed or a container, is all you need to grow miniatures. If poor soil is a problem, it can be removed and replaced since the volume is small. For each small plant, a soil volume of 1/8 cubic feet (6 by 6 by 6 inches) is all that is required. A full cubic foot of soil is better for larger miniatures and patio roses.

Heritage or Old-Fashioned Roses

Heritage or old-fashioned (old) roses have irregular growth habits. They are extremely hardy and often resistant to diseases and insects. An ordinary garden can turn into a wonderland of color and form by adding some old roses.

Damasks, albas, centifolias, gallicas, mosses, and species are spring-blooming old roses. Hybrids of some old roses bloom repeatedly and may be pruned any time of the year (as with modern roses). Varieties that bloom only once a year should not be pruned until after they bloom in spring. Such varieties bloom on old wood, so pruning in winter and early spring removes potential flowers. The beauty of old roses is in large, well-established plants, not tightly pruned, little bushes.

Polyanthas and Hybrid Polyanthas

This group fits somewhere between old-fashioned roses and modern floribundas. They were derived mainly from *Rosa multiflora* crossed with tea and China roses. They are very hardy and flower freely in clusters with individual flowers that are small and low-growing. These roses are not as popular as they were in the early 1900s.

Ground Cover Roses

Ground cover roses have vigorous canes that crawl outward and only slightly upward. They form a broad carpet, almost prostrate or slightly mounded. Some bloom only in spring; others are everblooming.

David Austin Roses

English hybridizer David Austin developed a new line of roses that combines the hardiness and disease resistance of old-fashioned

roses with certain characteristics (repeat blooming and double flowers) of modern tea roses and floribundas. David Austin roses range in height from 3 to 8 feet; most are bushy and upright growers. They can be considered low-maintenance roses and require little spraying.

Meidiland Roses

These roses were created by the House of Meilland in France and are sometimes sold as “flowering shrubs” rather than “roses” by companies in this country. They are easy to grow, hardy, relatively disease-resistant (though canker is a problem), tolerant of heat, and not bothered excessively by Japanese beetles. They are considered low-maintenance roses. They grow 1½ to 5 feet tall and are good plants for massing or hedges.

Tree Roses

A tree rose is any rose grafted to a tall trunk. Tree roses are not a class of roses but a distinct garden form; however, most tree roses are the bush type. They need special winter protection and careful pruning.

Climbers

Vigorous roses that produce long, supple canes (6 to 20 feet long) should be trained on supports like fences, buildings, arbors, or any stable structure. Weave the canes in and out of the structure or use soft ties to hold the canes in place. Some climbers are ever-blooming; others bloom once a year.

A serious problem with climbers is cold hardiness. Climbers bloom on canes produced the previous summer. Canes that suffer winter dieback produce no blooms. Some people resort to growing once-blooming ramblers, shrub roses, and some modern roses as climbers. Check the cultivar list that follows for ideas.

Cultivar Selection

Deciding which roses to grow is a personal choice. Everyone has individual preferences. When you see roses you like, jot down the cultivar name and make sure it is hardy in Zone 6 (or zones with lower numbers). If it is, find a source and get your order in early.

For some ideas, the rose cultivars listed below are hardy in Kentucky. They were selected because of low maintenance and some pest resistance. This is not an endorsement of these roses, but simply an effort to get you started since there are so many from which to select.

The Kentucky Public Rose Garden is located at the Kentucky Fair and Exposition Center (Louisville, KY 40232; phone 502/267-6308). Fifteen hundred rose plants, representing 98 varieties, are grown there. Which varieties are favorites of the growers at the public garden? They're ranked below, but remember there is no substitute for local experience.

1. 'Carefree Delight' (shrub rose)
2. 'Showbiz' (floribunda)
3. 'Double Delight' (hybrid tea)
4. 'Queen Elizabeth' (grandiflora)
5. 'New Beginning' (miniature)
6. 'Pride in Joy' (miniature)
7. 'Brigadoon' (hybrid tea)
8. 'Betty Prior' (floribunda)

The following list is primarily for the beginner. More sophisticated rose growers can recommend many more cultivars worth trying. (Cultivars marked with an asterisk are resistant to black spot disease.)

Bush Roses

Hybrid Teas

Brigadoon
 Double Delight (red blend)
 Olympia (red)
 Headliner (pink blend)
 Mr. Lincoln* (red)
 Sheer Bliss (white)
 Perfect Moment (pink)

Peace* (yellow blend)
 Pink Peace* (pink blend)
 Summer Dream (apricot blend)
 Dainty Bess (single, light pink)
 Pascali* (white)
 John F. Kennedy (white)
 Elina (medium yellow)
 Madame Violet (lavender)
 Marijke Koopman (medium pink)
 Touch of Class (pink blend)
 Hoagy Carmichael (red)
 Folk Lore (orange blend)
 Dublin (medium red)
 Elegant Beauty (yellow blend)
 Garden Party
 Color Magic
 Tiffany*
 Tropicana*
 Singing in the Rain
 Cary Grant
 Princess de Monaco
 Carla*
 Cayenne*
 Duet*
 Electron*
 First Prize*
 Granada*
 Miss All American Beauty*
 Portrait*
 Pristine*
 Proud Land*
 Sutter's Gold*

Floribundas

First Edition* (orange blend)
 Betty Prior
 Iceberg (white)
 Pleasure (pink)
 Eye Paint (red blend)
 French Lace (white)
 Interama (dark red)
 Summer Fashion (yellow blend)
 Showbiz (red)
 All That Jazz (coral-salmon)
 Sun Sprite x 2*

Grandifloras

Angel Face*
 Betty Prior*
 Carousel*
 Europeana*
 Gene Boerner*
 Ivory Fashion*
 Montezuma*
 Prominent*
 Queen Elizabeth*
 Razzle Dazzle*

Rose Parade*
 Queen Elizabeth* (medium pink)
 Camelot (medium pink)
 Pink Parfait* (pink blend)
 Love (red blend)
 Tournament of Roses (medium pink)
 Sonia* (pink blend)
 Shining Hour (white)
 White Lightnin' (white)
 The Fairy*
 Red Gold*

Modern Shrub Roses

- *Rosa* 'Austrian Yellow'—6 feet tall. Butter-yellow flowers that bloom in late May and early June. Ideal for background planting.
- *R.* 'Austrian Copper'—A sport (genetic modification) of 'Austrian Yellow,' with beautiful copper-red flowers. Reaches a height of 4 to 6 feet. Petals are copper colored on the upper side and yellow on the reverse side.
- *R.* 'Bloomin' Easy'—4 to 5 feet tall. Red flowers. Very hardy and disease-resistant.
- *R.* 'Carefree Wonder' and 'Carefree Delight'—Mounding, 5-foot-high by 4-foot-wide plants with rich pink flowers and a creamy reverse. Excellent pest and disease resistance. Blooms during most of the summer.
- *R.* 'Champlain'—Hybrid Kordesii shrub rose. Double deep red flowers have light fragrance. Forms neat 3-foot mounds.
- *R. glauca*—Grows up to 6 feet tall but is easily kept in bounds. Has soft-textured bluish-gray foliage tinged with red. Almost thornless with reddish-brown bark. Flowers are mauve-pink, about 1½ inches in diameter, and followed by handsome reddish brown hips in clusters of three to seven.
- *R.* 'Harrison's Yellow'—6 feet tall, with good green foliage. One of earliest to bloom. It is covered with 1½-inch semi-double fragrant yellow flowers.
- *R.* 'Nevada'—Height and spread of 5 to 7 feet. Creamy white single to semi-double flowers. Blooms in May and early June; blooms intermittently throughout the summer.
- *R.* 'Nymphenburg'—Hybrid moss rose that reaches 6 feet in height and produces long-lasting double pink flowers on arching branches. The main

bloom is in May and early June; blooms lightly thereafter.

- *R. rugosa*—Hardy, salt-resistant everblooming hedge rose recommended for urban planting. Fragrant flowers are pure white, yellow, pink, or magenta. The fruit or hip is bright red and about the size of a cherry tomato. Leaves are wrinkled and leathery. Good cultivars include 'Frau Dagmar Hartopp,' 'Grootendorst Supreme,' and 'Blanc Double de Coubert.' 'Pink Grootendorst' is a 6-foot cultivar with rounded habit and frilled double pink blooms that are ideal for cutting.
- *R. sericea pteracantha*—This rose has small white single flowers with only four petals. The foliage is beautiful—miniature and fernlike. Stems are large with wing-like thorns that are deep red and semi-transparent. It reaches 6 feet in height.
- *R. 'Wild Flower'*—English rose. Single flowers are creamy yellow with intense fragrance.

Hedge Roses

These roses generally die back to ground in severe winter, so close pruning in spring is all that is necessary.

- *R. 'Simplicity'*—4 to 5 feet tall and has bright pink flowers. A white cultivar, 'White Simplicity,' is also available. Very hardy and disease-resistant, requiring little care.

Patio Roses

Small, between miniature and floribunda. 2 to 4 feet tall. Bloom all summer long. Drop petals easily; don't require dead heading (removal of faded flower heads). Excellent as low border plants, hedges, or foundation plantings. Or plant in large masses for color. May die back to ground in winter but since they are not grafted, they come back and bloom well.

- 'Red Rascal' (red)
- 'Amorette' (white)
- 'Pink Pollyanna' (pink)

David Austin Roses

- 'Othello'—Fragrant dark crimson flowers.

- 'The Squire'—Delicate pale pink blossoms with a strong myrrh fragrance.
- 'Abraham Darby'—Apricot-yellow flowers with a fruity fragrance.
- 'Fair Bianca'—Pure white flowers.
- 'Gertrude Jekyll'—Large, fragrant rich pink blooms.
- 'Heritage'—Fragrant, clear shell-pink blossoms.
- 'Graham Thomas'—Apricot buds that open to pale yellow blossoms.
- 'Wife of Bath'—Pale pink blossoms with strong myrrh fragrance.

Meidiland Roses

- 'Bonica'—Soft pink double flowers. Blooms continuously.
- 'White Meidiland,' 'Scarlet Meidiland,' and 'Pink Meidiland'—Heavy bloomers. Require only light pruning in spring to remove winter damage.

Old-Fashioned Shrub Roses

- *Rosa 'Belinda'*—Hybrid musk rose originating in 1936 in England. Grows to 4 feet tall. Mid-pink semi-double slightly fragrant flowers. Flowers continuously. Foliage is deep green. Grows in a wide range of soils and conditions. Good for hedges or containers.
- *R. eglanteria (R. rubiginosa)*—Introduced prior to 1551 and called the sweetbriar rose, this species rose and its hybrids have apple-scented foliage. Plants may reach 8 to 12 feet tall. Small pink flowers appear in late spring or summer, followed by an abundant crop of colorful hips. Tolerates poor soils and shade.
- *R. foetida bicolor*—Species introduced before 1590. Flower is five-petaled with brilliant scarlet red on its upper surface and butter yellow on the underside.
- *R. 'Frau Dagmar Hartopp'*—Hybrid rugosa rose known since 1914. Large single fragrant pink flowers. Compact growth habit (to 3 feet tall). In autumn, crimson hips are the size of small apples and

foliage is colorful. Extremely hardy and tolerates tough conditions.

- *R. gallica var. officinalis*—This is the Red Damask Rose or Rose of Provins, also known as the Apothecary Rose. Oldest of old garden roses and appears in the ancestry of most other roses. Plants are compact (3 to 4 feet tall), with dark to medium green foliage and semi-double red blooms that have a spicy scent.
- *R. 'La Reine Victoria'*—Also called 'Reine Victoria.' A Bourbon rose that originated in France in 1872. Tall, slender shrub. Grows to 6 feet. Flowers along the entire length of its canes. Flowers are cupped, rose pink, and fragrant. It repeats flowering. Prone to black spot.
- *R. 'Madame Hardy'*—Another damask rose having the characteristic green button eye in the center of its white bloom. A profuse bloomer in early summer and one of the best ivory-white old-fashioned roses. Developed in France in 1832.
- *R. 'Petite de Hollande'*—Centifolia rose that originated in 1800 in the Netherlands. Compact shrub that can grow to 5 feet high by 3 feet wide. Many small pink fragrant flowers with dark centers. Tolerates poor soils and requires full sun. Blooms only in summer.
- *R. 'Roger Lambelin'*—Shrubby hybrid perpetual rose that grows to 4 feet tall. Deep scarlet double flowers; narrow white line on edges of petals gives a carnation-like appearance. Very fragrant. Summer-flowering with some late blooms. Originated in France in 1890. Requires good soil and should be mulched and watered in dry areas. May develop rust and mildew.
- *R. 'Rosa Mundi'*—Also known as *R. gallica versicolor* or *R. gallica variegata*. Around since the 16th century. Grows to 4 feet tall. Matte green foliage and few thorns. Flowers are all different, with combinations of light red, pink, and white, with prominent yellow stamens. Blooms in summer only. Tolerant of poor soils.
- *R. 'Salet'*—Originated in 1854 in France. Moss rose with double clear-pink

fragrant flowers. Forms a bush 4 feet tall by 3 feet wide. Repeat flowering occurs in autumn. 'Salet' requires regular watering and mulching for optimum flowering in hot, dry summers.

- *R.* 'White Rose of York'—Known since the 15th century or earlier. Other names are 'Maxima,' 'Jacobite Rose,' and 'Great White Rose.' This alba rose is one of the largest shrub roses, growing to 7 feet tall or more and 5 feet wide. Foliage is coarse and grey-green. Flowers are creamy white and fragrant doubles. It tolerates poor soils and is suitable as a hedge.

Fragrant Roses

Most wild species of roses are fragrant, some more than others. Damask, Musk, Cabbage, Rugosa, French, and Bourbon roses are the most fragrant. If true rose perfume is important in your choice of what to grow, try some of these highly perfumed species.

- *Rosa x damascena* var. *bifera* (Autumn Damask or Quatre Saisons). Bloom twice, once in spring and again in fall. Most cultivars are semi-double pink flowered, deliciously fragrant. 'Rose du Roi' 'Rose de Rescht' 'Quatre Saisons' 'Jacques Cartier' 'Marquise Boccela'
- *Rosa x centifolia* (cabbage roses). Distinct fragrance of cabbage roses is desirable. 'DeMeaux' 'Fantin Latour' 'Petite de Hollande'
- *Rosa x centifolia* 'Muscosa' (moss roses). These roses have a scent similar to that of cabbage roses.
- *Rosa x alba* (Albas). Roses have refined damask scent which is light. 'Maiden's Blush' 'Koenigin von Danemarck' 'Felicite Parmentier'
- *Rosa rugosa* (Rugosas). These roses have strong damask scent with hint of clove or cinnamon, which lasts all day. 'Sarah Van Fleet' (deep pink flower) 'Blanc Double du Coubert' (paper white flower)
- *Rosa gallica* (French rose). Semi-double flower known as Apothecary

Rose, whose oil and petals were once treasured for potpourris.

- *R. gallica* var. *officinalis*: 'Belle Isis' 'Charles de Mills' 'D'Aguesseau'
- Bourbons. Originally a cross between *R. chinensis* and Autumn Damask Rose. The following cultivars resulted from crossing original Bourbons with French Rose and Damask hybrids. 'Madame Isaac Pereire' 'Bourbon Queen' 'Zephirine Drouhin'
- Modern Roses, which received the James Alexander Fragrance Medal as listed by the American Rose Society, include 'Crimson Glory,' 'Tiffany,' 'Chrysler Imperial,' 'Sutter's Gold,' 'Granada,' 'Fragrant Cloud,' 'Papa Meilland,' and 'Double Delight.' There is also one fragrant floribunda: 'Sunsprite.'
- Fragrant hybrid tea roses include 'Mister Lincoln,' 'Pink Perfume,' 'La France,' 'Will Rogers,' and 'Oklahoma.'

Climbers

Modern Roses to Serve as Climbers

- 'New Dawn' (light pink flowers)
- 'White Dawn' (white flowers)
- 'Coral Dawn' (coral flowers)
- 'Altissimo' (seven-petaled red flowers)
- 'Dortmund' (single red flowers with light eye)
- 'William Baffin' (deep pink)

Ramblers to Serve as Climbers

- 'Dorothy Perkins' (rose-pink flowers)
- 'Excelsia' (red flowers)
- 'Chevy Chase' (dark red flowers)
- 'May Queen' (light pink flowers)
- 'Etain' (orange-pink flowers)
- 'American Pillar' (dark pink flowers with white eye)

Shrub Roses with 4- to 12-foot Canes that Serve as Climbers

- 'Alchemist' (double apricot flowers)
- 'Sally Holmes' (pure white flowers)
- 'Zephirine Drouhin' (Bourbon rose with bright cerise flowers)
- 'Frau Karl Druschki' (hybrid perpetual with pure white flowers)

Buying Roses

Roses are classified in three grades. Look on the rose tag for one of the following numbers. A #1 plant is usually 2 years old. It was budded (grafted to the understalk) two years prior to being dug. The plant was regularly pinched and pruned, producing two or more very strong canes. Canes are cut back when plants are harvested for sale.

A #1½ plant is also 2 years old but has one strong and one smaller cane.

A #2 plant has several small canes. But, take heart! A #2 plant can be grown into #1 quality with patience and care.

Rose Society

If you plan to devote a lot of time and effort to growing roses, consider joining the American Rose Society (P.O. Box 30,000, Shreveport, Louisiana 71130; phone 318/938-5402). The members' expertise is an invaluable guide in selecting plants to grow.

If you don't want to join the society, All America Rose Selections (AARS) chooses several outstanding roses annually. When you buy a rose labeled AARS, you will get a quality, tested plant that hopefully will perform well in your site. Not all AARS winners tolerate Kentucky's weather extremes and fluctuations.

Using Roses in Landscaping

Roses may be appropriate almost anywhere you use other shrubs in the landscape, as indicated by the following examples.

- foundation plantings
- massed plantings in beds (especially miniatures and floribundas)
- low growers as border or edging, container plants (protect roots from freezing in winter)
- rock garden plants
- screen or hedge plantings
- background planting for other flowers or shrubs
- camouflage plantings to draw attention away from unsightly areas
- terraced plantings on a steep slope
- climbing plants on fences, garden structures, or homes

When deciding where to plant roses in your yard, you must understand their needs and potential. Consider the height, growth habit (spreading, bushy, upright, tall, short), and color of the cultivar you have chosen. Most roses can be spaced 2 to 4 feet apart. Shrubs and old-fashioned roses should be 4 to 6 feet apart, and climbers along fences should be 8 to 10 feet apart. Most important, roses need good drainage and sunshine.

Full sun is best for your roses, although six to eight hours is sufficient (preferably morning sun).

Good drainage in your soil is a must. If your soil doesn't drain well naturally, enhance its porosity by adding abundant organic matter or small pea gravel.

Almost any soil type is fine for growing roses as long as it is well-drained and well-aerated. When water is added to the planting hole, it should drain freely and certainly should be gone in two hours. If not, you have a problem.

If heavy soil needs to be modified, use one-half to one-third native soil and one-half to two-

thirds fully composted organic matter (well-rotted manure, leaf mold, compost) to increase aeration, drainage, and water-holding capacity. The entire planting area should have similar soil modification, not just the planting holes.

Soil pH should be 6 to 6.8. A soil test submitted to your county Extension agent will determine whether lime and fertilizer are needed to produce attractive roses on the site you have selected. Fertilizers to modify pH may be necessary if a lot of organic matter and peat are added to the planting site.

Planting

The most appropriate time to plant roses is early spring, when the plants are not leafed out and the ground is not frozen. Follow these planting steps.

1. Dig the planting hole to accommodate roots and keep budded area at the soil line. This is usually 15 to 18 inches deep.
2. Incorporate superphosphate into your soil (to provide slowly available phosphorus) at a rate of three to four pounds per 100 square feet or one heaping tablespoon per plant.
3. Spread out the roots of the rose plant over a cone of soil located in the center of the planting hole. This will prevent air pockets from forming around the roots.
4. Make sure the **budded area is at the soil line**. This prevents undesirable suckering from the rootstock (the plant portion below the grafted bud). Also, if the budded area is buried in the soil, roots will form on the scion (the grafted portion), and the desirable characteristics of the rootstock (e.g., hardiness and disease resistance) will be lost.
5. Add half the soil backfill and gently firm soil around roots with hands to ensure root-to-soil contact. Water as you add backfill.

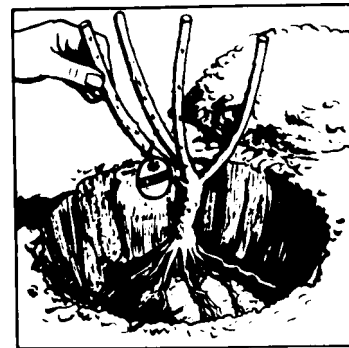


Figure 1. Position plant in planting hole. Make sure the bud union is at the soil line. The bud union is evident by a swelling of the stem area where the bud was inserted and healed. Any growth from the rootstock below the bud union is called sucker growth and should be removed down to its base.

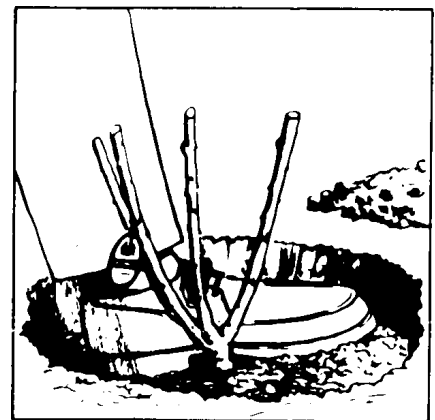


Figure 2. Tamp soil around roots.

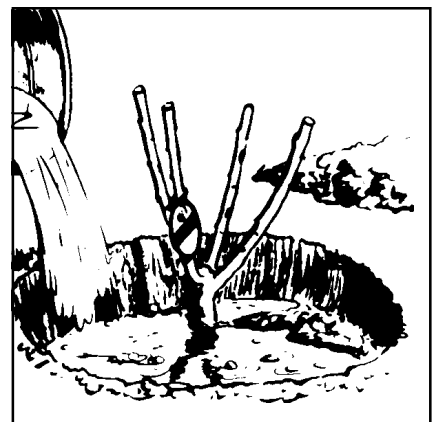


Figure 3. Add water gradually to planting hole.

6. Fill the planting hole to within 1 to 1½ inches of the original soil surface.

7. If tender roses are planted in the fall, mound compost around and over the plant to a height of 12 to 18 inches by Thanksgiving. This helps protect the bud union. Remove the protective mound in the spring (mid April) after growth starts.

Care After Planting

Adequate rose care includes watering, pruning, mulching, and disbudding.

Watering and Fertilizing

Roses perform best when they are well-watered. Rainfall often does not meet the plants' needs. Add water when the upper 1 to 2 inches of soil is dry.

Thorough, deep watering is best. Overhead sprinkling is the most convenient, but wet foliage may promote disease. Drip irrigation systems that are on the market are easy to install, use water efficiently, and do not cause wet foliage. If you use overhead watering, water in the morning or early afternoon so foliage will be dry by evening.

Fertilizers with an analysis such as 5-10-5 or 4-12-4 are commonly packaged as rose fertilizers; however, 8-8-8, 10-10-10, 12-12-12, or other garden fertilizers may be used. **High-nitrogen turf materials, such as 25-10-10 or 33-0-0, should be used sparingly.**

In a rose bed, apply about ¼ cup of 12-12-12 (or correct amount of other fertilizer analyses) per bush. Spread fertilizer evenly and scratch it into the soil surface. Application should be made to wet soils, before rain or watering.

Fertilize first in spring after danger of frost is past and pruning is completed. Then fertilize every four to six weeks until early

August. Shrubs that bloom once should be fed only in mid April.

Pruning

Spring Pruning

Remove all dead wood and any canes that are diseased, broken, or injured in any way. Prune to improve the shape of the plant and to permit air movement through it by removing branches that cross through the center of the plant or rub other branches. Also remove suckers from the rootstock and thin, weak growth. Generally, pruning back to one or two outward-facing buds or branches per cane encourages growth to the outside and creates an open, vase-shaped bush. It also allows good air circulation to reduce fungal diseases. Remember, do not prune healthy shoots of climbers until after flowering.

All cuts should be clean and smooth, so make sure the pruning shears are sharp. Place a drop of white glue (e.g., Elmer's) on top of each cut stem that is larger than ¼ inch. Glue helps reduce borer infestation into the cane.

Additional Summer Pruning

Continue pruning during the growing season to remove spindly shoots, suckers, diseased stems, insect-ridden areas, and other types of worthless wood. Summer pruning is as important as initial spring pruning.

Prune climbers after bloom. Remove one or two old canes, thin dense growth, and cut back remaining canes to keep the plant within bounds.

Mulching

Mulches help control weeds, keep roots cool, reduce the need for watering, and make the planting more attractive. Apply 2 to 3 inches of aged sawdust, wood bark, or other organic materials. Placing a few sheets of

newspaper under the mulch increases the effects of mulching. Don't place mulch against the stem; keep it about 6 inches away.

Cutting and Disbudding

Disbudding

Remove axil buds on hybrid teas to increase the vigor of one main flower stem. Axil buds of floribundas and grandifloras generally are not disbudded.

Dead Heading

Try to dead head twice a week. Carefully cut to an outside-facing, five-leaflet leaf from the top of the plant. You want to keep the bush at a height where flowers can be appreciated. Discontinue dead heading in mid September to allow bushes to store energy for winter.

Some shrubs, old-fashioned roses, and climbing roses bloom only once. Since flower removal will not encourage new flowers to form, spent blooms need not be removed. Red to orange rose hips form after flowers fade, and these can be harvested for jams, teas, etc., or left for birds.

Cutting Rose Flowers

Allow at least two five-leaflet leaves to remain on the new shoot when you cut a rose. Future stems will arise from buds in axils of remaining leaves.

Encouraging Healthy Plants

Do not allow newly planted or weak roses or stems to flower profusely early in the season. Remove flower buds along with the stem down to the first or second five-leaflet leaf when the bud is less than the size of a pea until the fall of the first season. Sacrifice a few blossoms to establish a healthy plant.

Winter Protection

Many modern and old-fashioned shrubs or climbing roses are quite hardy and do not need extra winter protection. Hybrid tea and grandiflora roses may be injured during severe winters or during fluctuations in temperature. Mulching is a good start for rose protection to moderate temperature extremes.

The best form of winter protection for garden roses is to mound the base of each plant with compost that drains well. The mound of compost should be 12 to 18 inches high. Don't scrape soil from around plants or you may injure roots. Don't use leaves, grass clippings, manure, or other materials that would remain wet since these can promote disease. If these materials are composted and become a crumbly mix, they are appropriate winter coverings.

Mounding should be done after plants have lost their leaves from several hard frosts, usually around Thanksgiving. Rake and discard old leaves since many disease-causing organisms overwinter in them. Canes may be pruned back to 18 inches to make mounding easier.

Mounds should be carefully removed in the spring after danger of frost is past. Don't be too anxious, because new tender shoots can be injured by a light freeze. Keep some straw or mulching material handy to cover plants in case of late frost.

Propagation

Roses can be propagated by the following methods: cuttings, budding, and grafting.

Homeowners wishing to produce more roses for their own use can do so with cuttings. Sometimes roses grown on their own roots are not as hardy as they are when budded to a very hardy rootstock.

Cuttings can be taken from early June to mid August when new growth normally hardens. In select-

ing wood for cuttings, choose a shoot that has bloomed, cut and discard the flower bloom to the first five-leaflet leaf, and use the wood of the remaining flower stem (4 to 6 inches long) for cutting propagation. Cuttings should have at least two leaves (nodes). Remove the bottom leaf and leave the top leaf. Dip the base of the cutting, including the bottom nodal area, in a rooting hormone (e.g., Hormodin 11, Hormex, Rootone).

Stick cuttings into individual containers and cover them with plastic to reduce evaporation from the soil and transpiration from the plant. Containers of cuttings can be placed in a cold frame or other protected spot out of direct sunlight. Roots should develop in 10 to 20 days if rooting hormone is used.

During winter months, keep plants in place and cover them with compost for added protection from low temperatures. Ideal temperatures for holding rose cuttings over winter are 25 to 35°F. Roots can freeze at low temperatures, and composted leaves added over tops of plants and pots reduce extreme fluctuations in temperature. In a normal year, rooted cuttings can be planted into permanent locations in early April, before new spring growth appears.

Miniature roses are propagated commercially by tissue culture. If you wish to experiment with rooting cuttings of miniatures for your own use, take 2½- to 3-inch cuttings. These cuttings should include more than two nodes. Remove half the leaves from the lower end of the stem, and dip this section of stem into rooting hormone. Handle the cuttings the same as regular roses described above.

Pests of Roses

Is concern about all the care required to keep roses healthy and free of insects and diseases sufficient reason to keep homeowners from growing them? Probably not! A large part of having healthy roses with less care is to follow good

cultural practices and choose plants resistant to pest problems.

Good cultural habits start with providing adequate water during the growing season. Proper location and spacing of bushes in the garden permits good air circulation and helps cut down on insect and disease problems. Proper pruning also aids in good air circulation. Canes should be pruned to an outside bud so the center of the plant is more open. And finally, good sanitation habits, such as picking up fallen leaves and debris from the bed, go a long way toward cultivation of strong, healthy rose bushes.

While perfect, blemish-free rose bushes are a goal of every gardener, one must realize that roses are hosts to a myriad of insects and diseases. Gardeners must establish their own levels of acceptable damage from pests and work from this perspective. Many homeowners are satisfied with less than perfect roses and can accept some pest damage. This seems like the most environmentally responsible attitude.

When chemical means are necessary to control rose problems, remember liquid sprays are generally more effective than dusts, especially for disease control. Wettable powders and flowables are better than emulsifiable concentrates which can cause leaf burn. Use a surfactant to help the spray stick to leaves. Try to spray early in the day to avoid the heat. Spraying lower leaf surfaces as well as upper ones is essential.

A key to growing good roses is identifying pests, including diseases and insects. Some common pests associated with roses are listed here.

Diseases

Black Spot

Black spot is probably the worst enemy of the rose grower. As the name suggests, the disease causes dark circular spots with irregular margins mainly on the

upper surfaces of the leaves. Spots enlarge until the leaf turns yellow and drops from the plant. The disease generally occurs from mid May to early August and is most severe in wet seasons and on plants exposed to little air movement. A wet leaf surface encourages disease spread.

CONTROL—Select resistant varieties whenever possible. Plant roses in areas where there is good air movement and where the sun hits them as early in the morning as possible to cause rapid drying of foliage. Avoid overhead watering of roses. Cleanliness around the plant is essential since the fungus overwinters in dead leaves and infections on the cane. Pick off all infested leaves, if possible. Rake and dispose of fallen leaves in the fall. Do not add to a compost pile.

Regular application of a good fungicide is important, especially on susceptible selections. Begin weekly sprays starting with early growth. Spray before predicted rainy periods whenever possible. Suggested fungicides include those products containing one of the following: captan, chlorothalonil, fenarimol, ferbam, folpet, mancozeb, maneb, propiconazole, ziram, or mancozeb + thiophanate-methyl.

Powdery Mildew

Leaves, buds, and even canes develop a white or gray cottony- or dusty-looking layer of mildew fungus growth. Some varieties are more susceptible than others. Severe infection may cause stunting, curling, and leaf drop. The disease thrives in high humidity. As a result, it becomes most severe on roses close to ponds, streams, or other warm, damp situations. If you have many other susceptible plants in your yard, the incidence of powdery mildew will be high.

CONTROL—Spray weekly when the disease first appears, using fungicide products containing fenarimol, propiconazole, or mancozeb + thiophanate-methyl. Growers wishing to use baking

soda and oil sprays for disease control should try them on some of the roses first to see that they work and are not injurious to the plants. Thorough coverage is important.

Stem Canker

In late winter or early spring, small purple-tinged or white spots on the stem develop into large brown patches. Infected canes grow poorly or die as dead areas caused by canker enlarge and girdle the stem.

CONTROL—Cut out and destroy infected canes well below the lowest point of infection. A good spray program for black spot control may also help control stem cankers.

Viruses

Rose mosaic is the most common virus disease on roses in Kentucky. Foliar symptoms vary but frequently include one or more of the following: chlorotic line patterns, ring spots, mottling, and yellowing of veins. This disease is not known to adversely affect flower production, but foliar symptoms are unsightly. Infected plants are less vigorous and, as a result, more sensitive to winterkill than healthy plants. Rose rosette is a virus-like disease that causes stunted plants, shoot proliferation, and excessive thorns.

CONTROL—Do not plant roses that have virus symptoms. Remove and discard infected plants.

Crown Gall

Galls or swellings appear on lower stems or roots as spherical or lumpy growth up to 1 inch in diameter.

CONTROL—Pretreat cuttings or liners with Galltrol-A or Norbac 84. Destroy heavily infected plants. Prune out and destroy galls on plants that are worth saving. Disinfect tools between cuts. Apply Gallex to exposed galls. Plant disease-free roses in new beds where crown gall has not previously occurred.

Insects

Japanese Beetles

Japanese beetles are about ½ inch long and are metallic green with coppery brown wing covers. They eat entire flower petals and skeletonize leaves. Japanese beetles love roses, especially light colored and fragrant blooms. Japanese beetles can fly and cover great distances. They can literally devastate a rose garden during July and August.

CONTROL—Handpicking beetles when they first appear in July greatly reduces subsequent attacks. The best time to do this is early in the morning when the beetles are sluggish. On small plants, beetles can be shaken into a bucket of soapy water. Protect roses during peak Japanese beetle flight by covering them with cheesecloth or other fine netting.

When Japanese beetles are too numerous to handpick, use Sevin every seven to ten days until the problem abates. Frequent use of Sevin may foster mite problems, so watch for them. Orthene, Dursban, and Malathion are also effective, as are synthetic pyrethroids such as Tempo, Talstar, and Scimitar. Thoroughly treat foliage and flowers, and always follow label directions.

Do not place Japanese beetle traps near roses. Beetle problems are actually made worse by the use of Japanese beetle traps.

Aphids

Several species of aphids are the most common pests of roses. Small, soft-bodied, and green, brown, or reddish colored, they usually are found in clusters on soft growing tips, flower buds, or on the stem just below buds. Severe infestations may wilt infested parts and cover other parts with honeydew, an aphid secretion that promotes growth of sooty mold on leaves. Growth is stunted and distorted, and buds may fail to open. Aphids can occur throughout the growing season.

CONTROL—Insecticidal soaps, such as Safer's, and summer horticultural oil, such as Sun Spray Ultrafine Oil, can be used for aphid control. Malathion, Diazinon, Orthene, and synthetic pyrethroids like Tempo, Talstar, and Scimitar give good control of aphids. These insecticides are often included among the active ingredients in combination sprays with fungicides. Apply treatments when aphids first appear in early spring; retreat as needed.

Spider Mites

These mites are very tiny and hard to see even with a hand lens. Mites live on the undersides of leaves. Feeding damage results in white stippling on upper surfaces of leaves, and as the injury progresses, leaves curl, turn brown, and drop off. Webbing may also be observed if populations are large.

Hot, dry weather favors mite development. Miniature roses and plants near sidewalks are usually most susceptible.

A good test to determine whether mites are present is to take a few leaves and gently tap them over a white sheet of paper. If you see what appears to be tiny flecks of pepper moving about, you most likely have spider mites.

CONTROL—The easiest treatment for low to moderate numbers of spider mites is a strong spray of water to the undersides of leaves a couple of times weekly. This washes many of the mites off, although it does not eradicate them. This procedure will remove fungicide used for disease prevention, and reapplication of a fungicide may be necessary.

Insecticidal soap and summer horticultural oil can provide effective control of spider mites, as can Kelthane, Morestan, Talstar, and Scimitar. At least two applications are normally required at seven- to ten-day intervals. Good coverage (particularly on the underside of the leaf) is essential. Always read and follow label directions.

Sawflies

Larvae of several species of leaf-feeding sawflies are called rose slugs because of their slug-like appearance. Although they may reach a length of 3/8 inch, they may be hard to see because their color blends with the leaves. However, the skeletonized effect of their feeding on leaves is easily noticed. Sawflies are not caterpillars, so they cannot be controlled with Bt (*Bacillus thuringiensis*) insecticides.

CONTROL—Sevin, Dursban, and horticultural oil give good rose slug control. Apply treatments as soon as skeletonizing damage appears. The insects appear suddenly and do their damage quickly.

Bees

Leafcutter bees cut circular discs from leaf edges to line their nests, and small carpenter bees bore out pith (wood) from the ends of pruned stems for nesting. Benefits of having these bees around far outweighs the minor damage they cause, so no control is recommended for them.

Thrips

Tiny brownish insects with fringed wings burrow deeply within the petals of rose buds and cause brown-edged petals or failure of buds to open. Thrips are difficult to control because they live deep within unopened buds. Effective products include Orthene, Dursban, Malathion, Sevin, and synthetic pyrethroids such as Tempo, Talstar, and Scimitar. Thorough coverage is essential. Treat when thrips are seen, and repeat as needed.

Rose Midge

If the new growth on your bushes wilts and turns brown and buds appear about to open but suddenly drop over, you likely have rose midge. Rose midges are small mosquito-like insects that lay eggs in soil. After the eggs hatch, larvae (which look like grains of rice) climb canes and do their damage. When leaves at the tips of canes are pulled apart, you can see

larvae nestled among the leaves.

CONTROL—Prune and destroy infested buds which contain maggots. Do not compost the trimmings. Rose midge is difficult to eradicate. The only effective cure is to spray bushes with Orthene as soon as affected buds are noticed. Retreat as needed.

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