

Roses

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Roses are used differently based on their growth habits and flowering characteristics.

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.

Rose Classifications

Classification lines and gradations are not clear since roses are highly crossbred, 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. Some types of bush roses are landscape or shrub roses, hybrid teas, floribundas, grandifloras, and miniatures.

Landscape or shrub roses gained popularity with the phenomenal success of Knock Out® and generally are lower-maintenance than other modern roses. Knock Out® has a pedigree of floribundas and a shrub rose 'Carefree Beauty.'

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.



Roses come in a variety of colors, forms, fragrances, and sizes.

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. For each small plant, a soil volume of one-eighth of a cubic foot (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. Mini-flora roses are a new classification for roses that have flowers too large

to be considered a miniature, but still distinct from floribunda or hybrid tea types.

Heritage or Old-Fashioned Roses

Old Garden Roses (OGR) is the American Rose Society designation for rose types that existed before 1867, when the first hybrid tea rose was released. Modern rose classifications include hybrid teas and any other class that was created in 1867 or afterward.

Heritage or old-fashioned 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. Many are also incredibly fragrant.

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). Repeat-flowering OGR classes include: China, tea, Portland, and hybrid perpetual roses. Varieties that bloom 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 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 ever-bloomers.

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 with fragrance) 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. They tend to be more winter hardy than most hybrid tea varieties, but many Austin varieties are susceptible to blackspot.

Meiland Roses

These roses were created by the House of Meiland 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 such as 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 everblooming; 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 UK Arboretum & State Botanical Garden has a display of 2,000 cultivars. Some of the favorites at the Arboretum are in the following list of cultivars.

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

The website www.helpmefind.com/roses is a helpful database for rose cultivar selection.

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'*

Shrub Roses

(Modern and Species)

- *Rosa* 'Austrian Yellow' reaches heights of 6 feet and has butter-yellow flowers that bloom in late May and early June. This selection of *R. foetida* is ideal for background planting.
- *R.* 'Austrian Copper' is a sport (genetic modification) of 'Austrian Yellow,' (see comment above) with beautiful copper-red flowers. It 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' reaches 4 to 5 feet tall, has red flowers, and is hardy and disease resistant.
- *R.* 'Carefree Wonder' and 'Carefree Delight' are mound-forming and reach 5-foot-high by 4-foot-wide. Plants have rich pink flowers with a creamy reverse and bloom during most of the summer. Excellent pest and disease resistance also is shown by these cultivars.
- *R.* 'Champlain' is a hybrid *Kordesii* shrub rose with double, deep-red flowers and a light fragrance. Plant forms neat 3-foot mounds.
- *R. glauca* grows up to 6 feet tall but is easily kept in bounds with pruning. Plants have soft-textured bluish-gray foliage tinged with red and are 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' reaches 6 feet tall, with good green foliage. One of earliest to bloom, it is covered with 1½-inch semi-double fragrant yellow flowers. This is another *R. foetida* variety.

- *R.* 'Nevada' plants reach a height and spread of 5 to 7 feet. The creamy white single to semi-double flowers bloom in May and early June and then intermittently throughout the summer.
- *R.* 'Nymphenburg' is a hybrid musk 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 and blooms lightly thereafter.
- *R. rugosa* is a 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* var. *pteracantha* is a rose with small white single flowers and 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 and is often sold as *R. omiensis* var. *pteracantha* or 'Wingthorn rose.'
- *R.* 'Wild Flower' is an English rose that has single flowers which 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' is 4 to 5 feet tall and has bright pink flowers. A white cultivar, 'White Simplicity,' and other colors (purple, red, yellow) are also available. This rose is hardy and disease-resistant, requiring little care.

Patio Roses

Small in size, between miniature and floribunda, patio roses are 2 to 4 feet tall and bloom all summer long. These roses drop petals easily so don't require dead heading (removal of faded flower heads). They are excellent as low border plants, hedges, foundation plantings, or planted in large masses for color. They may die back to the ground in winter but since they are not grafted, they come back and bloom well.

Recommended varieties include: 'Red Rascal' (red), 'Amorette' (white), 'Pink Pollyanna' (pink), and 'Baby Love' (yellow single, sold as a shrublet variety)

David Austin Roses

- 'Othello' has fragrant dark crimson flowers.
- 'The Squire' has delicate pale pink blossoms with a strong myrrh fragrance.
- 'Abraham Darby' has apricot-yellow flowers with a fruity fragrance.
- 'Fair Bianca' has pure white flowers with myrrh fragrance.
- 'Gertrude Jekyll' has large, fragrant rich pink blooms.
- 'Heritage' has fragrant, clear shell-pink blossoms.
- 'Graham Thomas' has apricot buds that open to pale yellow blossoms.
- 'Golden Celebration' has medium yellow, very double flowers.
- 'Wife of Bath' has pale pink blossoms with strong myrrh fragrance.

Meidiland Roses

- ‘Bonica’ has soft pink double flowers and blooms continuously.
- ‘White Meidiland,’ ‘Scarlet Meidiland,’ and ‘Pink Meidiland’ are all heavy bloomers and require only light pruning in spring to remove winter damage.

Old-Fashioned Shrub Roses

- *Rosa* ‘Belinda,’ a hybrid musk rose, originated in 1936 in England and grows to 4 feet tall with mid-pink semi-double slightly fragrant flowers. It flowers continuously and foliage is deep green. This rose grows in a wide range of soils and conditions and would be good for hedges or containers.
- *R. eglanteria* (*R. rubiginosa*) was 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. This rose tolerates poor soils and shade.
- *R. foetida bicolor* is a species rose introduced before 1590. The five-petaled flower has brilliant scarlet red on its upper surface and butter yellow on the underside.
- *R.* ‘Frau Dagmar Hartopp’ is a hybrid rugosa rose known since 1914. It has large single fragrant pink flowers and a compact growth habit (to 3 feet tall). In autumn, it has crimson hips which are the size of small apples and colorful foliage. It is extremely hardy and tolerates tough conditions.

- *R. gallica* var. *officinalis* is the ‘Red Damask Rose’ or ‘Rose of Provins’ and is also known as the apothecary rose. The oldest of old garden roses it appears in the ancestry of most other roses. Plants are compact (3 to 4 feet tall), with dark to medium green foliage and its semi-double red blooms have a spicy scent.
- *R.* ‘La Reine Victoria’ (also called ‘Reine Victoria’) is a Bourbon rose that originated in France in 1872. It is a tall, slender shrub, grows to 6 feet and flowers along the entire length of its canes. Flowers are cupped, rose pink, and fragrant. It repeats flowering but is prone to black spot.
- *R.* ‘Madame Hardy,’ is 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. It was developed in France in 1832.
- *R.* ‘Petite de Hollande,’ is a Centifolia rose that originated in 1800 in the Netherlands. It is a compact shrub that can grow to 5 feet high by 3 feet wide and produces many small pink fragrant flowers with dark centers. It tolerates poor soils, requires full sun and only blooms in summer.
- *R.* ‘Roger Lambelin’ is a shrubby hybrid perpetual rose that grows to 4 feet tall. The double flowers are deep scarlet with a narrow white line on



Deciding which roses to grow is a personal choice, but those grown in Kentucky should be hardy in zone 6 or lower.

- edges of petals which gives it a carnation-like appearance. The fragrant flowers are produced in summer, with some late blooms. It originated in France in 1890, requires good soil and should be mulched and watered in dry areas. It may develop rust and mildew.
- *R.* ‘Rosa Mundi’ is also known as *R. gallica versicolor* or *R. gallica variegata*. It has been around since the 16th century, grows to 4 feet tall, has matte green foliage and few thorns. Flowers are all different, with combinations of light red, pink, and white, with prominent yellow stamens. It blooms in summer only and is tolerant of poor soils.
- *R.* ‘Salet’ originated in 1854 in France. It is a moss rose with double clear-pink fragrant flowers. It forms a bush 4 feet tall by 3 feet wide with repeat flowering in autumn. ‘Salet’ requires regular watering and mulching for optimum flowering in hot, dry summers.
- *R.* ‘White Rose of York’ has been 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'). These bloom twice, once in spring and again in fall. Most cultivars are semi-double pink flowered and are deliciously fragrant. The following varieties are recommended: 'Rose du Roi,' 'Rose de Rescht,' 'Quatre Saisons,' 'Jacques Cartier,' and 'Marquise Boccela.'
- *R. x centifolia* (cabbage roses). The distinct fragrance of cabbage roses is desirable. Recommended varieties include: 'DeMeaux,' 'Fantin Latour' and 'Petite de Hollande.'
- *R. x centifolia* 'Muscosa' (moss roses) have a scent similar to that of cabbage roses.
- *R. x alba* (albas) roses have a refined light damask scent. Recommended varieties include: 'Maiden's Blush,' 'Koenigin von Danemarck,' and 'Felicite Parmentier.'
- *R. rugosa* (rugosas) roses have a strong damask scent with hint of clove or cinnamon that lasts all day. Recommended varieties include: 'Sarah Van Fleet' (deep pink flower) and 'Blanc Double du Coubert' (paper white flower).



The UK Arboretum and State Botanical Garden has a display of 2,000 rose cultivars.

- *R. gallica* (French rose) is a semi-double flower known as the apothecary rose, whose oil and petals were once treasured for potpourris.
- *R. gallica* var. *officinalis* has recommended varieties including 'Belle Isis,' 'Charles de Mills,' and 'D'Aguesseau.'
- Bourbons were 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,' and '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 Meiland,' and 'Double Delight.' ('Sunsprite' is a fragrant floribunda. 'French Lace' also is fragrant. Many floribundas are fragrant.)
- Fragrant hybrid tea roses include 'Mister Lincoln,' 'Pink Perfume,' 'La France,' 'Will Rogers,' and 'Oklahoma.'

Climbers

Modern Roses that 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 that 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

- 'Alchymist' (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)
- Knock Out® roses are easy to grow and do not require special care. They are the most disease-resistant roses on the market, but rose rosette disease and some black spot problems have been reported.
- Kordes roses also are offered as disease-resistant roses. Black spot is a problem in cultivars that are selected for garden use as well as outdoor cut-rose production.

Buying Roses

Roses are classified in three grades. Look on the rose tag for one of the following numbers. A No. 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 No. 1½ plant also is 2 years old, but has one strong and one smaller cane.

A No. 2 plant has several small canes. But, take heart: A No. 2 plant can be grown into No. 1 quality with patience and care.

Many newer cultivars are rooted cuttings (on their own roots, not grafted) and avoid some of the problems associated with budded or grafted roses.

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 2612, Mill Valley, Calif. 94942; (415) 381-5055). The members' expertise is an invaluable guide in selecting plants to grow.

If you don't want to join the society, the All America Rose Selections (AARS) has been active for several years and 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.

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, or used as screens for privacy

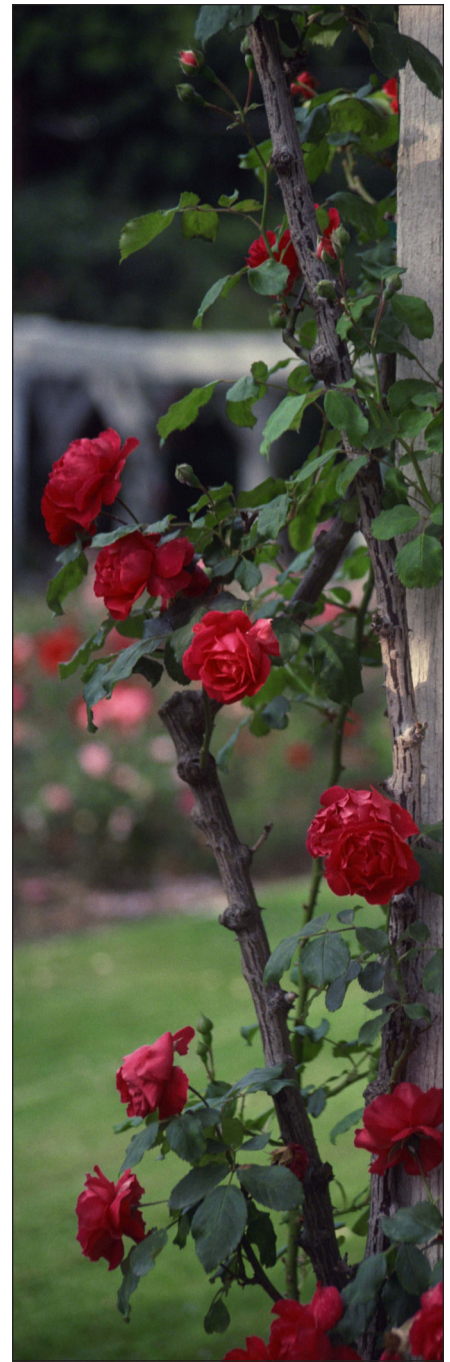
When deciding where to plant roses in your yard, you must understand their needs and potential. Consider the height, growth habit (spreading, bushy, upright, tall, short), and color of the cultivar you have chosen. Most roses can be spaced 2 to 4 feet apart. Shrubs and old-fashioned roses should be 4 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, or grow your roses in a rose bed.

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 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.



When planting roses, consider the height, growth habit and color of the cultivar.

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.

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. Dig the planting hole to accommodate roots and keep budded area at the soil line. This is usually 15 to 18 inches deep.

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.

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.

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.

Add half the soil backfill and gently firm soil around roots with hands to ensure root-to-soil contact. Water as you add backfill.

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

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.

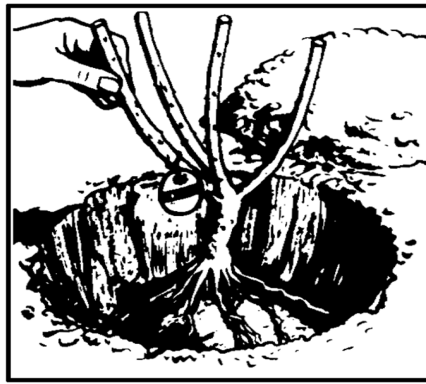


Figure 1. Position plant in planting hole. Make sure the bud union is at the soil line. The bud union is evident by a swelling of the stem area where the bud was inserted and healed. Any growth from the rootstock below the bud union is called sucker growth and should be removed down to its base.

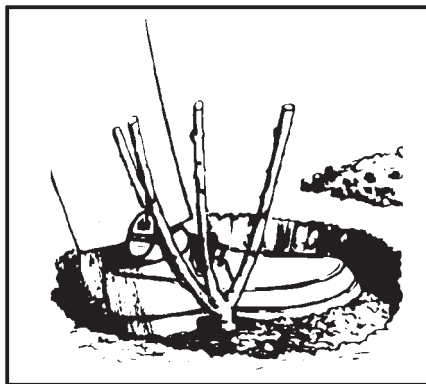


Figure 2. Tamp soil around roots.

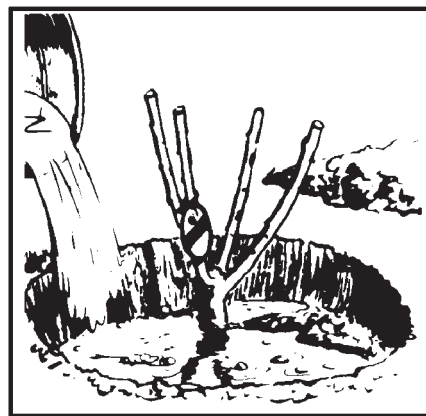


Figure 3. Add water gradually to planting hole.

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 one-fourth of a 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. 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 one-quarter of an 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.

When cutting, allow at least two five-leaflet leaves to remain on the new shoot.

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.





Growers wishing to produce more roses can do so with cuttings.

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 selecting 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°F 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 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 poorly ventilated plants. A wet leaf surface encourages disease development and spread.

Control: Select resistant varieties whenever possible. As a general rule, grandifloras and polyanthas are more resistant to black spot than hybrid teas and floribundas. Additionally, some cultivars are more resistant or susceptible than others.

Plant roses in areas where there is good air movement and where the sun hits them as early in the morning as possible for 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, as the fungus will overwinter in debris and spores will re-infect the following season. Do not add these diseased leaves to a compost pile. Regular application of a good fungicide is important, especially on susceptible selections. A preventative spray program is recommended for susceptible varieties. Begin sprays at 7-10 day intervals starting with early growth. Spray before predicted rainy periods whenever possible. Suggested fungicides are included in Table 1.

Powdery Mildew

Leaves, buds, and even canes develop a white or gray cottony- or dusty-looking layer of mildew fungus growth. Some cultivars are more susceptible than others. Severe infection may cause stunting, curling, and leaf drop. The disease is more prevalent in high humidity. As a result, it becomes most severe on roses close to ponds, streams, or other warm, damp situations. Under these conditions, powdery mildew may also be noticed on other susceptible plants in the landscape. The powdery mildew fungus of dogwoods or zinnias, for example, does not go to roses and vice versa.



Downy mildew infected leaves on Knock Out[®] roses.

Jean L. Williams-Woodward, University of Georgia, Bugwood.org

Table 1. Fungicides for Rose Black Spot Management

Protectant Fungicide ¹	Product Names
captan	Captan
chlorothalonil	Daconil, Spectro*
mancozeb	Dithane, Duosan*, Fore, Zyban*
maneb	Maneb
Systemic Fungicides ²	Product Names
azoxystrobin	Heritage
fenarimol	Rubigan
kresoxym-methyl	Cygnus
myclobutanil	Eagle, Immunox, Systhane
propiconazol	Banner Maxx
pyraclostrobin	Insignia
tebuconazol	Bayer Advance Disease Control
thiophanate-methyl	Duosan*, Spectro*, Topsin-M, Zyban*
triadimefon	Bayleton, Strike
trifloxystrobin	Compass
triflumazole	Terraguard
triforine	Funginex, Triforine

¹ Protectant Fungicides (Fungicide on plant surface prevents infections)

² Systemic Fungicides (Fungicide may penetrate plant tissue)

* Products that are a mixture of systemic and protectant fungicides.

Control: Spray weekly when the disease first appears, using fungicide products containing fenarimol, myclobutanil, propiconazole, or mancozeb + thiophanate-methyl. Growers favoring an organic approach may wish to try baking soda and oil sprays for disease control. Such products should be tested on a few plants first to determine whether they are effective and are not injurious to the plants.

Frequent applications and thorough coverage are important.

Botrytis Flower Blight

In wet seasons, flower buds may turn brown and decay due to infection by the *Botrytis* fungus. Under continuously moist conditions, the diseased buds and flowers may become covered with fuzzy gray fungal spores.

Control: Cut off and destroy infected flower buds to reduce spore production and disease spread. Some of the fungicides used for black spot management will also suppress *Botrytis*.

Rust and Other Leaf Spots

Compared to other fungal diseases, rust occurs less frequently on roses in Kentucky. Rust is easily recognized on infected leaves and stems by the spots with raised pustules containing reddish-brown or orange spores. *Cercospora* leaf spot is becoming more of a rose problem in the southeastern part of the country. This disease causes circular gray spots on leaves and can sometimes be mistaken for black spot disease.

Control: Many of the fungicides used for black spot management will also control rust and *Cercospora* leaf spot.

Stem Canker

Fungi enter through wounded stems and improperly pruned canes. Weak, poorly growing roses, including plants weakened by black spot, also are susceptible to infection. 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: No specific fungicides are available for treatment of stem canker. Maintain vigorous plants

and prevent cane injury. Cut out and destroy infected canes well below the lowest point of infection. Disinfect tools after each cut using a 10-percent bleach solution to prevent spreading the fungus. A good spray program for black spot control may also help control stem cankers.

Rose Rosette Disease

Rose rosette is a virus disease that causes stunted plants, shoot proliferation, distorted shoots and leaves, and excessive thorns. The rose rosette virus is transported from diseased to healthy plants by tiny leaf curl mites. The disease is frequently found on multiflora roses which may be growing nearby as a weed. Rosette symptoms may first appear on one or a few branches, but the disease becomes systemic, invading all parts of the plant. Infected plants produce few blooms and become a source of inoculum for nearby healthy plants.

Control: Cut out infected canes, remove them from the rose garden and destroy them. Watch carefully to be sure that the disease does not spread to other parts of the

plant. Badly infected plants should be dug up, including all roots, removed from the garden and destroyed. Remove and destroy multiflora roses growing near the garden.

Other 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.

Control: Do not plant roses that have virus symptoms. Remove and discard infected plants.

Crown Gall

Crown gall is caused by a bacterial pathogen that resides in soils. Galls or swellings appear on lower stems or roots as spherical or lumpy growth up to 1 inch in diameter.



Leaves are reddened by rose rosette disease.
James W. Amrine Jr., West Virginia University, Bugwood.org

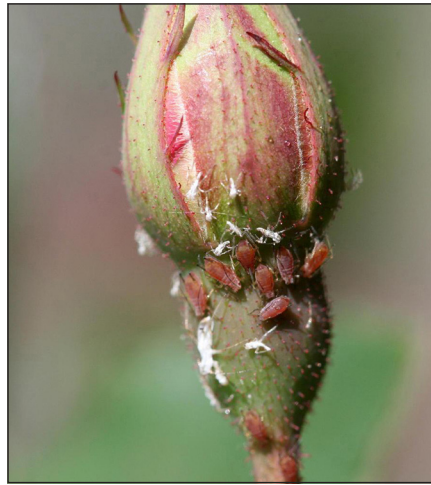
Control: If planting a new rose into soil where a crown gall-infected plant had previously grown, pretreat cuttings or liners with Galltrol-A or Norbac 84. Where crown gall is found, destroy heavily infected plants. Prune out and destroy galls on plants that are worth saving. Disinfect tools between cuts with a 10-percent bleach solution. Apply Gallex to exposed galls. Plant disease-free roses in new beds where crown gall has not previously occurred.

Insects

Aphids

Several species of aphids can infest roses during the cool weeks of spring and early summer but they naturally disappear during hot dry weather. Colonies of these small green to red-brown sap feeding insects can be found on fast growing tissue—shoots, stems, or developing buds. A few aphids will not harm plants and will provide food for natural enemies but aphid numbers can increase rapidly. A moderate to large aphid infestation causes a build-up of honeydew (sugar-rich liquid waste) and black sooty mold growth on leaves and stems. High aphid numbers can distort or kill buds, or reduce flower size. Overuse of fertilizer may favor the buildup of aphid populations.

Control: Regular forceful sprays of water, supplemented by applications of an insecticide if needed, can keep aphids at an acceptable level without disrupting natural control. Evaluate control about 5 to 7 days after treatment and make another application if live aphids are still present.



A rose is infested by a colony of aphids.
Whitney Cranshaw, Colorado State University, Bugwood.org

Beetles

Several beetle species feed on roses but the Japanese beetle is the key pest. It prefers cultivars with light colored, fragrant blooms. The beetles eat entire flower petals and skeletonize leaves, devastating roses during July and August.

Handpicking beetles when they first appear in July keeps them from attracting other individuals. It is best to do this 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. Do not place Japanese beetle traps near roses; this can actually result in more damage from additional beetles that are attracted by the lures.

Insecticides can be used for beetle control. However, the plants are still attractive to beetles so new individuals will continue to arrive.

Caterpillars and Sawflies

Larvae of several species of caterpillars and leaf-feeding of sawflies feed on rose foliage. Damage varies depending on the pest species. Some may feed on tender leaf tissue, leaving only veins, others may consume entire leaves. A few caterpillars use silk to secure a portion of a rolled leaf to form a tunnel in which they live and feed. Sawflies feed on the lower leaf surface, leaving only the thin epidermis which soon dies and turns brown. Light to moderate leaf-feeding, while unsightly, should not have a major impact on plant health.



Japanese beetles feed on a rose.
The Dow Gardens Archive, Dow Gardens, Bugwood.org

Table 2. Common names of insecticides labeled for control of insects and mites on roses*

Insecticide (common name)	Aphids	Beetles	Caterpillars	Mites	Sawflies	Thrips
acephate	X	X	X		X	X
carbaryl		X	X			
malathion	X			X		X
azadiractin (neem)	X	X	X	X	X	
<i>Bacillus thuringiensis</i> (Bt)			X			
canola oil	X			X	X	
insecticidal soap	X		X	X	X	X
acetamiprid	X	X				X
dinotofuran						
imidacloprid	X					
pyrethrins	X	X	X		X	X
bifenthrin		X	X		X	X
cyhalothrin		X	X		X	X
cyfluthrin		X	X		X	X
cyhalothrin		X	X		X	X
permethrin		X	X		X	X
spinosad		X	X	X	X	X

* Solid lines separate insecticides into groups with similar characteristics and effects on target pests

Early feeding damage by small stages of these insects is easy to overlook. Most feeding is done during the last few days of larval development and appears suddenly. Weekly inspection of plant foliage should allow detection of problems before significant damage occurs.

Small numbers of caterpillars or sawflies can be removed by hand-picking. Many insecticides labeled for roses will control caterpillars and sawfly larvae. However, Bt insecticides are not effective against the caterpillar-like sawfly larvae. Apply treatments as soon as skeletonizing damage appears and live insects are present.

Leafcutter Bees

Leafcutter bees cut circular discs from leaf edges and use the pieces to line their nests. Usually only a

few leaves are damaged and plant health is not affected. Control is not recommended because damage is minimal and the bees are important pollinators.

Mites

Spider mites, about the size of the period at the end of this sentence, live on the underside of leaves and use their needle-like mouthparts to feed on the contents of individual cells. At first this causes scattered tiny white spots (stippling) on leaves. As feeding continues, infested leaves can be bleached white then brown. Ultimately, they curl dry and fall off. Heavily infested leaves may be covered with fine silk produced by the mites.

Early detection of mite infestations can allow remedial action

before plants are adversely affected. Firmly tap or shake rose foliage over a piece of white paper. The presence of tiny moving dark “flecks” on the paper is a good indication that mites are present. If possible, use a small hand lens to confirm the diagnosis.

Spider mite infestations are usually associated with dry, dusty conditions. Applications of broad spectrum insecticides (such as carbaryl and pyrethroids) may reduce numbers of natural enemies that normally help to regulate mite infestations. Miniature roses and plants near sidewalks are very susceptible to build-ups of mites.

Overhead irrigation or hosing of leaves about twice a week can reduce mite numbers and keep humidity high enough for mite-attacking fungi to provide

natural control. Insecticidal soaps, summer spray oils, and products containing neem may be used for control. Success requires thorough coverage to the undersides of the leaves and at least two applications about 7 days apart. Follow-up applications are needed to kill mites that were in the egg stage during the first treatment. Use the white paper technique to look for surviving mites about 2 days after treatment.

The eriophyid mite *Phyllocoptes fructiphylus* is associated rose rosette disease which causes “witches’ broom.” Mite control is not an effective means of dealing with the disease.

Thrips

Thrips are tiny (one-twentieth of an inch), elongate yellow to black insects that typically live in flowers. Feeding damage from their rasping mouthparts causes symptoms ranging from small scars or brown streaks on petals to distorted petals or leaves. Thrips seem



A female thrips feeds on a Knock Out® rose leaf.
Andrew Derksen, FDACS/DPI, Bugwood.org

to prefer fragrant, light-colored blossoms and less problematic on cultivars with sepals that tightly enclose buds until they open.

Windbreaks may reduce the in-flight of thrips from other sources. Frequent removal and disposal of spent blooms also may help to reduce problems. Thrips remain deep inside blooms so they are difficult to control with insecticides. Thorough spray coverage and repeated applications may be needed to reduce damage.



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