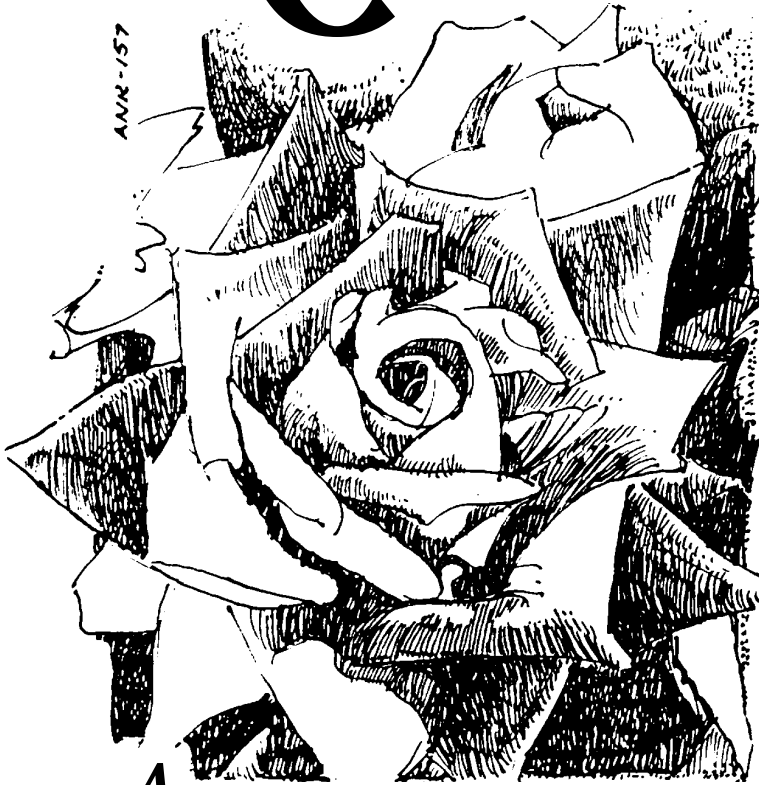


# GROWING Roses



America's national flower and the most popular garden flower is the rose. Today, there are more than 6,000 varieties, offering a wide range of flower forms, colors, and fragrances from spring until late fall. Roses can be used in the landscape as single specimen plants or in masses for an impressive color display. They may also be used as borders or hedges, on trellises, and in cut-flower beds. Each year new varieties, in a wide range of flower colors and forms, are introduced by plant breeders.

You can grow roses successfully with some thought and planning and a little regular care. **Following are key steps to start you off right:**

1. Select a planting site that receives a minimum of 6 hours of sunshine daily.
2. Plant roses in a well-prepared bed of garden soil liberally mixed with organic matter (well-composted animal manure, peat moss, or decayed leaves). A soil test should be taken several weeks before planting to help you to determine fertilizer and liming needs of the rose bed.

3. Water rose bushes frequently, with an inch of water each week from rain or irrigation applied during the early morning hours.

4. Remove flowers without damaging the remaining parts of the plant. Make clean cuts with a sharp knife or pruners.

5. Prune the plants every year to keep them healthy and in good form.

6. Regularly inspect plants to prevent insect or disease damage and treat as needed.

7. Mulch plants to conserve soil moisture and suppress weeds.

## Kinds Of Roses

Roses are classified by their growth habits into two main classes—bush roses and climbing roses. Climbing roses produce long canes and require some kind of support. Bush roses grow 1 to 6 feet in height and require no support.

**Bush Roses.** These roses are grouped primarily according to their flowering habit. The kinds of bush roses are hybrid tea, grandiflora, floribunda, polyantha, hybrid perpetual, shrub, old fashioned, tree or standard, and miniature.

**Hybrid Teas**—In the mid-nineteenth century, the first hybrid tea rose was developed by crossing the wispy caned tea rose with the full blossomed and vigorous hybrid perpetual rose. In the past 50 years, this rose has become the primary cut rose found in gardens and florist shops. Thousands of varieties are grown today, with many new ones developed each year. Usually a single bloom develops on a robust stem. Flowers of hybrid teas are most often used as cut flowers. Although the size, shape, and color of hybrid tea roses vary enormously, they all share a characteristic beauty. Hybrid teas are continuous bloomers.

**Floribundas**—These roses are the result of a cross between a hybrid tea rose and a polyantha, a dwarf rose with dense bunches of tiny flowers. Floribundas flower in clusters. Floribundas tolerate more neglect than any kind of rose except shrub roses. For color throughout the summer, floribundas may be used in flower borders and mass plantings and as informal hedges.

**Grandifloras**—Grandifloras resemble hybrid teas in their hardiness and type of bloom. The grandifloras have a larger bush, but more abundant, somewhat smaller blooms than the hybrid teas.

**Polyanthas**—Flowers are borne in large clusters and the individual flowers are smaller than grandifloras. Polyanthas are closely related to climbing roses. They are excellent for borders with perennials or for mass plantings. Furthermore, they are of easier culture than hybrid teas.

**Hybrid Perpetuals**—The blooms are full and spectacularly large but generally lack the refinement of hybrid teas. The hybrid perpetual blooms more frequently than older shrub rose varieties. Sometimes this rose is known as the “June rose” of grandmother’s garden. The variety was most popular prior to the development of modern hybrid teas. If given proper care, hybrid perpetuals develop into large, vigorous bushes. Hybrid perpetuals are hardy and withstand low winter temperatures without protection.

**Shrub Roses.** These are a miscellaneous group of hybrids, native species, and varieties that develop large, dense growth useful in general landscaping. Usually flowers are small but showy. In the fall, many bear attractive seed pods. Their fine-textured foliage makes some of them useful for hedges or screen plantings.

**Old-Fashioned Roses**—This category includes the varieties and species that were popular in colonial gardens. Although these roses are more fragrant, the flowers are not as perfectly shaped as those of newer varieties. All of these roses are hardy, require little care, and furnish an abundance of flowers in June. Thousands of old-fashioned roses are available, but many are not suited for the Alabama climate. Teas, noisettes, Bengals, Chinas, and some species roses are extremely well adapted to our heat and humidity.

**Tree Or Standard Roses**—The characteristic of tree or standard roses is the form of the plant rather than the type of flower. These roses are derived from grafting bush roses on upright trunks. Many of the popular bush rose varieties are available as tree roses. Tree roses may be used in formal plantings, as accent or specimen plants, or as a specimen.

**Miniature Roses**—Miniature roses are small plants with miniature leaves and flowers. Some varieties reach a maximum height of only 6 inches. These roses are used in edging beds, as borders, in containers, and for rock gardens.

**Climbing Roses.** Rose varieties that produce long canes and require some kind of support to hold the plants off the ground are known as climbing roses. They may be trained on fences or trellises, while some varieties may be used without support to cover hill-sides for erosion control. Since they are hardy, climbers are becoming more popular with the development of finer varieties.

**Ramblers**—Rapid growing and very hardy, rambler roses may develop canes as long as 20 feet in one season. They are better suited for fences than other types of roses. The small flowers are usually less than 2 inches in diameter and are borne in dense clusters. Ramblers flower only once during a season on the previous year’s growth. The glossy foliage of many vari-

eties in this group is susceptible to mildew. Newer varieties that bear larger flowers and are less susceptible to mildew are being developed.

**Large-Flowered Climbers**—When compared to ramblers, large-flowered climbers grow very slowly. Usually they are trained on trellises, posts, or some other type of support, and they may require heavy annual pruning to keep them manageable. Under ideal growing conditions, the flowers are rather large and may be useful for cutting. Most varieties bloom best when the canes are trained horizontally.

**Everblooming Climbers**—These roses usually produce an abundance of flowers in early summer. After heavy bloom, these plants will produce some scattered flowers in the fall. Some everblooming climbers are available that bloom continuously, like hybrid teas.

**Climbing Hybrid Teas**—Climbing hybrid teas were developed from seedlings and as chance sports of bush varieties. When a cane having a climbing character is produced from a hybrid tea, the new type of plant is usually given the bush variety name. Example: Climbing Crimson Glory. In general, the climbing forms of hybrid teas do not bloom as continuously as their bush parents. The flowers and foliage are usually identical.

**Climbing Polyanthas And Floribundas**—These roses were developed from sports and seedlings of polyanthas and floribundas. Generally the flowers of these sports are identical to the bush forms from which they originated. They are fairly continuous bloomers.

## Some Suggested Varieties

### Hybrid Teas

- Alabama (medium red)
- Dainty Bess (light pink)
- Tiffany (pink)
- Pascali (white)
- Mr. Lincoln (dark red)
- Confidence (pink blend)
- Garden Party (white)
- Oregold (yellow)
- First Prize (pink blend)
- Tropicana (orange-red)
- Duet (salmon pink)
- Peace (yellow blend)
- New Day (yellow)
- Seashell (salmon pink)
- Granada (red blend)
- Yankee Doodle (red-orange)
- Royal Highness (light pink)
- Perfume Delight (medium pink)
- White Masterpiece (white)

## Grandiflora

Queen Elizabeth (pink)  
Aquarius (light pink)  
Montezuma (red orange)  
Camelot (salmon pink)  
Pink Parfait (pastel pink)  
Carrousel (deep red)  
Comanche (orange)  
John S. Armstrong (red)  
Mt. Shasta (white)

## Floribunda

Europeana (dark red)  
Pink Bountiful (medium pink)  
Betty Prior (medium pink)  
Gene Boerner (pink)  
Irish Mist (orange salmon)  
Ivory Fashion (white)

## Climbers

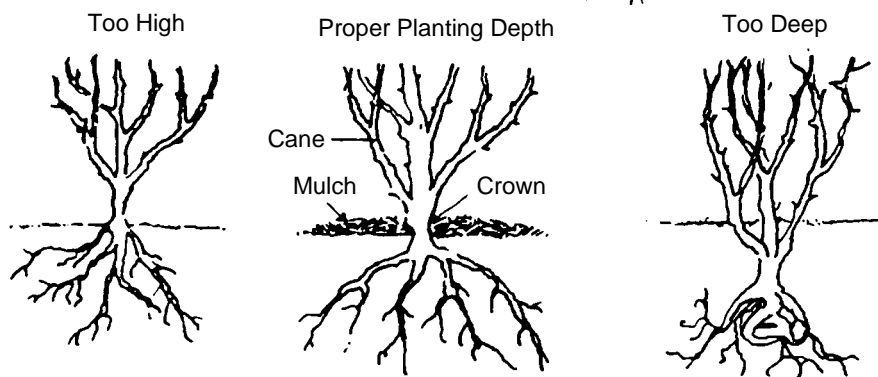
Don Juan (dark red)  
Handel (red blend)  
Casa Blanca (white)  
America (orange)  
New Dawn (light pink)



Hybrid tea rose  
as received from  
nursery.



Same bush  
after top and roots  
have been pruned.



Spread roots over a mound of soil to assure proper drainage for plants. Apply water when filling soil around mound.

## Landscape Uses

Among the best flowers for use as color accents in the landscape are the floribundas, hybrid perpetuals, polyanthas, and grandifloras. They may be used in mass plantings, such as in shrubbery borders and at the base of hedges. Roses are rarely used as foundation plants because their beauty lies in the flowers rather than the plants, which are bare in winter. There are exceptions, such as the use today of one row of one of these four types of roses along a carport or along the side of a yard.

Climbing and rambler roses need the support of a post, trellis, or wall. Some houses with an informal design may lend themselves to the use of roses as “vines” over a door or upon a lamp post. These roses are excellent for landscape use along fences and walls.

Where full sun exposure is not possible, morning sun is better than afternoon sun. The ever-popular collection of tea roses in the rose cutting bed should be placed in an open area away from competition from roots of trees and landscape shrubs.

## Buying And Handling Plants

Rose plants should be purchased from reputable sources. Local nurseries and garden centers are usually good sources of plant material. Reputable mail-order nurseries will send you colorful catalogs, listing the plants they sell. Generally, the varieties listed in these catalogs are favorites with rose growers. You should look for ideas for varieties in the catalog, but make your purchases from reputable, local nurseries

or garden centers because they carry varieties suited to local growing conditions. Get the best quality plants you can find—cheap, inferior rose plants will not be worth the trouble and expense of planting and caring for them. Roses are graded by the number of canes the plant begins with; the more canes, the higher the grade and the bigger the bush. Be careful not to purchase roses that have wax on the canes. In the high heat of the South, this wax will melt and scorch the canes.

Every rose grower has her or his own ideas for bringing a rose into the peak of flowering perfection. However, the basic techniques for rose growing are rather simple, and if you apply them correctly you will be rewarded with lovely blooms year after year.

The care of roses really begins at the time of planting. It is best to plant roses when they are dormant. In Alabama, this would be from December to early spring. It is important to plant the bushes as soon as they arrive.

## Planting Bare-Root Roses

When your plants arrive, remove the wrappings and place the roots in a bucket of warm water. Plants may be left in water up to 24 hours prior to planting and this will help them begin the process of taking up water. Bushes to be planted should not be left out in the open overnight when freezing weather is expected. The combination of freezing temperatures and drying wind is especially lethal to roses. If planting must be delayed for a few days, place them in a cool, dark area or heel them in by making a trench and covering the roots with sawdust.

Before planting, prune off any damaged stems or roots of bare-root roses. Hybrid teas, floribundas, grandifloras, and climbers should have the tops pruned back to 12 to 15 inches.

## **Planting**

Care taken in planting will be many times rewarded. The best rose plants on the market will give disappointing results if planted improperly. Roses perform best in clay soil that is slightly acid (pH 5.5 to 6.5). It is important to have a soil test on the rose bed before you prepare it. The recommendations will help you determine the amount of fertilizer and limestone to add to your soil to get roses off to a good start.

Poorly drained soils should be avoided, since roses will not survive “wet feet” conditions. Eliminate hardpans by deep tillage or spading. Prepare the bed at least 6 inches deeper than the depth you plant the roses. Plan to plant roses at least 2 feet apart. This will provide access to sunlight and free circulation of air as the roses grow. To prevent spread of disease through poor air movement and impaired sunlight, avoid crowding roses.

If you plant only a few roses, dig individual holes. The holes should be at least 12 inches deep and 18 inches in diameter. If you are planting a large number of roses, prepare the bed by tilling the soil to a 12-inch depth. Then dig the planting holes in the prepared bed.

Two parts soil should be mixed with one part humus (leaf or manure compost, peat moss, composted pine bark, etc.). Fertilizer and lime should be mixed into the bed according to soil test recommendations. In the absence of a soil test in a previously used garden bed, add 4 pounds of 8-8-8, 12-6-6, or similar complete fertilizer per 100 square feet of bed.

Set plants in the hole on top of a mound made of the soil mix so that the bud union is just above ground level after the soil settles. If you are not sure about the ground level, lay a stick across the hole to determine ground level. Under no circumstances should the roots be twisted or forced into a ball in order to cram them into a small area. Place soil around the roots, firming the soil by hand, and water the rose thoroughly.

## **Planting Potted Roses**

If potted roses are to be planted, remove the plastic or papier-mâché container in such a way as to keep the soil ball intact. Dig a hole twice the diameter of the soil ball. The planting depth should be the same as for bare-root roses. Place soil from the rose bed in the hole around the soil ball. Immediately after planting, water thoroughly to firm the soil around the roots. Do not tamp in the soil after watering the soil ball.

After planting tree roses, drive a sturdy pole into the soil beside the upright trunk and tie the trunk to

the pole. This will prevent the trunk from whipping in the wind and loosening the roots.

## **Mulching**

Mulches aid in controlling weeds, conserving moisture, and adding fertility. Some effective mulching materials are: pine bark, coarse textured peat, ground corncobs, pine straw, and well-rotted strawy manure. Apply mulches to a depth of 3 to 4 inches soon after planting. Reapply organic mulches each year to keep the depth to 4 inches.

A landscape fabric may be used under the organic mulches to improve weed control. In general, black plastic is not recommended.

## **Watering**

Roses need large amounts of water. Occasional watering may be necessary even where rainfall is plentiful. Watering should be done in early morning. Avoid wetting the foliage as this will promote disease problems.

Soak the soil thoroughly to a depth of 8 to 10 inches, directing a small, slow-moving stream of water around the bases of the plants. In a clay soil, this can usually be accomplished with 1 inch of water applied weekly. Avoid using a heavy stream, as it is usually wasteful: most of the water runs off and fails to penetrate the soil more than a few inches.

## **Fertilizing**

Test your soil before applying fertilizer. Your county Extension agent can provide you with soil testing information. He or she can also advise you on adjusting the pH or correcting any nutritional disorders.

The elements most often lacking in soils of existing rose beds are nitrogen and potassium. Although the amount of fertilizer to use should be based on soil test results, you will find that most garden soils in Alabama benefit from two applications of 12-6-6 or 15-0-15 fertilizer at the rate of 2 pounds to each 100 square feet of bed, the first application made in March and the second in July. Then in April, May, June, and August, most rose beds will require ammonium nitrate (34-0-0) at the rate of ½ pound to each 100 square feet of bed.

## **Pruning**

Pruning roses improves the size, quality, and color of blooms. As soon as the danger of frost is over, you should get ready to prune. Select three to five vigorous, healthy canes to be left to produce flowers. The amount of pruning varies with the variety of rose. However, the first pruning should remove dead, damaged, or weak growth.

Pruning can also regulate the number of flowers produced. Leave longer canes if more flowers are desired. If large show-type blooms are desired, cut back to a few canes and head the remaining ones back to 12 to 14 inches above the ground.

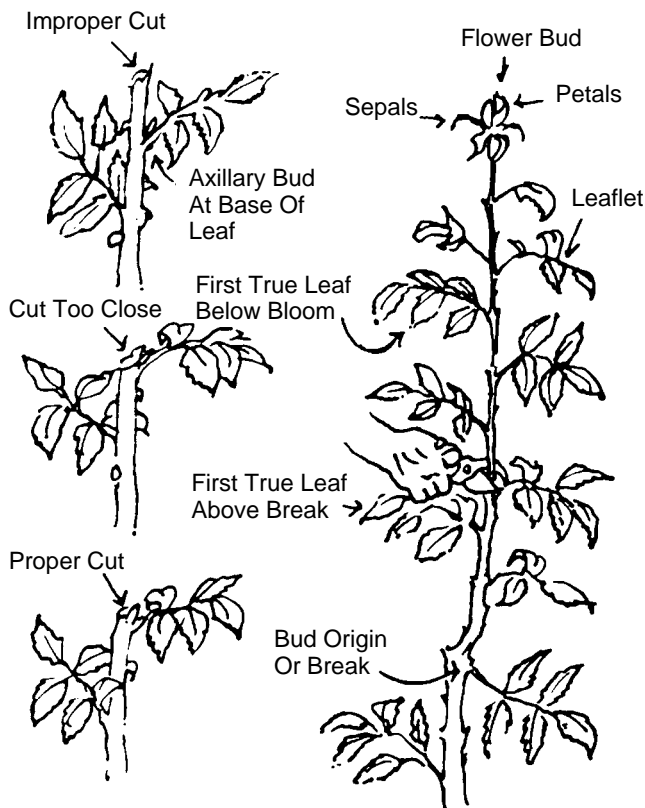
Bush roses (grandifloras, hybrid teas, floribundas) should be pruned in early spring. Prune after the last frost has occurred or when buds begin to swell.

**Hybrid Teas.** Canes killed by cold, diseases, and insects should be removed first. Next remove all suckers growing below the graft union. Cut all the remaining canes back to 12 to 15 inches aboveground or to a bud 1 inch below any damaged part of the cane. NOTE: Be aware of any cold damage or disease cankers. Cold damage will appear as a browning of the stem and, most often, a brown pith or center of the cane. Cuts should be ¼ inch above a bud and made at a 45-degree angle. On most varieties, cut to an outside bud to encourage growth away from the center of the bush. Varieties that tend to spread will grow more erect if the canes are cut back to an inside bud. Leave only three or four sturdy canes when pruning for exhibition blooms. These canes should be pruned back severely. Plants should be well established before cut-

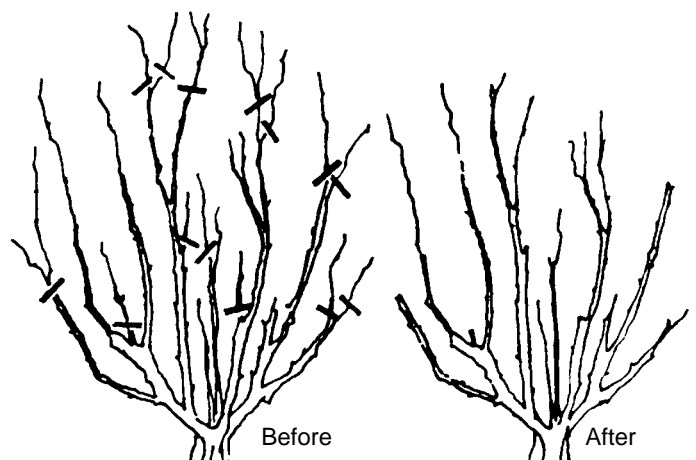
ting. Growth can also be controlled by rubbing off new and weak shoots not needed for blooms. Only two or three of the strongest buds per cane should remain.

Prune tree roses in the same manner as hybrid teas by cutting back branches within 6 to 8 inches of the crown. Avoid letting the top get too heavy. Compact, vigorous new growth should be encouraged by cutting out weak branches.

**Floribundas And Grandifloras.** These roses should not be pruned as heavily as hybrid teas. Often these roses grow to a considerable height and produce more blooms. Cut back an inch below any darkened area to remove any dead and diseased wood. The entire branch should be removed if it is badly diseased or dead. Three to five strong, healthy canes should be left. Next, any canes having weak growth or those growing toward the center of the plant should be removed. Any remaining canes should be cut 18 to 24 inches above the ground, depending upon the plant's vigor.



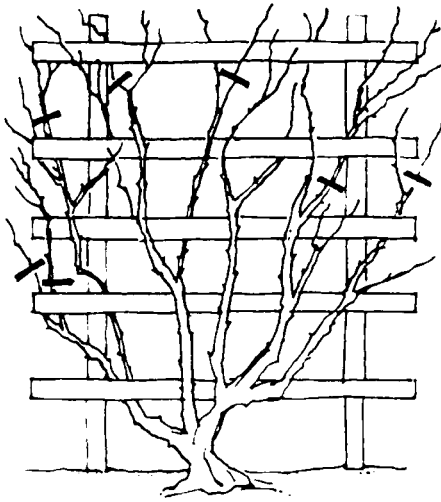
For most rose buds, cuts should be made below the third true leaf. For occasional longer stems, stems may be cut above the first true leaf above the break. First year plants should be cut higher (at or near the first true leaf) to allow more leaves to remain on the plant and produce food.



Floribundas and grandifloras should be opened up so as to allow more light in to the plant.

**Climbing Roses.** Many of these roses bloom in early spring and need pruning at the end of flowering. Any new canes that have developed should be left since these will produce flowers the next year. Cut all old canes back to the ground immediately after flowering.

Some varieties of climbers will continue to bloom throughout the growing season. These varieties produce new canes from old canes rather than from the base of the plant. It is best to leave five or six strong healthy canes and to remove the older canes at the ground. Sometimes these remaining canes produce heavy branching. To control growth and encourage flowering, these lateral branches should be kept headed back. Faded flower clusters should be removed, too.



After each flowering, prune climbing roses back as shown. Prune weak, diseased, or dead stems back anytime they are observed. Do not allow climbers to become overgrown, with thick, dense growth of branches.

Climbing hybrid tea roses should be pruned lightly. Remove only weak, diseased, and dead wood.

**Cutting Roses.** Since cutting determines a plant's growth pattern, there are correct and incorrect ways of cutting roses.

The right way to cut a flower starts with proper equipment—clean, sharp shears or pruners and a pair of protective gloves because of thorns. Next, the proper place to cut should be determined. If a large, single, decorative flower is desired, disbud the plants early when the buds are small. Cut stems should be approximately 5 to 10 inches in length, depending on each plant.

Make the cut just above a five-leaflet node to promote a healthy flowering shoot to grow after the cut. Roses have three-, five-, and seven-leaflet nodes. The best place to cut the rose is just above a five-leaflet node because a strong shoot should emerge from just below the cut. This shoot should produce a good flower bud. The second-best cut would be just above the seven-leaflet node, and the third-best cut would be at a three-leaflet node.

Some roses may be harmed by too much cutting. In the spring, reduced growth may result from cutting a long stem, which removes a large number of leaves. Long-stemmed roses can be taken more safely after mid-season.

Some rose varieties may be rooted; however, it is advisable to purchase 2-year old budded plants from a reliable nursery. Many of the new varieties are difficult to propagate. Even if you root the new growth, the new plant will probably have a weak root system. Since many of the new varieties are patented, their propagation is illegal unless permission is granted from the introducer.

**Treatment Of Cut Roses For Longest Life**—All cut flowers have a limited life, but there are some simple steps you can take to extend the enjoyment of your fresh roses. When you cut them outdoors, take a pail of warm water with you and place the roses in it immediately after cutting. Once you have collected all the roses for your enjoyment, take the pail inside.

Prepare your vase by adding a measured amount of pre-packaged floral food in warm water. The old tales of using an aspirin or copper penny don't work. Science has produced a food for flowers (not plant food) that meets all its needs and will help roses last for 7 to 10 days. Too much food is as bad for the rose as too little. Be sure to measure the amount of floral food you mix in the vase. Use warm water, not too hot or cold.

Once you have prepared the vase, you need to cut the rose stem. Roses will last several days longer if you re-cut their stems under water. Place the bottom 2 inches of the rose stem under water and make a sharp angled cut, removing the bottom 1 inch of the stem. You may even see a little air bubble emerging as you make the cut. Cutting rose stems under water can help extend the vase life of roses for several days. Don't submerge the entire rose under water because this won't help and can harm the rose by promoting disease problems.

Cut flowers, especially roses, may wilt prematurely but may be revived and their life extended for several days. A slanted cut should be made an inch or so from the base of the stem while holding the stem under water. Cutting stems underwater prevents an air bubble from entering the stem and blocking the uptake of water.

## Rose Pest Control

Even though rose growing is a rewarding hobby, controlling pests is one of the requirements. Insects, mites, and diseases can quickly make a beautiful plant unsightly. The number and quality of blooms will also be greatly reduced if pest control is not practiced.

The following sections give general information on common rose pest problems. For more information and for specific treatment recommendations, check with your county Extension agent.

## Rose Insects

**Aphids**—In early spring aphids can appear on the first buds, stems, and leaves. Occasionally they may become a pest during the summer but usually appear in heavier numbers again in the fall. Smaller or deformed blooms may result from aphids sucking the plant juices and stunting the plants. Heavy infestations of aphids result in the secretion of honeydew from

their bodies. Honeydew makes leaves sticky and shiny and provides a starting place for sooty mold. Begin treatment when aphids build up on plants early in the spring. Inspect plants regularly. Treat in the fall to reduce the number of aphids that may produce overwintering eggs.

**Caterpillars**—Corn earworms, armyworms, rose slugs, and other caterpillars may feed on blossoms, buds, and leaves. Roses that are not treated with insecticides on a regular basis are more subject to damage by caterpillars than those on a regular spray program. Treat when small caterpillars are present. Removal of caterpillars is an alternative to chemical control.

**Bud-, Blossom-, And Leaf-Feeding Beetles**—These may attack roses in various stages of development.

**Spider Mites**—These pests attack the undersides of leaves. Infested leaves develop a yellow flecking or stippling, turn brown, curl, and drop off. In severe infestations webbing is present. Spider mites are extremely small and can be examined closely only by using a microscope or hand lens.

Some spider mites are green with two spots; others are red. Spider mites increase in number as the temperature increases, and they often reach the most damaging levels during mid-summer. Excessive use of carbaryl (Sevin) destroys spider mite enemies, and mites become more numerous. To control spider mites keep the rose bed and surrounding areas free of weeds. Direct pesticide spray to the undersides of leaves.

**Thrips**—Thrips are tiny yellow or straw-colored insects that injure rose petals. Thrips rasp slits in petals and cause blooms to become brown-flecked in appearance. Blooms damaged by thrips often fail to open properly. Shake an infested flower over a sheet of paper or pull back petals of blooms to see these tiny insects. Be sure to destroy all old blossoms.

## Rose Diseases

Because of the long growing season, high annual rainfall, heavy dews, and relatively mild winters in Alabama, roses are subjected to prolonged attack by several plant diseases. Fortunately, control measures are available for most of these diseases.

Six diseases that commonly occur in Alabama are listed below, with a brief description of each disease and the recommended control practices.

**Black Spot (*Diplocarpon rosae*)**—Black spot is probably the most damaging disease of roses in Alabama. Symptoms consist of circular black spots with jagged margins appearing on the leaves. Frequently, the spots are surrounded by a yellow halo. Infected leaves turn yellow and fall prematurely.

When the attack is severe and allowed to continue, repeated defoliation will occur, resulting in a weakened plant. The fungal spores are spread primarily by splashing rain or water. Germination of the spores and infection occur when free water remains on the leaf surface for a period of 6 hours or longer. Leaf spots develop within 5 to 10 days.

**Powdery Mildew (*Sphaerotheca pannose*)**—This fungal disease occurs in Alabama during the spring and fall. It is rarely a problem during the mid-summer months when black spot is at its worst. Frequent rains and temperatures above 80°F inhibit powdery mildew. The presence of the powdery mildew fungus is confirmed by the white powdery masses of spores on young leaves, shoots, and buds. Symptoms consist of distorted foliage and stunted shoots.

Fungal spores of powdery mildew are easily windborne and are responsible for its spread. Under conditions of relatively high humidity these spores germinate and infection occurs. Unlike the black spot fungus, powdery mildew does not require free water for spore germination.

**Control (Black Spot and Powdery Mildew):** Sanitation is the first step in controlling both black spot and powdery mildew. Leaves (either attached or on the ground) that appear to be infected should be removed and disposed of properly. This practice should be continued throughout the flowering season. Since the fungus overwinters on diseased leaves and canes, this practice should be intensified near the end of the growing season. Sometimes it is necessary to prune canes severely in the spring prior to new growth. In addition, remove and replace mulch beneath diseased plants. A dormant spray of liquid lime-sulfur (1:15) is also recommended at the time of leaf emergence. The best results will be obtained if the plants and ground are sprayed after the old mulch is removed and before fresh mulch is applied.

Good control of black spot and powdery mildew can be realized with a season-long fungicide spray program. Important points to consider are regularity of spraying and thorough coverage. Fungicides act as a protective shield. Once infection occurs, however, they are of little value to already infected plant tissue.

**Crown Gall (*Agrobacterium tumefaciens*)**—This disease causes a gradual decline of the rose bush. The bacterium that causes this disease is usually introduced into an area through contaminated nursery stock. Once present, it can survive for several years, even in the absence of a host plant. The bacteria enters the plant through wounds made during planting, cultivating, or grafting, as well as those made from chewing insects and rodents. Galls are spherical, woody growths with rough surfaces, which may exceed 6

inches in diameter. Crown gall reduces plant vitality, causes stunting, and inhibits blossom development. Aboveground symptoms are similar to those caused by nematodes.

**Control (Crown Gall):** There are effective controls for existing crown gall infections. Diseased plants should be removed and destroyed. Infested areas may be replanted after fumigation or solarization. Transplants should be free of galls and handled carefully to avoid root injury. Use root dips when planting susceptible plants.

**Stem Canker And Cane Blight (*Botrytis blight*)**—Stem canker and cane blight may be caused by one of several fungi. These fungi, however, usually attack weakened or damaged plants. Therefore, infection may indicate the presence of a more serious problem such as crown gall or low soil fertility. Symptoms may consist of dark brown to black, sunken lesions on canes. Terminal stems die when canes are completely girdled.

**Control (Stem Canker And Cane Blight):** Follow sanitation practices suggested for black spot and powdery mildew. Fungicides that are effective in controlling black spot will also control most stem and cane diseases. A regular spray program throughout the growing season is advisable.

**Viruses**—Several kinds of viruses attack roses in Alabama. Most are confined to minor leaf discolorations and are of little importance. Since most viruses can be transmitted through grafting, roses suspected of having virus infections should not be used in propagation. Most viruses may also be transmitted by insects (primarily aphids). Growers may therefore wish to remove infected plants from rose gardens to prevent the possible spread to healthy plants.

**Varietal Resistance**—Roses vary considerably in their reaction to black spot and powdery mildew as well as other diseases. If a low-maintenance rose bed is desired, choose a variety with multiple disease resistance. Remember, many of the prize-winning roses are quite susceptible to one or more diseases and may require a rigid disease control program.

See Extension publications ANR-401, "Disease and Insect Control for Roses" (entomology) and ANR-505, "Diseases of Roses and Their Control" (plant pathology) for more information on control procedures for rose diseases.

## Nematodes

Several nematodes are common parasites on roots of roses. Symptoms of nematode injury vary with plant type and age, kind of nematode, and degree of infestation. They include lack of vigor, premature leaf fall, yellow foliage, stunting, and twig and branch die-back. Roots infected by the root-knot nematode (*Meloidogyne* sp.) have obvious galls (usually less than ¼ inch in diameter). Other nematodes that may damage roses include lesion, spiral, and stunt nematodes. Roots attacked by these nematodes are usually rough, discolored, decayed, and without galls. Nematode damage is often mistaken for lack of fertilizer or poor soil conditions. Aboveground symptoms are similar to those caused by crown gall.

When purchasing roses, inspect roots for nematode damage. No matter how careful you are in carrying out all other precautions, your efforts are largely wasted if nematodes are brought into the home garden on infested plants. Avoid the movement of soil from known nematode-infested areas in your yard to uninfested areas.

Contact your county Extension office for information on nematode control. Additional information on nematodes on roses and their control can be found in ANR-689, "Nematode Pests of Flowers and Woody Plants."

**J. Raymond Kessler**, *Extension Horticulturist*, Assistant Professor, and **Dave Williams**, *Extension Horticulturist*, Associate Professor, both in Horticulture at Auburn University. Former authors and revisers include Bridget Behe, former *Extension Horticulturist*; Patricia Cobb, former *Extension Entomologist*; Austin Hagan, *Extension Plant Pathologist*; Kim Sheffer, former *Horticulturist*; Ron Shumack, *Extension Horticulturist*; George Stritikus, *Extension Agent*, and Dave Williams, *Extension Horticulturist*; all at Auburn University.

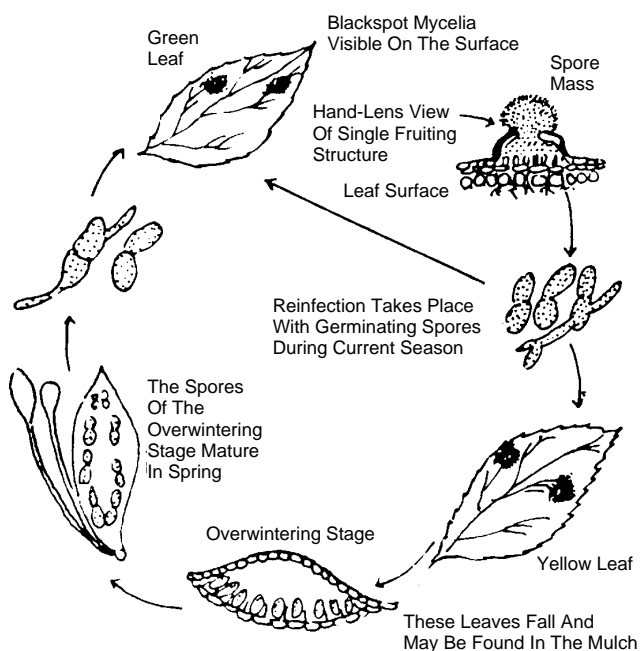
Use pesticides **only** according to the directions on the label. Follow all directions, precautions, and restrictions that are listed. Do not use pesticides on plants that are not listed on the label.

The pesticide rates in this publication are recommended **only** if they are registered with the Environmental Protection Agency and the Alabama Department of Agriculture and Industries. If a registration is changed or cancelled, the rate listed here is no longer recommended. Before you apply any pesticide, check with your county Extension agent for the latest information.

Trade names are used **only** to give specific information. The Alabama Cooperative Extension System does not endorse or guarantee any product and does not recommend one product instead of another that might be similar.

**For more information**, call your county Extension office. Look in your telephone directory under your county's name to find the number.

Issued in furtherance of Cooperative Extension work in agriculture and home economics, Acts of May 8 and June 30, 1914, and other related acts, in cooperation with the U.S. Department of Agriculture. The Alabama Cooperative Extension System (Alabama A&M University and Auburn University) offers educational programs, materials, and equal opportunity employment to all people without regard to race, color, national origin, religion, sex, age, veteran status, or disability. UPS, 10M17, **Revised July 1999**, ANR-157



Life Cycle Of Black Spot Disease.