

Flower Tips

Roses for the Home

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Introduction

Roses are one of the most popular garden flowers. They can be grown in almost all areas of Michigan and are adapted to many decorative purposes. New cultivars are introduced each year and are available in a wide range of colors and forms.

Many types of roses are available for planting on lawns and borders, for growing on arbors and trellises, for specimen tree roses, for use as bedding plants or hedges, and as a source of cut flowers. For successful results in growing garden roses, follow these tips:

- Buy vigorous plants from a reputable nursery, retail store, or mail-order nursery.
- Select a planting site that receives at least 6 hours of sunshine daily.
- Set plants in well-prepared beds.
- Water plants weekly unless rainfall equals at least 1 inch.
- Cut flowers from the plant without damaging the remaining parts of the plant.
- Prune plants annually.
- Spray or dust regularly to control pests.
- Protect plants from winter injury.
- Prune dead flowers.

Kinds of Roses

Outdoor roses are commonly separated into three main groups by their habits of growth — bush roses, shrub roses, and climbing roses. These groups can be divided into many classes as shown in Table 1.



Mature bushes are 1 to 6 feet tall, whereas shrub roses can grow to heights of 10 feet or more. Neither of these main groups require support. However, climbing roses produce long canes that must have some kind of support.

Bush Roses

Bush roses (Fig. 1) are grouped into types primarily according to their flowering habit, winter hardiness, size, and type of growth. Major classes of recent cultivars include hybrid tea, floribunda, grandiflora, and miniature. Common classes for older cultivars include polyantha, hybrid perpetual, and old-fashioned or heritage. Tree or standard roses is another group and includes adaptations of bush roses.

Hybrid Teas

Hybrid teas are also known as monthly or everblooming roses

because they bloom continually throughout the growing season. They are also the most commonly grown of all roses — when the word roses is used, it generally suggests a hybrid tea cultivar.

Mature hybrid tea rose bushes are 2 to 6 feet tall, depending on the cultivar. The flowers vary from singles, which have but one row of petals, to doubles, which have many rows. In general, the buds are pointed and long and the flowers are borne one to a stem or in clusters of three to five. Hybrid tea cultivars are available in a wide range of colors including pure white and many shades of red, yellow, pink, and orange. All cultivars are good for cutting, although some have short stems.

Most hybrid teas have some fragrance. This characteristic varies, however. When fragrance is present, it is usually most intense in early

Table 1. Classifying Roses.

Bush Roses	Shrub Roses
Modern Classes Hybrid Teas Floribundas Grandifloras Miniatures	Climbing Roses Ramblers Large-flowered Climbers Everblooming Climbers Climbing Hybrid Teas Climbing Polyanthas Climbing Floribundas Trailing
Older Classes Polyanthas Hybrid Perpetuals Old Fashioned (Heritage)	

morning before the fragrant oil evaporates from the base of the petals.

Most hybrid teas are winter hardy in areas where the winter temperatures only occasionally fall below 0°F, but cultivars differ in cold resistance. In regions where winters are more severe, practically all cultivars need some protection.

Floribundas

Floribunda roses bear their flowers in clusters, and the individual blooms of many varieties closely resemble hybrid teas. Floribundas are increasing in popularity, especially for use in bed plantings where many blossoms are desired. Floribundas tolerate more neglect than any other type of rose, with the possible exception of some of the shrub species.

Grandifloras

Grandiflora roses resemble hybrid teas in hardiness and in type of bloom — they have single flowers on long stems. Though the flowers are somewhat smaller than those of hybrid teas, grandifloras bloom more abundantly. The flowers are good for cutting.

Miniatures

Miniature rose plants, including leaves and flowers, are very small; for some cultivars, the maximum height is about 6 inches. Miniatures are used mostly for rock gardens, edging beds, borders, and indoor container gardening.

Polyanthas

Flowers of polyantha roses are smaller than those of the grandifloras, but are borne in large clusters. The clusters are similar to many of the climbing roses in form and size of individual flowers.

Polyanthas are hardy and may be grown in many areas where hybrid teas are difficult to grow. They are most frequently used in bed plantings or in borders with perennials and are excellent for mass plantings.

Hybrid Perpetuals

Hybrid perpetuals are the June roses of grandmother's garden. Their flowers are large, but generally lack the refinement of hybrid teas. An exception is the white-flowered cultivar *Frau Karl Druschki*, which many consider the finest of all white roses.

Prior to the development of modern hybrid teas, hybrid perpetual roses were very popular. As their name indicates, they are considered everblooming types, although most of them do not bear continuously throughout the growing season. They usually develop large, vigorous bushes if they are given good cultural care and are properly pruned. They are very hardy and tolerate low winter temperatures without protection.

Old-fashioned or Heritage Roses

Old-fashioned roses include the cultivars and species that were popular in colonial gardens. Though the flowers of old-fashioned roses are

not as attractive as those of newer cultivars, they are usually much more fragrant. These roses are all very hardy, require little care, and furnish an abundance of flowers in June.

Tree or Standard Roses

Tree or standard roses (Fig. 2) are distinctive because of the form of the plant rather than the type of flower. They are grown by grafting any of the bush-type roses on upright canes. Many of the better-known cultivars of bush roses are available as tree roses. Tree roses are used in formal plantings or to accent a particular part of a garden. These plants need special winter protection.

Shrub Roses

Shrub roses (Fig. 3) are actually a miscellaneous group of wild species, hybrids, and cultivars that develop a large, dense type of growth that is useful in general landscape work. They are hardy in all sections of the United States. While their flowers do not equal the size or form of other types of roses, many shrub varieties bear very attractive seed pods (fruits or hips) in the fall. They have fine-textured foliage and some are quite useful for hedges or screen plantings.

Climbing Roses

Climbing roses (Fig. 4) include all cultivars that produce long canes and require some sort of support. They are often trained on fences or trellises, but some are grown without support to cover banks and help prevent soil erosion. They are

Fig. 1. Bush type rose plant.



becoming more popular as improved cultivars (disease resistant, everblooming, larger-flowered) are developed.

Like bush roses, climbing roses are grouped into several types. There is much overlapping among types, and some cultivars can be classified under multiple categories. Most rose catalogs list the following types: rambler, large-flowered climber, everblooming climber, climbing hybrid teas, climbing polyanthas, climbing floribundas, and trailing roses.

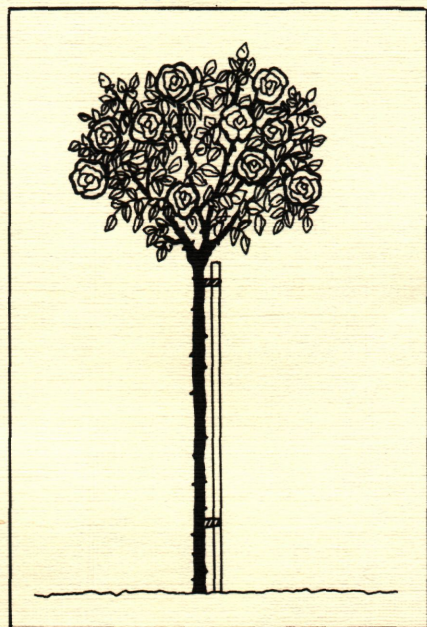
Rambler Roses

Rambler roses are rapid growers. They sometimes develop canes as long as 20 feet in one season. The flowers are borne in dense clusters and are small, generally less than 2 inches across. The plants flower only once during a season and only on canes that were produced the preceding year. The foliage is glossy and the plants are very hardy, but many cultivars are susceptible to mildew. Older cultivars are being replaced by newer climbing cultivars that bear larger flowers throughout the growing season and that are less vulnerable to mildew.

Large-flowered Climbing Roses

Large-flowered climbers grow slowly in comparison with rambler.

Fig. 2. Tree type rose plant.



They are often trained on posts or some other type of support, and they sometimes require heavy annual pruning to keep them contained.

This type of climber is often trained on some type of support and thus is well adapted to small gardens where they may be trained against a wall, a fence, or a small trellis. However, many cultivars do not bloom as freely when the canes are trained vertically as they do when canes are trained horizontally. The flowers on vigorous plants may be large and useful for cutting.

Everblooming Climbing Roses

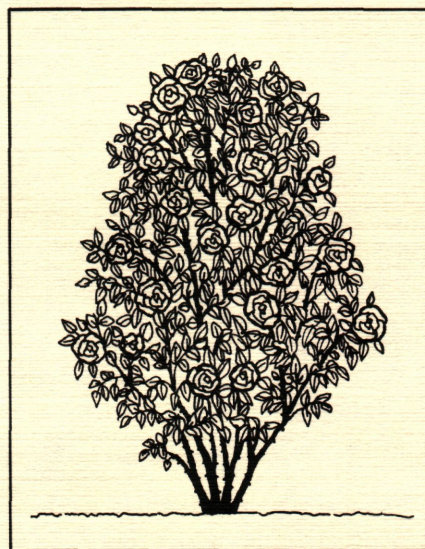
Everblooming climbers usually bear an abundance of flowers in early summer. After this period of heavy bloom, the plants produce a few scattered flowers until fall. Then, if growing conditions are favorable, the plants again may bear heavily.

Plant breeders are rapidly improving this type of rose. Some everblooming climbers are available that bloom as continuously as hybrid teas.

Climbing Hybrid Tea Roses

Climbing hybrid tea roses are actually bush varieties that exhibit the climbing characteristics. When a hybrid tea produces a cane that has the climbing characteristic, the new type of plant is usually given the same name as the bush cultivar from

Fig. 3. Shrub type rose plant.



which it originated — for example, *Climbing Crimson Glory*.

In general, the climbing forms of hybrid teas do not bloom as continually as the bush forms. The flowers, foliage, and other characteristics, however, are usually identical. The climbing hybrid teas are as susceptible to winter injury as the bush forms.

Climbing Polyanthas and Floribunda Roses

These types, like the climbing hybrid teas, originated from bush type polyanthas and floribundas that grew climbing canes. The flowers of

Fig. 4 Climbing type rose plant.



these climbing types are generally identical to the bush forms from which they originated and they also are fairly continuous in blooming. They are hardier than the climbing hybrid teas, but cannot withstand severe winter climates without protection.

Trailing Roses

Trailing roses are well adapted to planting on banks or walls. They produce long canes that creep along the ground and make a pleasing ground cover. The flowers are not as attractive as other types, but because of their hardiness, they can be grown more easily.

Selecting and Buying

Buy your rose plants from reputable sources. Generally, local nurseries and garden centers are good sources of planting material. Retail stores — drug stores, supermarkets, and department stores — are also good sources if their stock has been kept dormant and has been protected from drying. Do not buy plants that have started to grow or that have shriveled canes.

Mail-order nurseries can also provide a good selection of high-quality plants. Reputable mail-order organizations will send you catalogs listing the plants that they sell. Most guarantee their plants to grow and bloom if given normal care.

To help you decide which of the many cultivars of roses to buy, you may obtain catalogs from several nurseries or garden centers. The cultivars listed are generally favorites with rose growers and you are likely to be satisfied with any of them. Or, you may contact one of the following sources:

- Members of local garden clubs and rose societies are sources of specific information regarding the cultivars that do well in your area. Most cultivars grow well in Michigan climates, but they require adequate winter protection.

- The American Rose Society has a rating system for roses which may be purchased by mail. Send your request to: The American Rose Society, P.O. Box 30,000, Shreveport, LA 71130.
- The All-America Rose Selections, a non-profit organization, tests new rose cultivars under actual garden conditions and selects and recommends superior cultivars to the rose-buying public. A partial listing of AARS recommendations appears in Table 2. To obtain a complete list, send requests to: All-America Rose Selections, Office of Public Information, P.O. Box 218, Shenandoah, IA 51601.
- Numerous books on roses are available at book stores and libraries.

Handling

Unless plants are frozen when they are delivered, unpack them at once. If they are frozen, store the plants where they can thaw gradually; do not unpack until completely thawed.

After unpacking, inspect the roots to see if they have dried out during transport. If they are dry, soak them in water for 1 to 2 hours. Protect the roots from drying at all times. Never expose them to sun or drying winds. Move the plants to the garden with the roots in a bucket of water or coat the roots with a thin clay mud and keep them covered with wet burlap or some other protection until planted.

Set out plants as soon as possible after you receive them. If you cannot plant them immediately, moisten the packing material and repack the plants. They can be kept this way safely for 2 to 3 days. If you must hold the plants for more than 2 or 3 days before planting, place them in a trench and cover the roots with moist soil. If the canes are dry, cover them with soil also.

Before planting, examine the roots and cut off any that are injured, damaged, or dead. Remove broken or dead canes and, if necessary, cut the canes back to about 8 inches in length (nurseries usually cut back the

canes to about 12 inches before shipping the plants).

Planting

Selecting Planting Sites

Roses grow best when they receive full sunshine all day. They will grow satisfactorily, however, if they have at least 6 hours of sun a day. If you must plant roses where they will be shaded part of the day and have a choice as to morning sun or afternoon sun, plant them where they will receive morning sun. If plants are shaded in the morning, the leaves remain wet with dew a few hours longer each day and moisture on the leaves favors the development of several leaf diseases.

If you are not sure where to plant your roses, draw a scale map of your yard on a piece of graph paper that shows the location of buildings, walks, driveways, trees, shrubs, existing flower beds, septic tanks, clothes lines, etc. If you are planting roses primarily for their landscape value, they should fit in with existing plants and the overall landscape design. If you plan to grow roses for cut flowers only, then they may or may not be a conspicuous part of the landscape plan and you may want to locate them where they will be easier to care for, perhaps in the backyard.

Planting Times

Plant packaged roses in Michigan in early spring (April and early May). Some nurseries and garden centers sell roses that are planted in containers. These can be transplanted at any time from spring to fall, although they will establish better if not planted in mid-summer because of the heat.

Preparing the Soil

Any good garden soil will produce good roses. If you can grow good grass, shrubs, and other plants, your soil probably needs no special preparation for roses. If your soil is very heavy, if it is light and lacking in fertility, or if subsoil was used to level your lot, you can improve your

Table 2. Partial listing of All-America Rose Selections.

Year	Winners	Color	Class
1986	Touch of Class	Pink	H.T.
	Broadway	Pink-Yellow Blend	H.T.
	Voodoo	Orange-Yellow Blend	H.T.
1985	Show Biz	Scarlet	F.L.
1984	Olympiad	Crimson	H.T.
	Intrigue	Lavender	F.L.
	Impatient	Orange	F.L.
1983	Sweet Surrender	Medium Pink	H.T.
	Sun Flare	Medium Yellow	F.L.
1982	Brandy	Apricot Blend	H.T.
	Shreveport	Orange Blend	G.R.
	French Lace	White	F.L.
	Mon Cheri	Red Blend	H.T.
1981	Bing Crosby	Orange Blend	H.T.
	Marina	Orange Blend	F.L.
	White Lightning	White	C.R.
1980	Love	Red Blend	G.R.
	Cherish	Medium Pink	F.L.
	Honor	White	H.T.
1979	Paradise	Mauve	H.T.
1978	Color Magic	Pink Blend	H.T.
	Charisma	Red Blend	F.L.
1977	Double Delight	Red & White bicolor	H.T.
	First Edition	Coral	F.L.
	Prominent	Hot Orange	G.R.
1976	Seashell	Peach & Salmon	H.T.
1975	Oregold	Pure Yellow	H.T.
1974	Perfume Delight	Clear Pink	H.T.
1971	Command Performance	Orange-Red	H.T.
1970	First Prize	Rose-Red	H.T.
1969	Angel Face	Lavender	F.L.
	Gene Boerner	Pink	F.L.
1968	Europeana	Red	F.L.
1965	Mister Lincoln	Deep Red	H.T.
1963	Tropicana	Orange-Red	H.T.
1961	Duet	Salmon-Pink/ Orange-Red	H.T.
1959	Ivory Fashion	Ivory	F.L.
1955	Queen Elizabeth	Clear Pink	G.R.
1953	Chrysler	Crimson Red	H.T.
1950	Fashion	Coral Pink	F.L.
1947	Rubaiyat	Cerise Red	H.T.
1946	Peace	Pale Gold	H.T.
1941	Charlotte	Cerise Red	H.T.

H.T. — Hybrid tea
G.R. — Grandiflora

F.L. — Floribunda
C.L. — Climber

soil by adding organic matter. Use peat moss, compost, leaf mold, or well-rotted manure. Peat moss and leaf mold are easier to obtain and cause fewer problems.

To prepare planting sites, spread a layer of organic matter 2 to 4 inches deep over the bed along with superphosphate (3 pounds/100

square feet). Work the organic matter spade-depth into the soil.

If you are planting only a few roses, dig individual planting holes for them. Make the holes 12 to 15 inches deep and at least 18 inches in diameter. If you are planting a large number of roses in one bed, prepare the bed by spading the soil to a

depth of about 12 inches. Then dig planting holes in the prepared bed.

If you are digging planting holes in unprepared soil, mix soil from the holes with organic matter and a little superphosphate. Use one part of peat moss, compost, or leaf mold to four parts of soil, or one part of well-rotted manure to six parts of soil. Use 3 ounces of superphosphate for each hole and mix it thoroughly with the organic matter and soil.

Prepare beds and dig planting holes in advance of planting so you can set out the plants as soon as you receive them.

Setting the Plants

Place a small, cone-shaped pile of soil in the center of each planting hole. Set the plant on the peak of the cone and spread the roots down the slope (Fig. 5). Make the top of the cone low enough so the bud union of the plant is about 2 inches below the ground level. Carefully work soil around the roots so all roots are in contact with the soil. Cover the roots with soil, then add water to help settle the soil around the roots, and finish filling the hole.

If you plant roses very early in the spring and frosts are expected, mound the soil 8 to 10 inches high around the canes of bush and climbing roses, and 3 to 4 inches high around the canes of miniature roses (Fig. 6). Remove the soil mound when danger of frost has passed.

After setting tree roses, drive a sturdy pole into the soil beside the upright trunk and tie the trunk to the pole. This prevents the trunk from whipping in the wind and loosening the roots.

Spacing Plants

Space hybrid teas, grandifloras, polyanthas and floribundas about 2 feet apart. Space hybrid perpetuals 3 to 5 feet apart and climbers 8 to 10 feet apart.

Cultural Information

Cultivating and Mulching

Cultivate roses carefully; the roots can grow close to the surface and

may be injured by deep cultivation. The main purpose of cultivation is to remove weeds. To prevent damage, hand-pull the weeds or cut them at the soil surface.

Use a mulch to help control weeds, conserve moisture, and add fertility. Peat, ground corncobs, buckwheat and cottonseed hulls, spent mushroom manure, leaves, and well-rotted straw manure are effective mulching materials. Avoid using straw late in the year because mice may nest in it over winter.

Apply mulches about 1 month before the roses bloom. Remove all weeds and rake the soil lightly before applying mulches. Spread the mulching material evenly around the plants to a depth of 2 to 3 inches. Keep the mulch on the soil throughout the year. The mulching material eventually decays and becomes incorporated in the soil, so add new material as necessary to maintain proper depth.

Watering

Roses need large amounts of water. Plan on watering weekly unless rainfall amounts to 1 inch or more during a week. Soak the soil thoroughly to a depth of 8 to 10 inches. Direct a light stream of water from a garden hose around the base of the plants. A heavy stream usually is wasteful; much of the water runs off and fails to penetrate the soil more than a few inches. Avoid spraying water on foliage and water in the morning because watering in the evening increases the risk of disease problems.

Fertilizing

Roses grow best in soil that is moderately to slightly acid (pH 5.5 to 6.5). To determine if the acidity of your soil is within the best range for roses, have it tested. The Michigan State University Soil Testing Laboratory will test your soil and make recommendations for changing the soil's acidity, if necessary. Contact your county Cooperative Extension Service office for information on soil testing and containers for shipping your sample.

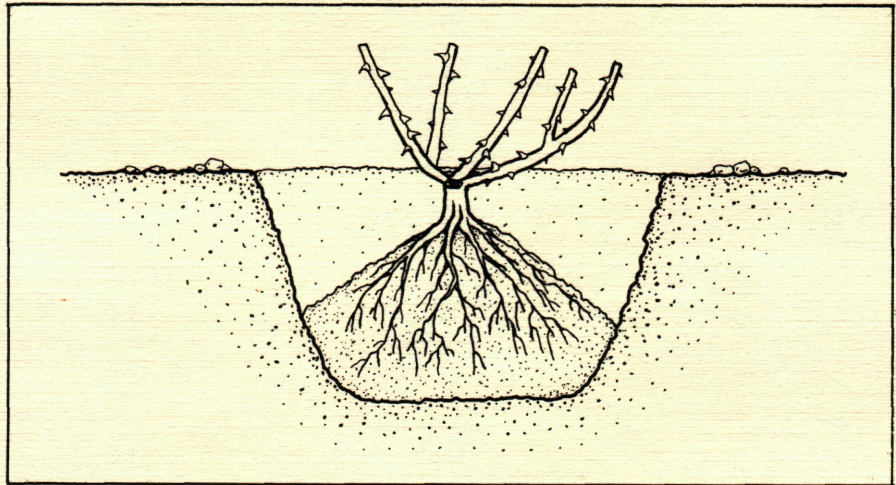


Fig. 5 Set the rose plant on the peak of the cone and spread the roots down the slope.

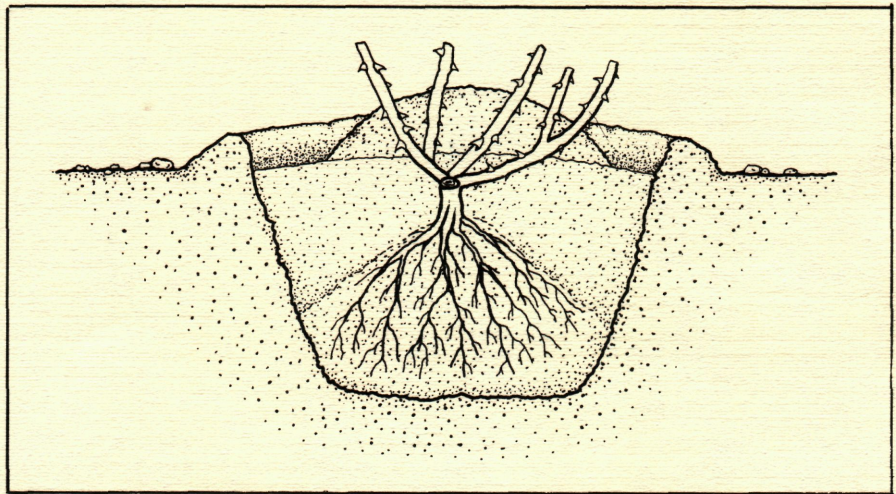


Fig. 6 Fill the hole with soil. If there is danger of frost, mound soil 8 to 10 inches high around the canes.

If you find the soil pH to be below 5.5, apply dolomitic lime at a rate of 7 to 8 pounds per 100 square feet. If the pH is over 6.5, apply powdered sulfur. Use 1 pound of sulfur per 100 square feet if the pH is between 7 and 7.5, 2 pounds if it is between 8 and 8.5, and 3 pounds if it is 8.5 or higher.

The fertilizer elements most likely to be deficient in garden soil are nitrogen, phosphorus, and potassium. To supply these elements, use a complete fertilizer such as 6-12-12, 5-10-10 or one with a similar analysis. Apply complete fertilizers at a rate of about 2 pounds per 100 square feet or one heaping tablespoon for each plant. Spread the fertilizer evenly around the plants, work it into the soil, and then water.

Apply fertilizer when new spring growth is well established and all danger of severe freezing is passed. Make a second application later in the season, 4 to 6 weeks after the first application, if the plants show evidence of mineral deficiencies. Look for yellowing of leaves from lack of nitrogen, leaves turning grayish-green from lack of phosphorus, or browning of leaf margins from lack of potassium. Do not apply fertilizers after August 1. When applied late in the season, fertilizers may stimulate fresh growth and delay hardening of the wood before winter.

Some soils are deficient in calcium. Calcium deficiency first causes the margin of rose leaflets to turn brown, and then eventually the

entire leaf dies and falls off. The flowers may also be deformed with brown spots near the margins of the petals. When these symptoms appear, take a soil sample and have it tested. If the pH value is below 5, add lime to increase the calcium supply.

Disbudding

For large exhibition or single-stem roses, disbud the plants when the buds are very small. Remove all but the terminal bud on each stem. The terminal bud will then develop into a much larger flower.

The flower clusters of polyanthas and other roses bearing many flowers per stem will also be improved by disbudding. Remove some of the buds from each stem; the more buds you remove the larger the remaining flowers will grow.

Pruning

Prune roses annually to improve their appearance, to remove dead wood, and to control the quantity and quality of flowers produced by the plants. If roses are not pruned, they soon grow into a bramble patch and the flowers are small and of poor quality.

Use sharp tools when pruning roses. A fine-toothed saw is useful for cutting large, dead canes, and the remaining pruning can be performed with pruning shears. Do not leave bare stubs when pruning. Cut back to sound wood just above a bud at a 45° to 60° angle (Fig. 7).

Pruning Bush Roses

Prune bush roses in early spring just before growth starts (mid- to late April in southern lower Michigan). First, remove all dead wood; live wood can be identified by its green color and the presence of live buds that are beginning to swell. Cut 1 inch or so below dark-colored areas at a 45° to 60° angle about 1/4 inch above an outward-facing bud. If no live buds are left, remove the entire branch or cane. Next, cut out all weak growth and any canes or branches growing toward the center of the bush. If two branches cross,

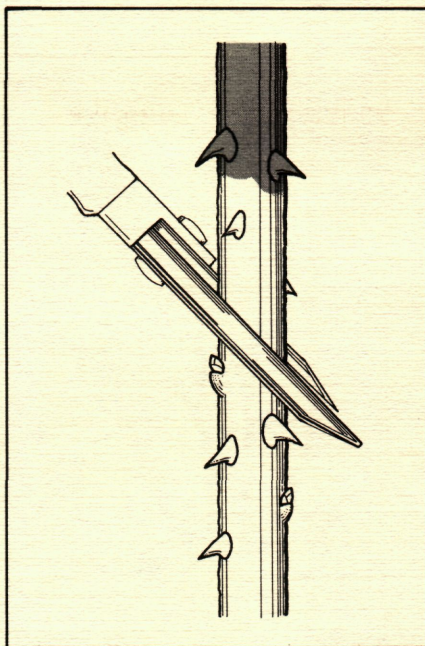


Fig. 7. When pruning, use a cutting angle of 45° to 60°.

remove the weakest one so that the center is open to light, air circulation, and growth. Finally, shape the plant by cutting the strong canes to a uniform height. Healthy, vigorous hybrid tea plants may be pruned to a height of 12 to 18 inches. Prune less vigorous varieties less severely, about 16 to 24 inches tall. Also, floribundas generally do not need to be pruned as severely as hybrid teas, but they are pruned in a similar manner (Figs. 8A and 8B).

In most areas of Michigan, the winters are so severe that much of the top of the plant is killed. Under these conditions don't attempt to shape the plants; just cut out the dead wood and save as much live wood as possible.

Pruning Tree Roses

Tree roses require heavy pruning in the spring and some pruning during the growing season to keep the tops from becoming too large for the stems. After removing dead wood, cut back live canes to a length of 8 to 12 inches and shape the overall structure of the plant.

Pruning Shrub Roses

Most of the shrub roses should be pruned after they have bloomed. As

a rule, these plants are very hardy, so pruning is needed primarily to thin and remove old canes. They do not require shaping; in almost all instances shrub roses are most attractive when they are allowed to develop a natural shape.

Pruning Climbing Roses

Prune hardy ramblers just after they have bloomed. Pruning stimulates new cane growth and development of new laterals on which the next year's flowers will grow.

Where ramblers are trained to a trellis or support that is so high that one season's growth will not cover it, cut off some of the older shoots. Shorten strong, vigorous canes that are lead pencil-size to fit the trellis or support. This pruning will stimulate lateral development that will eventually cover the trellis.

In spring, remove all dead canes and weak branches. Prune sparingly — removing too much wood at this time will reduce flower production. Many of the large-flowered climbers, especially the everblooming types, do not grow as much each year as the hardier climbers, so less pruning is necessary. This rule also applies to the slow-growing cultivars.

Removing Suckers

Roses are propagated by budding a particular cultivar onto a rootstock of a more vigorous grower, such as a multiflora rose. Suckers often arise from the rootstock, and because they are more vigorous than the bud-grafted cultivar, they will eventually crowd out the desired flowering cultivar. Suckers also have different foliage and flowers, which aids in their identification. Remove suckers by pulling them out or cutting them from the rootstock (below the soil line) whenever they occur (Figs. 8A and 8B).

Protecting

Roses must be protected not only against low winter temperatures, but also against fluctuating temperatures and winter winds. To prevent winter injury, keep your roses healthy

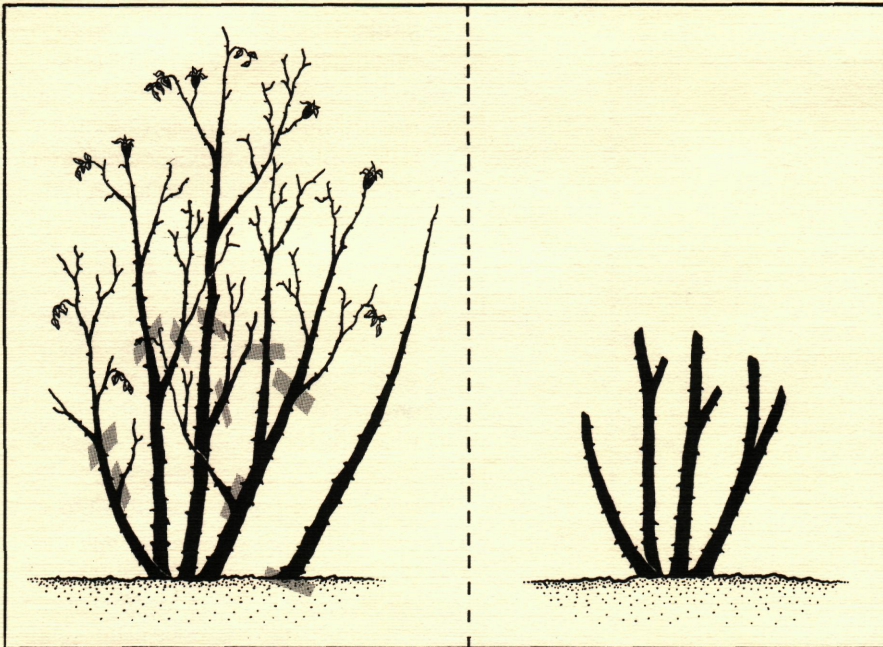


Fig. 8A and 8B. Prune rose bushes to a uniform height, between 12 and 24 inches tall. Remove suckers below the soil line.

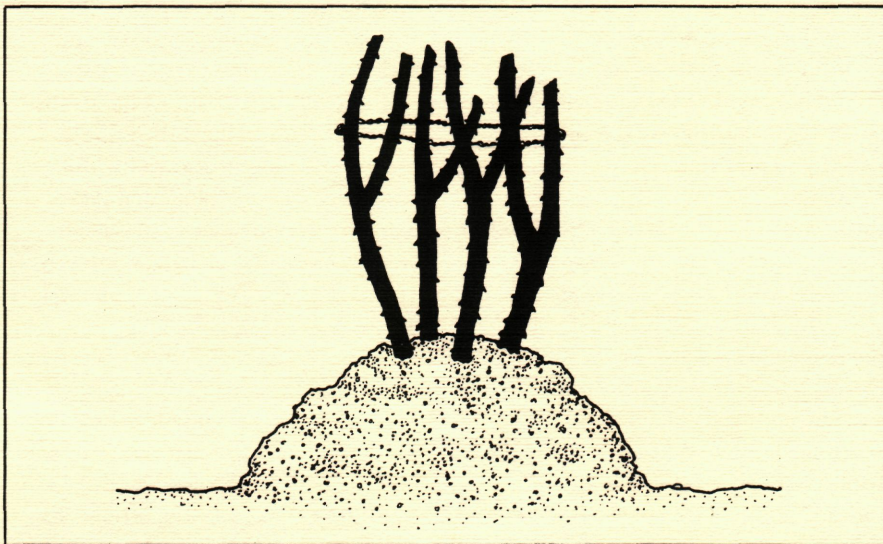


Fig. 9. For minimum protection, tie canes of bush roses together, then mound soil 8 to 10 inches high around the canes.

during the growing season. Roses that have been sprayed for disease control and have been properly nourished are more likely to escape winter injury than plants that have lost their leaves because of diseases or nutrient deficiencies.

Bush Roses

Most rose bushes are not completely hardy in Michigan and need to be protected from cold temperatures. Different types of insulators, such as soil mulch, cones,

etc., can provide necessary protection.

To protect roses using soil, mound soil around the base of the canes after the first hard freeze while the soil can still be easily worked. Bring soil from another part of the garden for mounding because you may injure the roots if you remove soil from around the rose plant or bed. Avoid using clay or heavy soils because they hold too much moisture. Mound soil 8 to 10 inches high around the canes and then tie

all the canes together to keep them from being wind-blown and loosening the soil around the base of the bush (Fig. 9). You may also shorten the canes to reduce wind whipping. However, do not cut the canes to the soil level because they may not be killed during the winter.

After the ground has been frozen in late fall, around Thanksgiving in southern lower Michigan, pile hay, straw, strawy manure, leaves or similar material over the mounded canes (Fig. 10). Hold the material in place by covering with some soil. These materials help to keep the soil temperature constant. It is important to apply straw or other materials only after the ground has frozen to avoid mice invasion. You may also want to distribute some mouse bait around the bushes. For additional protection, place twiggy branches or evergreen boughs (from Christmas trees) over the top of the bushes. These branches help accumulate snow between the bushes, which may help reduce injury to the roots while still allowing for air circulation.

You can also make or buy your own rose protectors or cylinders. Tarpaper cylinders 12 inches in diameter, styrofoam cones, or similar protectors are satisfactory. Apply cylinders or cones after the plants are fully dormant — after two hard freezes have occurred, usually after Thanksgiving.

If you use an open-top cylinder, tie the canes together, apply the cylinder, then fill with one of the following: a mulch of dry vermiculite, corn cobs, leaves, straw, perlite, or other material (Fig. 11). Cut the tops of the canes even with the top of the cylinder and cover with polyethylene film to keep the insulation material dry. Anchor the film to prevent wind damage. Check the plants occasionally in winter for mouse, wind, or other damage. If you're using a closed-top cylinder, tie the canes together, apply one of the materials listed above, then cover with the cylinder.

Follow manufacturer's directions when using commercial plant protectors. Most need to be

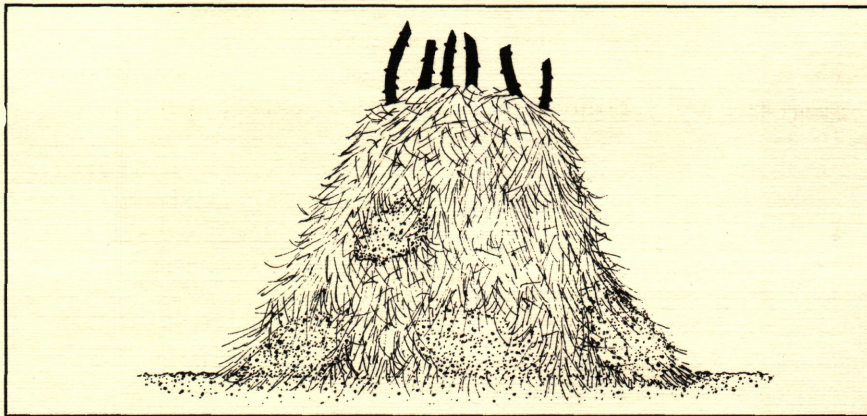


Fig. 10. For more winter protection, pile hay, straw, strawy manure, leaves or similar material over the mounded canes.

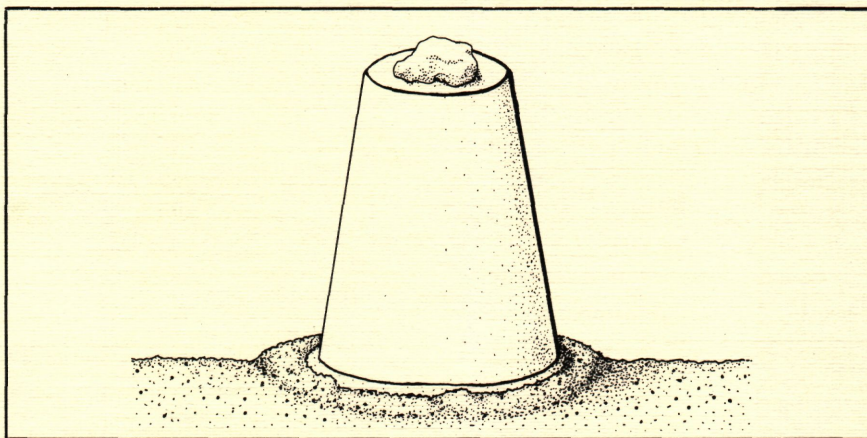


Fig. 11. For maximum winter protection cover the rose bush with a protective cylinder. Use straw, leaves or similar material to insulate the bush inside the cone.

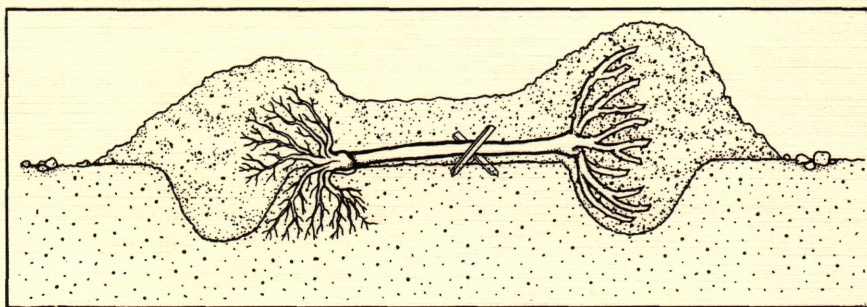


Fig. 12. Protect tree roses by digging under the roots of the plant, pulling it over to one side, then covering with several inches of soil.

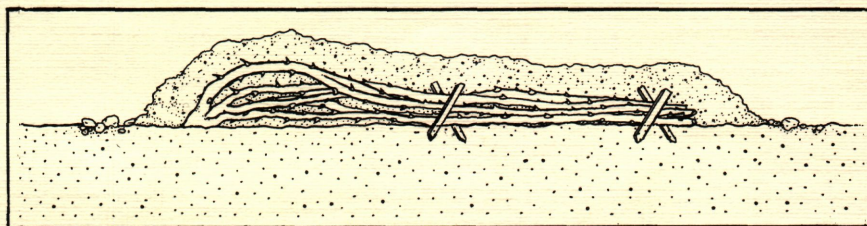


Fig. 13. Protect climbing roses by laying the canes on the ground, holding in place with wire pins or notched stakes and covering them with several inches of soil.

anchored by placing stones on top of them.

Remove covering materials (straw, soil, cylinders) in spring as soon as danger of hard frost (several degrees below freezing) has passed, but before new growth appears. If new growth has already started, the plant may need protection in case of frost. Remove the soil mounded around the base of the bushes carefully to avoid breaking off any shoots that may have started to grow. Never uncover the bushes in the spring before the ground has thawed because the tops may start to grow before the roots can provide water.

Tree Roses

Protect tree roses by covering the plants with soil. Dig carefully under the roots on one side of the plant until the plant can be completely pulled over on the ground. This must be done very carefully to prevent breaking all root connections with the soil. Cover the entire plant with several inches of soil (Fig. 12). In spring, after the soil thaws and danger of severe frost has passed, remove the soil cover and set the plants upright again.

Shrub Roses

Most shrub roses do not need additional protection.

Climbing Roses

Climbing roses need protection in areas where the temperature regularly drops below zero. Lay the canes on the ground, hold them down with wire pins or notched stakes and cover them with several inches of soil (Fig. 13). In spring, remove the soil after danger of severe frost has passed.

Propagating

Most varieties of roses can be propagated from cuttings taken during the summer or in fall. Newer rose cultivars are patented, so propagation of these cultivars is prohibited.

Take summer cuttings after blossoms have died. Make 6- to 8-inch cuttings from the stems. Use

either stem tip or stem section cuttings. Remove all leaflets except one or two at the top, then plant the cuttings with half their length below the ground. Water thoroughly and cover with an inverted fruit jar to provide high humidity while rooting and protection over the winter. Remove the fruit jar the following spring.

Take fall cuttings after the wood has matured or becomes woody. Cut the stems into 8- or 10-inch lengths, remove all leaves, and plant the cuttings in a well-protected sunny place with only the top bud above the ground. When freezing weather approaches, cover the cuttings with a mulch of organic matter several inches deep to keep the ground from alternate freezing and thawing.

Cutting and Using Flowers

Cutting rose flowers is in itself an important cultural operation. Improper cutting can injure the plant and decrease its vigor. Always use sharp tools; breaking or twisting off flowers injures the remaining wood. Use a hook and blade pruner or sharp knife for a cleaner cut.

It probably is best if you do not cut any flowers during the first season of bloom. If early flowers are not cut, the plants usually develop into large bushes by fall. Some flowers may be cut at that time. If you do cut flowers during the first season, cut very short stems only.

Removing foliage with long-stemmed flowers robs the plant of its food-manufacturing capacity, which reduces growth potential and subsequent flower yield. Even when the plants are well established, cut stems only as long as necessary. Be sure that at least two leaves remain between the cut and the main stem.

If you do not cut the flowers, remove them when the petals fall. Remove withered individual flowers in a cluster to give the remaining flowers more room to develop. After all flowers of a cluster have withered, cut off the entire stem just above the top five-leaflet leaf using sharp pruners or a knife.

Roses that are cut just as the two outer petals unfold will continue to open normally and will remain in good condition longer than if they are cut after they are fully open. Roses will stay fresh longer if they are cut in late afternoon and placed immediately in water.

After cutting blossoms, remove any lower leaves that will be in water and recut the stems under water, removing about one inch of the stem. This removes the air bubble that formed when the stem was cut in air. Then place the stems in warm water (100°F) to which a floral preservative has been added. A preservative adds carbohydrates and reduces the water's pH to an acid condition, which retards the growth of bacteria.

Clean the container first with soap and water, then disinfect with a 10% bleach solution (1 part bleach to 9 parts water), and rinse well with tap water before adding the warm water/preservative solution. Then place the container with the roses in a dark, cool (38° to 50°F, if possible) room for 2 to 4 hours before arranging them. As you are making the arrangement, again cut the stems under water and place them in your container previously filled with the same type of preservative solution described above. Freshly cut roses should last a week indoors if they are cut at the proper stage, handled correctly, and placed in sterile containers with warm water and a floral preservative.

Instead of using commercial floral preservatives, you can easily make your own using one of these simple recipes. To 1 gallon of water, add 2 tablespoons of vinegar and 1 tablespoon of granulated sugar. Or, use 7-Up or Sprite (not diet) and water mixed half and half. Flowers in a preservative solution will last about twice as long as those in plain water. Whether using a preservative or not, flowers will last longer if you cut the stems under water and replace the water in the container every 2-3 days.

Other tips on extending the life of roses and most cut flowers are:

- Place out of direct sunlight.
- Place away from the front of a hot

or cold air register.

- Add water daily.
- Place in a cool, dark place at night or whenever the arrangement is not being appreciated.
- Rearrange your floral design as old flowers wilt by cutting the remaining flower stems and making a smaller arrangement.

Diseases, Insects, and Mites

Many different diseases and insects attack roses. These pests vary in type and severity from area to area. You can control most of them effectively if you follow these general recommendations:

- Buy plants that are free of diseases and insects.
- Keep your rose garden free of weeds, fallen rose leaves, and diseased or insect-infested canes.
- Apply pesticide sprays or dusts as needed.

Three types of pesticides are used on roses: fungicides for diseases; insecticides for insects; and miticides for spider mites. You can apply them as dusts or sprays. Ready-to-use dusts are available from pesticide dealers. Few sprays come ready-to-use on roses. It is usually necessary to prepare sprays by mixing wettable powders or emulsifiable concentrates with water.

Select pesticides by studying this section and pesticide container labels. Follow label directions for dilution and care in handling. Commercial pesticides containing both an insecticide and a fungicide are also available.

Diseases

Of the many diseases that attack roses, black spot, canker, crown gall, powdery mildew, rust, and viruses are the most serious.

Black Spot (fungus)

Circular black spots, frequently surrounded by a yellow halo, appear on the leaves. Infected leaves turn yellow and fall prematurely. Severely infected plants may be almost completely defoliated by mid-summer. The plant is weakened,

becomes subject to winter injury, dieback, and stem cankers.

Black spot is spread by water that remains on leaves for at least 6 hours before the infection takes place. So help prevent black spot through careful cultural practices.

Severe pruning in spring eliminates some infected canes on which the disease overwinters. Begin spraying or dusting when leaves are half grown. Spray or dust weekly throughout the growing season.

Cankers (fungus)

Cankers commonly occur on plants that have been weakened by black spot, winter injury, or poor nutrition. They first appear as small reddish spots on the stem, and enlarge and eventually encircle the stem, causing the cane to die.

To control the cankers, keep bushes free of black spot, provide them with proper winter protection, and use care when pruning. When pruning, make clean cuts near a bud. Prune all cankered canes. Disinfect pruning tools with alcohol after use on a cankered shoot.

Crown Gall (bacterium)

Galls begin as small swellings usually at ground level, but sometimes on the upper part of the stem or on the roots. They slowly increase in size. Infected plants become stunted and may die.

Control is a matter of prevention. Buy plants free of crown gall and plant them in soil that has been free of crown gall-infected plants for at least 2 years. If crown gall appears, remove and burn the infected plants.

Powdery Mildew (fungus)

White powdery masses of spores appear on young leaves, shoots, and buds. Young shoots may be swollen or distorted and foliage may be stunted. Unopened buds may be covered with powdery masses of spores.

The disease is spread by wind. It overwinters on fallen leaves and on infected bud scales and flower stems.

Rust (fungus)

Yellow or orange pustules appear on leaves and the plant may be defoliated. The disease may also attack young stems. Rust overwinters on fallen leaves and is spread by wind. Therefore, clean up debris in the fall. Cool, humid summers and mild winters favor disease development.

Viruses

Rose viruses are spread by propagation of infected plants. The diseases do not seem to be spread by insects or by handling.

Viruses cause small, angular, colorless spots on the foliage. Ring, oakleaf, and watermark patterns also may occur. Infected plants may be otherwise unaffected or they may be slightly to severely dwarfed.

The only control for viruses is prevention. Buy plants that are free of virus disease symptoms.

Major Insects and Mites

Roses are attacked by a large number of insects. The most common are aphids, Japanese beetle, rose chafer, rose midge, rose stem borers, spider mites, and thrips.

When preparing blooms for exhibit, protect prized plants and flowers from insect attacks by covering them with cheesecloth or other coarsely woven cloth on a light framework.

Aphids

Several species of aphids occur on rose stems, leaves, and buds. Large numbers of aphids may stunt rose plants by sucking the plant juices. Aphids often appear on rosebuds. The insects also secrete a sticky honeydew that accumulates on foliage. Sooty mold fungi that grow on honeydew may make aphid-infected leaves appear brown or black.

Japanese Beetle

The Japanese beetle attacks rose flowers and foliage during July and August. This beetle is about 3/8-inch long and is metallic green with coppery-brown wing covers. In areas

of moderate infestation, protect against the Japanese beetle by frequent application of an insecticide.

Rose Chafer

Yellowish-brown beetles, known as rose chafers, are often abundant during June and early July, especially in areas with light, sandy soil. They are about 1/2-inch long and have long, spiny legs. They appear suddenly on rosé petals where they feed. They may destroy the entire flower. Insecticides are available that can be used to control this pest.

Rose Midge

The rose midge is sometimes a serious pest of roses. This tiny yellowish fly lays its eggs in the growing tips of the rose stems. The maggots that hatch from the eggs destroy the tender tissue, killing the tips and deforming the buds.

Cut and destroy the infested tips daily for 1 month to eliminate the maggots before they complete their growth and drop to the ground. No satisfactory insecticide control is available.

Rose Stem Borers

The stems of garden roses are occasionally infested with one of several kinds of borers. These stems usually die back, and those infested with the stem girdler develop a marked swelling at the point of injury. The only control is to remove and destroy infested stems.

Spider Mites

The two-spotted spider mite and related species suck the juices from rose leaves, which soon become stippled. As the injury progresses, leaves turn brown, curl, and drop off. When mites are abundant, they spin a web over the leaf surface.

Spider mites are usually greenish with two brown spots, although some are dark red. They are almost too small to be seen without a magnifying glass. The mites overwinter as adults on leaves of living weeds or perennial garden plants. They become abundant in hot, dry weather. They are especially

common on miniature roses grown indoors.

Removing trash and living weeds in early spring is one way of helping to control this pest. Miticides are also available for use in controlling this pest.

Thrips

For several weeks each summer, the petals of garden roses, especially white varieties, may become brown. This injury is caused by flower thrips and related species that enter the opening flower. The tiny yellow or brown insects can be seen if an infested flower is shaken over a sheet of white paper.

No fully satisfactory control is available because the rapidly expanding flowers cannot be kept adequately covered with an insecticide. Place cheesecloth cages or bags around prized blooms to protect them from damage.

Minor Insects and Mites

In addition to the more common insect pests listed above, four others may also occasionally attack roses. They are leaf-cutter bees, rose galls, rose scale, and rose slugs.

Leaf-Cutter Bees

Leaf-cutter bees cut circular pieces from rose leaves and other

plants and store them as food for their young in burrows dug in the pith of rose stems, broken branches, or plant crevices. The tunneled stems usually die back several inches.

No satisfactory insecticide control is available for these bees, which are valuable pollinators of alfalfa and other plants. A carpet tack pushed into the end of the cut stem at pruning time will prevent the bees from entering and tunneling the stems. Tree-wound paint can also be applied to the ends of the cut stems.

Rose Galls

Several species of wasp-like insects lay their eggs in stems of roses. As the larvae develop, they cause large swellings or galls. One species makes a gall resembling fibrous moss on the stem. Another causes a large wart-like gall near the soil surface. These galls may be confused with crown gall, which is caused by bacteria. However, if insect galls are cut open, numerous larvae — or the cells in which they develop — are visible.

No known insecticide will control the insects that produce these galls. The best control is to prune the infested stems and bury them promptly to destroy the larvae before they emerge.

Rose Scale

Old rose stems sometimes become encrusted with white insects known as rose scale. These insects suck sap from the plants. Waxy adult insects are protected from insecticides.

Control scale insects by treating tiny scale crawlers before they become covered with wax, or with a systemic for covered scale adults. If scales persist until fall, prune heavily infested stems.

Rose Slugs

Rose slugs, the larvae of three species of sawflies, feed on rose leaves. Their injury is recognized by the skeletonized effect on the leaves. The insects appear suddenly and do their damage quickly, so be alert and act quickly so that control measures can work effectively.

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