$1.00

Growing *Roses* in Wisconsin

by

David C. Zlesak

Throughout history, roses have been grown and admired for their fragrance and beauty and have been used as symbols of emotion. Many rose classes exist today offering gardeners unique growth habits, interesting flower forms, and varying requirements of care. They range from very hardy cultivars which can thrive in the landscape to the most exquisite hybrid tea a dedicated rosarian can carefully groom with the hope of winning a rose show trophy. No matter your experience, success with roses can be easy. First decide what you expect from and are able to give to your plants, and then choose cultivars accordingly. Following are some general guidelines, which will help you in their care.

SELECTING A SITE

Investing the little bit of time in preparing a good planting site will pay off for many years to come.

Light: Provide five hours or preferably more of direct sunlight / day.

Competition: Avoid planting near an established tree or large shrub which will absorb much of the nutrients and water meant for your roses.

Air Circulation: Choose locations without stagnant air pockets to help wet foliage dry faster and discourage disease. Also avoid excessively open and windy areas where plants can be easily dehydrated and physically broken.

Soil: Having a professional soil test done through the county extension service will take the guess work out of knowing the status of ones soil. Information on the suggested amendments and quantities needed will be on the test result form.

-pH 6.0-7.0 (proper pH makes essential nutrients in soil available to plants).

-Good drainage (avoid adding sand to try to improve heavy soggy soils- add composted organic matter and/or create raised beds).

-Add composted organic matter (leaves, peat, manure, etc.) to improve soil structure, moisture relations, and nutrient holding capacity. For the average sized garden rose, mix organic matter over an area at least 24-30" wide and 18" deep. The goal is a large uniform soil volume.

CLASSES OF ROSES

Roses are similar to people in that they tend to be grouped and classed into loose descriptive stereotypes. Even though a rose may fall into one of these general classes, there can be a lot of variation between it and another cultivar in the same class.

Species: These roses are found growing natively throughout the Northern hemisphere. There are well over 100 species, many of which were never used yet by rose breeders. Some offer very interesting characteristics and are well worth learning about and growing. In the background of most modern roses (hybrid teas, floribundas, etc.), only about 7-9 species are found. Most species roses have one strong bloom period that lasts a few weeks in late Spring.

Hybrid Teas: This is the most popular class of rose today and is the class used for typical florist roses. Usually one relatively large flower is borne per medium-

long cutting length stem.

Floribundas: These roses are shorter and more compact than hybrid teas and have flowers borne in clusters. Floribundas provide a strong display of color in the garden and in mass plantings.

Grandifloras: This class is between the hybrid teas and floribundas in that they produce blooms in clusters, yet each bloom usually is borne on a medium to short cutting length stem. Plant size of some can be rather large.

Pillars, Climbers, and Ramblers: These roses produce large plants with long canes that can be trained on a supportive structure such as a trellis. Some are everblooming.

Shrubs: This class can better be called a miscellaneous class. Roses with characteristics that don't fit well into other classes are often put here. Some cultivars are very winter hardy, while others are more tender. Many have dense growth.

Miniatures: These roses are just dwarfed in size. They often produce far more blooms per season than the larger roses. There is a wide range within what rosarians call "minis". They can resemble dwarfed hybrid teas, floribundas, shrubs, and even climbers. A border or bed of minis produce a lot of color and are well worth a try. They range in winter hardiness as do the shrubs.

Rugosas: *Rosa rugosa* is a species from Northern Asia that is very tolerant of cold (zone 2), disease, and salt (it's native to seasides). Many cultivars have been bred combining it with characteristics of other rose classes. These hybrids and the species itself are a major source for carefree roses that can be incorporated in the landscape. Most are also repeat blooming, producing multiple cycles of bloom throughout the growing season. Not all hybrids are as carefree as the species.

Antique Roses: This is a loose name given to roses that were popular in time past and include such classes as: moss roses, gallicas, albas, centifolias, bourbons, noisettes, foetidas, spinosissimas, damasks, teas, etc.

BUYING PLANTS

Dormant Bareroot Plants	**VS**	**Potted Growing Plants**
Advantages		
-Often greater cultivar selection		-Can see cultivar in bloom before purchase
-Available through mail order in addition to quality wider range garden centers		-Can get a head start on the growing season with a greenhouse forced plant
-Usually more affordable		

Dormant Bareroot Plants **VS** **Potted Growing Plants**

Look For

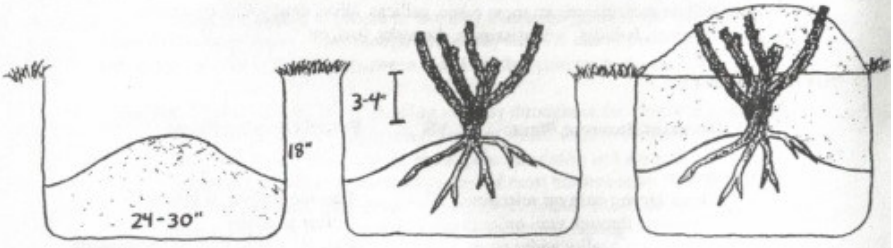
-#1 grade plants
-Strong plants without broken or damaged canes and having as many of the original roots as possible
-Avoid packaged plants displayed for extended periods in warm dry stores or direct sunlight

-Symmetrical and healthy plants with no signs of disease or water stress

PLANTING

Bareroot Plants

-Plant as soon as soil is workable and plants are available. Root growth can begin well before temperatures warm enough to stimulate shoot growth.
-Prune canes 6-8" in length from bud union or crown and 1/4" above an outward facing bud. Remove cracked, weak, or broken sections of canes and roots.
-Soak plants in water, or water with a plant starter, for a few hours to up to a day before planting. Do not allow plants to dry out.
-Loosen soil approximately 18" in depth and 24-30" in width for most garden roses (smaller roses at maturity can have a proportionately smaller hole).
-Remove enough soil from the hole to create a cone allowing roots to be symmetrically spread. The cone needs to be deep enough to allow the bud union or crown to be 3-4" below final soil surface. The added planting depth will give extra protection to help survive our harsh winters.
-Spread plant's roots evenly over mound and fill soil in to about ground level. Water well, allow soil to settle, and then add more soil mounding it over the canes. Water again and lightly mulch. The mound helps to keep canes from drying out as the root system establishes itself.
-When new growth emerges, carefully wash mounded soil to final soil level, create a shallow basin about 2' in diameter to help collect water, and mulch.



Prepare Hole.

Adjust cone so bud union or crown is 3-4" below final soil surface.

Fill soil to final soil surface and water well. After settling, mound soil over canes, water well, and lightly mulch.

Potted Roses

-Loosen soil approximately 18" in depth and 24-30" in width for most garden roses (smaller roses at maturity can have a proportionately smaller hole).
-Remove plant from pot and gently separate roots if heavily pot bound.
-Plant with crown or bud union as realistically possible to the 3-4" below final soil level. Avoid burying leaves to accomplish this since they will rot. You may strip off some lower leaves to be able to plant a little deeper.
-Water well, form a shallow basin around plant to help collect water, and mulch.

GROWING ROSES IN CONTAINERS

Raising roses in containers allows one to have plants on a deck or patio where they may be more easily admired and also be moved around during the growing season. Some tips when growing average sized roses outdoors in containers are to plant in containers at least 10-15 gallons in size and to raise containers off the ground with bricks or wheels to ensure good drainage. Miniatures can be grown well in smaller pots. Plant in a well draining soil mixture and check plants for water regularly. During winter extra protection must be given. Uproot the whole plant and protect it like what is described later for tree roses. Plants can then be replanted in the container or garden in spring. Another option is to store the plant and container in all in a root cellar or similar place where the plant will stay right above or a little below freezing. Check stored containers periodically for water so soil doesn't totally dry out.

FERTILIZATION

There are 16 identified elements that plants need to grow. They are categorized into three groups depending on the relative quantity that is needed.

Macro nutrients-Nitrogen, Phosphorous, Potassium, Carbon, Hydrogen, and Oxygen
Secondary nutrients-Calcium, Sulfur, and Magnesium
Micro nutrients-Iron, Manganese, Molybdenum, Chlorine, Boron, Copper, and Zinc

These essential elements are available to plants as either cations (ions having a positive electrical charge) or anions (ions having a negative electrical charge). The exceptions are carbon, hydrogen, and oxygen which a plant receives primarily as water and carbon dioxide. Most soils have a naturally negative charge allowing cations to be held more easily within the soil. Since plants can only absorb nutrients (except C, H, and O) as electrically charged ions dissolved in water, fertility goes hand in hand with good watering practices.

There are a few ways to apply inorganic fertilizers with each having a different ease of application and effectiveness. Begin fertilizing in early to mid-May after new growth is evident.

Spikes: This method is the least labor intensive and also the least effective. Fertilizer is heavily concentrated around the spike creating localized "hot" spots

and nonuniform nutrient availability throughout the root zone. Usually two applications are made per season.

Granular: This method takes only a few applications per season and is more uniform than spikes when applied evenly over the soil surface.

Liquid (or water soluble): Since plants take up nutrients as ions dissolved in water, this method is the most immediate and effective way to make nutrients available to plants. This method of fertilization is recommended at 2 week intervals and can also be used as a foliar feed directly sprayed over the plant if temperatures are below 90 degrees F. Application time can be saved through using siphons or siphons in conjunction with drip irrigation. If one is interested in growing the best roses or garden possible, this is the method to choose. Many of the liquid soluble fertilizers have not only NPK, but also secondary and micronutrients as well. Miracle Grow and Rapid Grow are examples.

Organic sources of nitrogen and other nutrients include such things as blood meal and composted manure. The forms that the nitrogen ions and other ions are absorbed by the plant does not necessarily differ between inorganic and organic sources. A challenge with organic fertilizers is that a lot is needed since they are bulky and have a relatively low nitrogen level. Using a combination of both sources each year is a wise choice. Sidedressing organic matter is beneficial to the soil beyond a fertilizer source, and the ease and certainty of nutrient levels in inorganic fertilizers can still be utilized.

IRRIGATION

Water is vital to plants. It's used for such things as photosynthesis and other biochemical reactions, nutrient uptake, turgor pressure, and transpiration (water evaporating off the plant to cool it down). During the growing season, roses need about 1" of water per week and even more in hot weather. The 1" or so of water includes what comes as rain and from watering. When any plant is experiencing water stress, growth will be dramatically reduced.

When watering, it is important to water deeply and less frequently compared to shallowly and more often. Watering shallowly encourages roots to concentrate near the surface and be more susceptible to drought. Having a couple inches of mulch over the soil surface is essential to help retain water. Mulch also has other great benefits such as keeping the soil temperature even, reducing weeds, and helping to prevent disease. One type of mulch to avoid is rocks. They can absorb too much heat from the sun and become a nuisance as they appear in the lawn and become mingled with rotting leaves and debris. Also avoid hay (it may contain weed seeds), lawn clippings having had an herbicide application, and wood mulch from trees like black walnut that contain growth inhibitors.

Water Application

Overhead Irrigation: Sprinkling water over a plant's foliage can encourage disease. If this method is chosen, water early in the day so foliage can dry relatively quickly. If watering by hand with a hose, try to aim water directly to the soil without

hitting leaves. The use of a water wand can reduce splashing.

Drip Irrigation: This method wastes less water than overhead irrigation since water is directed to the root zone and less is lost through evaporation. Surprisingly, a significant amount of sprinkler applied water can be lost on a hot dry day as it is shot through the air. Drip irrigation avoids wetting foliage and in the long run can save time and money on water.

PRUNING

Spring

For hybrid teas, grandifloras, minis, and some shrub roses:

-Remove dead, spindly, and weak wood.
-Open up center of plant by removing crossing and crowded canes.
-Prune so the topmost bud is facing outward to direct growth symmetrically.
-The more severely a plant is pruned the fewer blooms there will be, but the blooms will be larger and on stronger stems. If a lot of color is wanted, prune less severely, but if high quality cut flowers are desired, prune more severely.

For climbers and many of the antique and shrub roses:

-The first three principles apply from above.
-Do not prune healthy canes back severely since most of these rose cultivars bloom predominantly from side buds from the previous season's canes. The goal for these roses is to be able to over winter and keep as much healthy wood as possible.

Rejuvenation Pruning: Each spring after a plant is established, prune out about 1/4 to 1/3 of the oldest canes at their base to encourage new strong canes to replace them. The plant will benefit from increased vigor and health.

Summer

Do a minimal amount of summer pruning. Remove spent blooms down to a strong outward facing bud if rose hips aren't desired, and also prune to remove broken canes and to keep the plant in bounds and looking symmetrical.

GARDEN ROSES AS CUT FLOWERS

When to cut: Cut late in the afternoon when the plant's natural carbohydrates are highest.

What stage to cut: Cut no sooner than when the bud is showing color and outermost petals are becoming loose.

Extending vase life:

-Recut stems underwater at a 45 degree angle.
-Keep in a cool place.

-Do not allow leaves to be underwater since they will decompose.
-Use a floral preservative. A floral preservative:
-reduces pH of the water to more closely match the pH inside the rose.
-provides sugar as an energy source.
-has an anti-bacterial and anti-fungal ingredient to prevent stems from becoming clogged with these organisms.

A simple home floral preservative is to add to one quart of water: 2 tablespoons of lemon juice (reduces pH), 1 tablespoon sugar (carbohydrate source), and ½ teaspoon of bleach (suppresses microorganisms).

Try exhibiting roses at fairs and area rose shows. It can develop into an enjoyable hobby.

DISEASES AND INSECTS

Fungal Diseases

The best preventative is to select cultivars having a high resistance to these diseases. Ways to learn of these rose cultivars are to ask what fellow rose growers in your area suggest, or to visit area parks and arboretums late in the season looking for cultivars showing little or no signs of disease. Choosing a site with good air circulation, mulching, and keeping plants healthy will also benefit against disease. If you select resistant cultivars and provide an environment that deters disease, you may not experience a disease problem at all.

Blackspot: This is the most prevalent disease for roses in the Mid-West. Dark circular lesions develop usually on the lowest leaves first and then spread throughout the rest of the plant. The dark spots grow in size until the whole leaflet turns yellow and falls off.

Prevent by:

-Keeping foliage dry when possible.
-Reducing rainsplash from soil to lowest leaves by mulching and stripping off some of the lowest leaves.
-Removing diseased tissue to reduce spore inoculum.

Powdery Mildew: This disease affects usually only the newest growth. Tips of new growth become covered with a white haze of fungal mycelium and become curled and distorted. Sometimes a purple hue develops on infected tissue. There are many truly mildew resistant cultivars available and our climate tends to be less conducive to the disease than other areas of the United States.

Prevent by:

-Providing good air circulation and mulch.
-Removing and destroying badly infected tissue.

Another option to aid in the prevention and control of these and other fungal diseases is to use a chemical fungicide and to rotate chemicals between spraying. Always read labels carefully and take suggested precautions.

Insects

It is often sufficient to control destructive insects when encountering them instead of spraying to prevent them. The most common destructive insects in our area are usually aphids and various caterpillars. They can be controlled by physical removal and/or spraying. By removing destructive insects by hand, beneficial insects won't be harmed. Using a water wand on the undersides of leaves seems to wash many caterpillars onto the ground where they die and may even be eaten by birds. Insects are usually not a continual problem. The key to insect control is to periodically inspect roses and respond if insect damage is becoming more than you can tolerate.

WINTER PROTECTION

Unfortunately, many people in our climate are fearful of growing roses due to past plant loss over winter. Thankfully, there are many winter hardy roses being made available to us today for our climate. In the past the upper Midwest was ignored for the most part by those that market roses. Large rose growers in Arizona, California, Oregon, and Texas grew mostly modern winter-tender hybrid teas, grandifloras, and floribundas and sold the same cultivars from Florida to Wisconsin. Because of the recent demand for roses to use in landscaping and for generally more winter hardy roses for the Northern climate, these growers are raising some of the hardier cultivars. Many of these hardier roses have been around for over a century. Recent hardy introductions are also available from breeding work done mostly in Canada and Germany. When growing grafted plants, try to buy roses on *R. multiflora* or *R. canina* rootstock since they are more winter hardy and longer lived in our climate than if on Dr. Huey rootstock.

How a plant tolerates cold

When water freezes on our window panes we often see interesting patterns as the ice crystals branch and grow in size. If allowed to form in plant cells, these ice crystals mean death. The cell walls and organelles within the cells rupture beyond repair. This is the cause of most of the dieback we see in the spring, and this is especially true on stem tips that were actively growing and succulent entering winter. Hardy plants combat this phenomenon by increasing their sugar and soluble salt concentrations and by taking advantage of a process called supercooling. When sugar and soluble salts are dissolved in water, it will not freeze at 32 degrees Fahrenheit, but at a lower temperature (this is why we put salt on our sidewalks). These solutes at most can prevent cellular water from freezing at about the mid 20's F. Beyond this point, supercooling is what the plant must

use. Supercooling is when cellular water is removed from within the cell and pushed out between the cells where it is allowed to freeze safely. The better a plant is at doing this, the lower the temperature it can tolerate before dying. Water in very thin films resists freezing, making the goal of supercooling to have just thin films of water around organelles in cells with the rest of the water pushed between cells. In addition to providing some insulation for our more tender roses we have chosen to grow, our goal as rose growers is to help provide conditions that encourage plants to go into natural dormancy in the fall.

Cultural practices to stimulate dormancy and enhance winter survival

Discourage succulent late-season growth by:
- -Ending fertilization in late-July.
- -Not pruning heavily in late Summer or Fall.
- -Discontinuing to deadhead spent blooms in September.

Encourage sugars to accumulate and healthy soluble salt levels by:
- -Maintaining good watering practices throughout the Fall.
- -Preventing diseases and severe insect damage.

Insulating the more tender roses

The goal of protection isn't to keep the frost out, but to keep it in and to prevent extreme temperature variations. The best insulator available to us is soil. Begin to mound up soil around the crowns of your tender bush roses in mid to late September. Gradually increase the mound to a foot or so for most average sized garden roses. Finally, after the soil is frozen hard, mulch well with leaves, boughs, hay, or straw to keep frost in. In spring carefully wash soil back with water and prune after buds swell. The only Fall pruning gardeners should do is to remove height on tall canes that are planned to be trimmed in spring anyway. This is done after all growth has ceased to prevent canes from whipping in the wind through winter and cracking near the crown. Avoid rose cones in our climate because in early spring they accumulate too much heat and humidity on warm days and will cause molding.

Tree roses need special protection in our climate. The decorative cultivar we enjoy is grafted to the top of the tree with the trunk being a different rose. It is therefore important to make sure not only the top, but also the whole trunk over winters well. The best way to protect a tree rose is to dig the whole plant up as late as possible, but before the soil freezes. Next, strip off remaining leaves of the plant, prune back the top some to make it easier to handle, bury it sideways with soil in a trench, and mulch. After replanting in spring give protection from drying winds and late frosts.

Since climbing roses and some antique and shrub roses bloom predominantly off of the previous year's canes, it is important to protect as much wood as possible of the more tender of these cultivars. One method of protection

for these roses is to carefully bend canes down to the ground, mound with soil, and mulch. Roots on one side of plant may be loosened to aid in bending the plant over (Minnesota tip method). Another method for the slightly hardier cultivars is to mound as described above for bush roses and then create an upright enclosure with wire or wood to accumulate dry mulch around canes. When using a larger volume of mulch, use straw, wood chips, or chopped corn cobs that will not get as waterlogged as most leaves will. In the use of mulch to directly insulate canes, it is wise to add rat poison so mice won't find a warm home and knaw rose bark off for food. On the first warm days of spring, begin to slowly remove mounded mulch so heat doesn't build up and mold develop.

My desire from organizing this information is to help you experience the enthusiasm and joy I have had over the years from raising and breeding roses. May you be inspired to make room in your yard for some more this next spring.

SUGGESTED ADDITIONAL RESOURCES

Organizations:

The American Rose Society
P.O. Box 30,000
Shreveport, LA 71130-0030
-Membership includes a monthly magazine and a yearly book called **The Rose Annual**

Rose Hybridizers' Association
c/o Larry Peterson, RHA Sec-Treasurer
21 S. Wheaton Road
Horseheads, NY 14845
-Membership includes a quarterly newsletter devoted to subjects on raising new hybrid roses from seed.

Books:

Hardy Roses, Robert Osborne, Garden Way Publishing, 1991, ISBN number 0-88266-739-4.

All About Roses, Ortho Books, Monsanto Company, 1995 ISBN number 0-897-21256-8.

Roses for the North: Performance of Shrub and Old Garden Roses, University of Minnesota Extension publication MR-6594-GO

About the author:

David Zlesak earned a Bachelor of Science degree in Horticulture from the University of Wisconsin at River Falls and is currently working on a graduate degree in Plant Breeding and Genetics at the University of Minnesota. David started growing roses in 1980 and has been breeding them for increased winter hardiness and disease resistance since 1985. Along with roses, David also enjoys breeding other ornamentals for greater adaptation to our Northern climate. You can contact him at:

zlesak@rocketmail.com