



*An Organic Approach to
Rose Selection and Care*

ROSE Primer

by Orin Martin.



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A Rose Primer: An Organic Approach to Rose Selection and Care (3rd printing)

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Foreword



Roses are arguably the most popular plant in the home garden, but are often considered impossible to grow successfully without doses of chemical fertilizers and pesticides. This publication is part of a project funded by the Stanley Smith Horticultural Trust to demonstrate

the way that healthy, thriving roses can be grown using an organic approach. Although focused on rose growing conditions in Santa Cruz County and the greater Monterey Bay Area, there is plenty of information that will apply to those cultivating roses in other regions.

A primer is defined as “a book that covers the basic elements of a subject.” In this primer, organic gardening practitioner Orin Martin discusses the basic steps involved in cultivating a healthy rose plant. Organic pest and disease control options are addressed, but the emphasis here is on selecting, establishing, and caring for your roses in a way that gives them the best chance to thrive in an organic setting — what Martin calls a “plant positive” approach. Granted, roses can be a finicky lot, subject to a myriad of fungal diseases and pests that even conventional sprays won’t completely control. Creating optimal conditions for your roses through careful site selection, a well-balanced fertility program,

proper watering, aggressive pruning, and most of all an awareness of your plants’ ongoing needs is the best way to enhance their chances for success.

Martin also reviews the various classes of roses: old-fashioned, modern, and David Austins (a blend of old and new) and weighs in with some of the “greatest hits” from each class to give you ideas for plants that will best suit your taste and garden.

If you live in or plan to visit the Santa Cruz area, we invite you to stop by the Alan Chadwick Garden on the UC Santa Cruz campus to see the rose collection started by legendary gardener Alan Chadwick nearly 40 years ago (information on page 38). Chadwick recognized the importance of “working with, rather than overpowering nature” in the garden—we hope this booklet inspires you to do the same.

The Challenge of Rose Care

Before plunging into rose growing, ask yourself: Do I have what it takes to grow roses? What do they need? (The answer is, everything you've got!) Am I willing to take the good with the bad, for better or for worse, in sickness and health?

Roses require almost constant care: Modern rose bushes can easily absorb 5–10 minutes a day. You might be able to “lump up” and spend a morning a week, but delaying two to three weeks will be most unsatisfactory for you and the roses. When it comes to rose care, slow and steady wins the race.

Even if your care is skilled and on point, there is no guarantee of 100% success. It is almost inevitable that there will be stretches of cool-cold, gray-wet weather during any growing season that make your roses look like color plates from a textbook on rose diseases. Will that work for you?

Growing roses calls to mind Michelangelo's experience: the agony and the ecstasy. Fall behind on care, choose an inappropriate variety, or experience a stretch of poor weather and it's analogous to Dante's *Inferno*, the third Canto and “abandon hope all ye who enter here” — a frustrating and torturous affair. But when all goes well — the right variety meshed with properly timed care and inputs, coupled with favorable stretches of weather — it's a bit like the hand of God on the Sistine Chapel ceiling: sublime.



A Brief History



All garden roses, old and modern, are members of the genus *Rosa* in the family Rosaceae. Geologic records of fossil rose remains date back 35 million years. Today there are over 100 species (mostly wild) on the planet, and between 13,000–20,000 cultivars (varieties) of garden culture.

Wild roses are found solely in the northern hemisphere, from 20°–70° latitude, and include arctic species as well as North African and Chinese species. Most garden roses derive from about a dozen species of Eurasian origin. And as is so often the case in horticulture, China is home to the breeding parents of many old garden as well as modern roses.

The first cultivated roses were probably grown in Persian (Iran/Iraq) gardens starting in 1200–1500 B.C. The Greeks and Romans valued roses aesthetically in gardens and in their apothecaries. To this day, many naturalized but foreign rose species remain as wayside plants on the old Roman roads throughout Europe.

The rose, like much knowledge academic and aesthetic, persevered through the (dark) Middle Ages within the cloistered walls of European Christian monasteries. By the

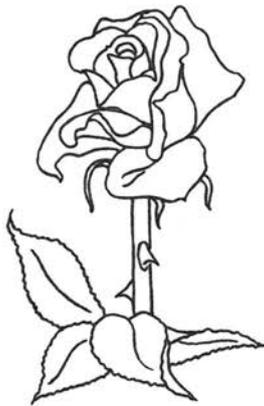
14th century and the blossoming of the Renaissance, wild and cultivated roses were ubiquitous in landscapes, painting, poetry, sculpture, on coins, etc.

But it wasn't until the 18th century in Europe that conscious rose breeding began in earnest. Using species and varieties of roses collected from Chinese gardens by traders and travelers, breeding efforts gave rise to the five major classes of roses we now know by the synonyms old garden, antique, and heirloom roses: Gallicas, Damasks, Albas, Centifolias and Mosses. Old garden roses, in turn, gave rise to modern roses: Hybrid Teas, Floribundas, Grandifloras and especially David Austin's English shrub roses or "new old-fashioned roses." Austin's roses are a highly successful attempt to combine the best qualities of old garden roses with the highlights of modern roses.

Old Garden Roses and Modern Roses Compared

Throughout this pamphlet there are references to old and modern types of roses. Later, specific cultivars of each class are discussed. What follows here is a brief review of the differences between old and new roses.

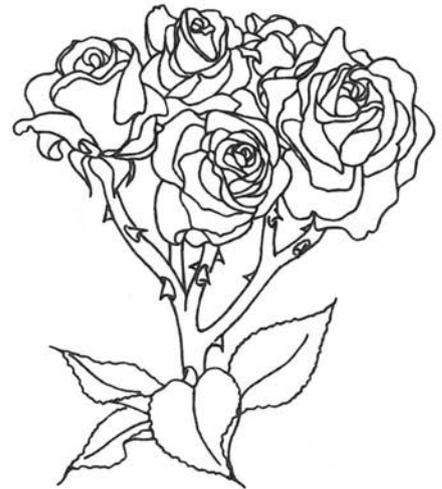
Unlike modern roses (e.g., Hybrid Teas), which share the same basic flower form and shape (high-centered, pointed buds), old roses cover a gamut of shapes: rosettes, deep and shallow cupped, pompom and single flower forms.



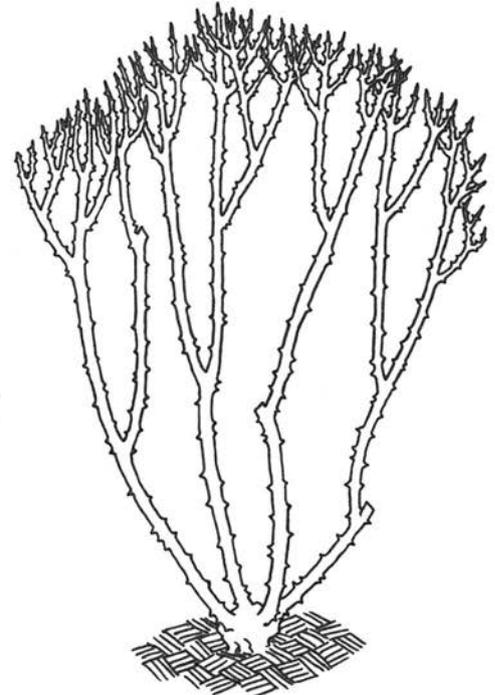
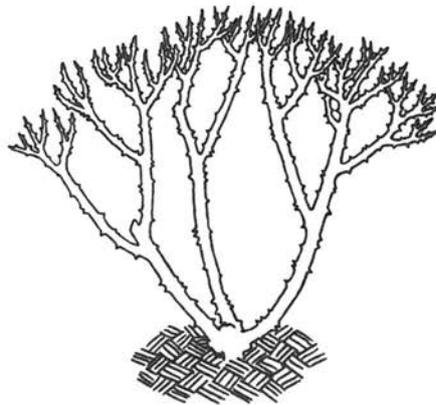
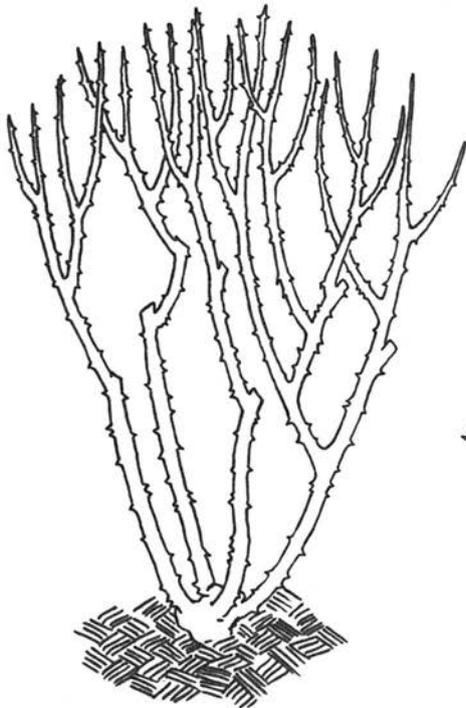
HYBRID TEA



FLORIBUNDA



GRANDIFLORA



Whereas modern rose flowers are at their apex in bud to partially open (thereafter they lose form, grace and often intensity of color), old roses look inconspicuous and even unattractive in bud. They hit their stride half to fully open, and although they are rarely repeat blooming, old roses compensate by creating an avalanche of blossoms and color when in bloom. The bloom period often lasts 4-6 weeks.

Compared to modern roses, old garden roses are limited in their color range. With pink being the natural color of most wild roses, old garden roses offer a lesson in the range of the color pink. While whites are represented, with few exceptions (the Damask variety Madame Hardy), they are not the pristine, pure whites of modern varieties. Shades of mauve, violet and purple are in evidence, but true crimson is a modern color. Yellow is almost unheard of in old garden roses.

The texture of old roses is largely about rich softness. The quality of color is subdued, subtle, and sophisticated compared to the showy colors of their modern counterparts.

As cut flowers, old roses may or may not have long stems and a long vase life. Modern roses, especially Hybrid Teas and Grandifloras, are the classic florist cut flowers.

Modern and old garden roses offer both scented and scentless varieties. There is a striking qualitative difference between their fragrances. Old garden roses offer a wider range of fragrances—significant yet subtle. Modern roses have strong scents and can be almost too much of a good thing.

Plant stature differs between old and new: Old roses are full shrubs with attractive foliage, often 5'x5' or bigger. New roses are more of a bush and often over-emphasize flowers in relation to foliage, so that they may appear bare or "chicken legged."

Even the small garden should be able to accommodate a blend of old and modern roses — the best of both worlds.

In a Nutshell: Characteristics of Old Garden Roses and Modern Roses

OLD GARDEN ROSES

Fragrant (subtle)

Generally not repeat bloomers

Flowers in balance with shape and size of shrub

Not a lot of blooms

Buds may be attractive but intricate; interesting cup shapes are highlighted when half to fully open

Color: subtle, range limited, whites, pinks, some reds; yellows rare, no orange or yellow-gold blends

Classes 40-45

MODERN ROSES

Fragrant or not (artificial, overpowering)

Flower factories, 3–5 rounds of bloom a year

Can be "gawky," awkward-looking bushes, stiff, formal, especially Hybrid Teas

Flower shape and color at peak in bud to slightly open, lose vibrancy and form when fully open

Color showy, gaudy, even artificial, rainbow range, many blends

Classes 3–10 Hybrid, Musks, David Austin, Romantica, Hybrid Teas; Floribundas (cluster); Grandifloras, etc.

DAVID AUSTIN ROSES (English Shrub Roses)

Combine aspects of both old and modern. Colors are wide-ranging (modern) yet subtle (old).

More attractive fully open

Flower forms like old roses (cups, rosettes, singles)

Shrub shape more like that of old roses

Fragrance subtle as old roses

Repeat blooming (a little less than modern roses)

Plant habit: graceful, arching foliage affect (old)

Getting Started



Once you've committed to growing roses — either those you've inherited in your landscape, or those you plan to purchase — there are a number of options to consider.

Sources: Mail Order vs. Retail

Unless you're buying roses in quantity or looking for rare offerings, especially heritage or old garden roses, buying retail has its advantages over mail order. Whether you're purchasing bareroot or container-grown roses, retail shopping lets you inspect and accept or reject individual plants. Quite often retail prices are on a par with or cheaper than mail order costs. High-end retail nurseries offer a plethora of modern bush and climbing rose varieties with the occasional smattering of heirloom types.

Types: Bareroot vs. Container Grown

As with fruit trees, the earlier in the season a rose goes in the ground (first safe planting date in your area) the sooner and stronger it establishes in year one. Bareroot roses planted in January are fully established shrubs in year two.

Bareroot roses are sold in three grades:

Grade #1 (best quality): Three canes starting within 3" of the bud union. Hybrid Tea canes must be at least 18" long, Floribundas 15" long, climbers 24" long.

Grade #1½: Minimum two canes. 15" for Hybrid Teas; 18" for climbers; 14" for Floribundas. Can produce good plants.

Grade #2: Two canes 12" long and of questionable vigor, quality and thus a bit like rolling the dice: 7, 11... or snake eyes?

Container-grown plants, usually available March through June, yield flowers the first spring but sometimes at the expense of overall plant establishment. Container plants also take more care and skill to successfully transplant in the garden, and cost approximately twice as much as bareroot plants. They will also establish twice as quickly as bareroot plants, although both methods yield cuttable stems in year one.

Caveat Emptor — Buyer Beware

Remember, while perusing color catalogues, that there has never been a poor-performing, disease-prone variety of anything, ever, in any catalogue description. It is all about superlatives — good, better, best. One of the advantages of container-grown roses is that they are often pushing buds

or in bloom at the time of purchase, giving you a chance to evaluate them in person. It is also a good idea to visit public rose gardens in the spring (April and May are the rose months) and see the real blooms, not color-enhanced photographs.

Rose growing, indeed gardening, is a bit about dreaming and a bit about realism. Go ahead and dream, but temper it with a good dose of reality. If after two (arguably three) years a rose has not performed for you, grit your teeth and “prune it with a spade.”

Do the detective work and ascertain why a particular choice didn't work out. Was it a matter of less-than-optimal care, or perhaps a poor varietal selection for your weather conditions? Some problems can be corrected, while others — such as climate — can be an ongoing source of frustration. And sometimes, as with hard-to-grow varieties of fruit (Blenheim apricot and Cox's orange pippin apple come to mind), the merits of a rose bloom in the vase outweigh the challenges of a variety in the garden.

Choosing a Location

Among the myriad requirements for successful rose growing is picking the “right” spot in the garden. Roses require a minimum of 6–8 hours a day of full sun during the growing season (more is better). Exceptions to this rule are Hybrid Musk roses. This intriguing class of roses, developed in the early 20th century, is capable of growing and blooming prolifically in moderate (40%) shade.

In warm interior locations roses prefer morning sun; in coastal locales the warmth of afternoon sun pushes growth and can keep foliage dry going into foggy evenings. In most species of plants, heat activates scent, so to a certain extent the warmer the spot the more you will avail yourself of fragrance. A wind-protected location will enhance both scent and growth.

Roses grow best in well-drained soils. In fact, poor drainage will trigger or compound many minor and a few major (and

potentially terminal) problems. Before planting your roses, perform this test: dig a sample planting hole two feet wide and 18 inches deep; fill it with water. It should drain within an hour (20–30 minutes is ideal). While any textural class of soil (sand, silt or clay) can grow roses (with assistance), medium-textured silts and well-drained, improved clays have more “grow power.” Sands require copious amounts of fertilizer and water.

Along with sun and soil considerations, give some thought to your rose view shed. Where do you walk, sit or pause in the garden? Roses show off their blooms best when viewed from slightly above or below eye level. Some roses should be placed on the edge of a well-frequented path, walk or drive, even at the risk of them meandering away from their appointed places and stabbing at you as you rush by. Because, you see, you really should stop and smell the roses now and again.

Some interesting candidates for path edges include:

Gertrude Jeckyl This David Austin rose is arguably the most intensely and exquisitely scented rose in creation.

Eglantine This species (wild) rose, made famous by Sleeping Beauty as the briar rose, is nothing much to look at: small (1”–2” across), pink, single flowers, a scraggly shrub that can't decide whether it's a bush or a vine, an infinite number of tiny, pain-inducing thorns. But when brushed or bruised or even undisturbed on a warm afternoon, the foliage wafts the scent of green apples up to 15–20 feet away.

Double Delight This Hybrid Tea is top of the charts for scented modern roses. The rub is, you have to look at the gaudy pink over white flowers (like something out of an ice cream sundae shop) that occur both profusely and frequently.

Madame Hardy Among the Damask roses, Madame Hardy offers the essence of the class along with pristine white blooms, each sporting a green “eye” at its center.

In a Nutshell:

Rose Requirements

- Sunlight** Minimum 6–8 hours/day direct sunlight. Note: hybrid Musk roses and the variety Gruss an Aachen do well in partial shade.
- Soil** Drainage is paramount, although roses can grow well on any textural class (sand, silt, clay) if amended and improved.
- Water** Modern bush roses are shallow-rooted (2' wide by 18" deep) so shallow/frequent watering is required 1–2 times a week (thus the need for good drainage).
- Fertility** Moderate nitrogen to grow the bush; high phosphorous for good root development and free flowering; moderate potassium for stem strength (see Fertility, page 11, for specifics). Frequent inputs: annual compost and mulch application after winter pruning; application of concentrated granular or pelleted fertilizer and compost coincident with dead-heading and summer pruning after each round of bloom. Optional: periodic liquid nitrogen (fish emulsion) soil drench.
- Protection** Protect blooms and foliage and reduce water loss by protecting the plant from wind.

Planting

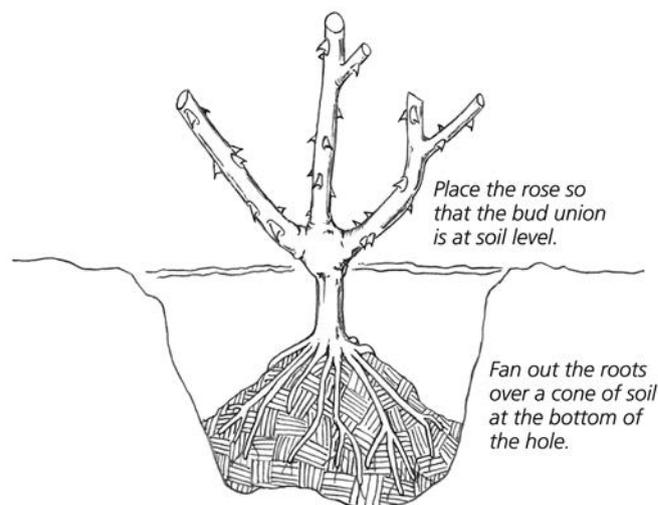


The old gardening quip, “Don’t plant a \$5 tree in a 50 cent hole,” needs to be adjusted for inflation and roses: “Don’t plant a \$15 shrub in a \$5 hole.” The planting hole needs to be wide and deep enough to accommodate

the plant’s eventual mature root system — in general, two feet wide and 18 inches deep is adequate. The bottom of the planting hole should be fashioned with a soil cone (for bareroot plants) to accommodate and spread the roots. Roots can be trimmed slightly to fit in the space available. If the roots appear dry (bareroot), soak them for 1–2 hours prior to planting.

It is arguable as to whether even moderately fertile fill soil needs to be augmented with compost/fertilizer. If it does, no more than 25–30% by volume should be added. The best and easiest strategy for enhancing fertility at planting time is to top dress with a concentrated rose fertilizer, compost and mulch (see Fertility, page 11).

The fill soil should be firmed in incrementally as you fill the hole. The bud union (basal swelling above the shank) should be positioned at or slightly above soil level in mild winter areas. Orientation of the bush is not critically important; whatever angle/presentation appeals to your aesthetic will



be fine. Creating a watering basin (18”–24” deep) around the bush will aid in initial watering and can be maintained or smoothed over eventually, depending on your watering method.

The initial watering in of the new plant could be more accurately described as “puddling in.” It is critical to thoroughly wet all the soil in the planting hole and ensure good root-soil contact. As the soil dries down (in the top 6”–8”) to the

point where it no longer balls together when compressed by hand, reapply water. At no time can a rose tolerate a water deficit and perform well.

Most texts recommend mounding up soil 8"–12" high at the base of the plant for a short period (until growth starts) to prevent the shrub from drying out. I find this practice to be laborious, injurious and absolutely unnecessary in all but the windiest locations. Mulching with compost, wood chips, straw, cocoa bean, or rice hulls helps protect the surface structure of the soil, reduces water loss, acts as a physical barrier to fungal spores, and has a pleasing visual effect.

In a Nutshell: Rose Planting Guide

Timing	Dormant season (January–March 1) for bareroot Late winter into early summer (late February–June) for container
Spacing	Hybrid Teas 3'–4' Grandiflora 3'–4' Floribunda 2'–4' David Austin 3'–5'
Planting hole	2' wide x 18" deep
Fertilizer	Augment fill soil with 25–30% well-aged compost. Top dress with concentrated rose fertilizer and compost
Prep plants	Soak roots (bareroot) 1–2 hours prior to planting; trim injured roots Pre-wet soil in container and minimize soil ball disturbance; transplant in late afternoon
Placement	Place spread roots over a soil cone (bareroot) Place bud union (swelling) slightly above soil level
Watering	Soak soil, create good root-soil contact Create a watering basin
Pruning	Remove any dead or damaged wood, cut back canes (evenly) to an outward facing bud
Mulch	Mulch soil surface with compost, wood chips, straw, cocoa beans or rice hulls
Understory	No weed or understory planting/competition

Rose Care



Watering

Water is the pulse of the garden, carrying nutrients suspended in solution through the pore space in the soil and into the plant, growing and giving it turgor — the ability to stand erect.

Don't skimp on frequent (1–2 times/week), moderately deep waterings, particularly with modern roses and newly established plants. At no time should your rose suffer what orchardists call a water deficit.

In warm climates, overhead sprinkling can cool the leaves and unclog dust on the stomata (openings on underside of leaves). But in cool, wet climates overhead water = disease! Avoid it at all costs.

Fertility

Modern roses are generally rampant growers and prolific bloomers. This pattern of growth needs to be supported by copious amounts of concentrated fertilizer. Compost (well-aged and stabilized) is a good component of a rose fertility regimen, but not sufficient unto itself. The good thing about compost is that it is slow acting and provides nutrients over the course of the season, but because roses are heavy feeders, they can't rely solely on compost's relatively slow pace of nutrient release.

In a Nutshell: Watering Your Roses

Good drainage is essential

Sandy soil texture: improve water retention with organic matter.

Clay soil texture: improve drainage with organic matter

NEVER overhead water in cool, wet, or foggy climates. Use drip tape, soaker hose, drip emitters, micro-sprinklers, or hand watering. If you must overhead water, do so early in the morning of a sunny, windy day. Never water in the afternoon, especially with fog on the horizon.

When soil is dry 6"–8" deep so that soil will not quite ball up, it's time to water

Apply approximately 1"–2" water/week

Aggressive watering after the finish of a round of bloom, coupled with fertilization, spurs on new vegetative growth

Roots will extend 18"–24" deep and just beyond the plant's drip line (the point at which water drips from its outermost leaves)

From the outset of growth (post pruning in January–February through the first round of bloom in April–May), roses demand large amounts of macronutrients in a compressed period to partition into root, shoot, leaf and flower production. Thereafter they demand a re-upping of nitrogen, phosphorous and potassium to stimulate new vegetative growth and another round of long, strong-stemmed, big blooms. Because they tend to be shallow-rooted, a surface application of nutrients followed by an application of water leads to efficient and rapid nutrient uptake. Every time repeat bloomers (most modern roses) finish a round of flowering, they should be cleaned up (remove diseased foliage, dead-head, summer prune, fertilize and water aggressively) to stimulate a new round of bloom in 4-6 weeks (see Summer Care Program, page 20).

During the initial phase of growth (post pruning) soil temperatures are usually too cool (<50°–55° F) for optimal, if any, nutrient uptake from soil and/or compost. During this period, concentrated dry fertilizers supplemented by foliar feeding best meet plants' needs. Remember that, as with trees, roses' roots start to grow considerably sooner (3–5 weeks) than above-ground growth is visible. Thus initial fertilization should follow on the heels of pruning.

Foliar feeding (as often as once a week) with compost tea, fish emulsion, liquid kelp, etc. is a quick-acting pathway (through the stomata, or openings, on the underside of leaves) for nutrient uptake. A soil drench of similar substances (once every 10–14 days) is intermediate between quick-acting foliar feeding and slower-acting solid fertilizers.

Thus with roses, a two-pronged approach is best : 1) a large volume of potent fertilizers at the outset of the season, after each round of bloom, and/or once a month, combined with 2) the “gentle nudge approach” — more frequent and dilute applications of foliar feeds and liquid soil drench.

Old garden roses are far less demanding when it comes to fertility needs. Once established, they can thrive on an application of compost every 1–3 years, combined with moderating pruning. Old-fashioned climbers and ramblers can be completely ignored once established.

In a Nutshell: Fertility Guide

Timing:

- Immediately after winter pruning
- After each round of bloom
- Foliar as often as 1x/wk
- Liquid soil drench as often as every 10–14 days
- Stop before August-September so as not to promote growth too late in season

Substances:

- Compost
- Composted chicken manure
- Concentrated pelleted time-release fertilizers
- Formulated rose/flower fertilizers
- Fish emulsion
- Compost tea
- Liquid kelp

Methods:

- Surface applications (solid)
- Backpack sprayer (foliar/liquid)
- Water can at base (liquid)

Nutrient Sources

Mixed compost

Well-rounded, slowly available nutrient source. Compost has a “half-life”, i.e., approximately half of the nitrogen is available in year one, half of the remaining N is available in year two, etc. While different composts have different nutrient values, on average you can expect compost to contain:

- .5–2% Nitrogen
- .3–3% Phosphorous
- .4–3% Potassium

Apply compost 1”–2” deep around and slightly beyond the bush’s “drip line” (the point where water dripping from the outermost leaves falls).

Composted chicken manure

Highest N and P source of any organic composted manure:

- 2–4% Nitrogen
- 4–6% Phosphorous
- 2–4% Potassium
- 8–10% Calcium

Apply 1” deep

Seabird and bat guano

Both these substances share many similarities:

Fast-acting (either a high N formulation: Seabird 12-8-2, Bat 10-2-1) or a high P formulation (a function of the source of diet): Seabird 1-10-0, Bat 3-10-1

Extremely water soluble (as in here today, gone tomorrow, lasting approximately 30 days)

High cost: \$13-15/5 lbs, \$30-40/20 lbs

Blood meal

This is a fast-acting, potent source of nitrogen:
12-14%N, 0%P, 0%K \$15/25 lbs

Time release pelleted organic fertilizers

These products are the organic equivalent of conventional osmocote-type fertilizers. They release their nutrients slowly over a 30–90 day period and come in differing NPK amounts. California Organic fertilizers (available from Peaceful Valley Farm & Garden Supply):

Ichaboe Plus	11-5-2	\$20-30/50 lbs
PrePlant Plus	7-5-7	
Veggie Mix	8-5-1	

Sustane All Natural Organic

Primarily composted turkey manure and litter, feather meal and potassium sulfate:
4-6-4

Various formulated organic rose/flower fertilizers

Composed primarily of high N and high P meals:

Whitney Farms Rose/Flower Fertilizer
5-8-4 \$18/15 lbs

E.B. Stone Organics
Also contains beneficial microbes and mycorrhizae
5-6-3 \$16/15 lbs

Dr. Earth Organics
A very effective fertilizer, partly due to the stimulating effects of microbial inoculants
5-8-4 (contains microbes and mycorrhizae) \$29/25 lbs

Pruning

If you do nothing else to your roses, prune them and prune them relatively hard during their dormancy (December through early February; see below for summer pruning). The harder you prune, the stronger, the longer and the healthier the regrowth the next growing season will be. Heavy winter pruning and lush new growth rid the plant of older, weak, diseased wood.

Without devolving to stereotyping, there are two basic pruner personalities: *Whackers* (people who, when unsure, practice the age-old adages: when in doubt, cut it out, and don't think, just cut) and *Hair Cutters* (those who, when faced with a 30-foot apple tree or a 20-foot house-eating rambling rose, wonder if it'd be okay to just snip a little here... and after some gut wrenching, agonized decision-making ...a little there).

I believe it was the Buddha who once said something about the middle path. A basic understanding of the two types of pruning cuts and their consequences, in tandem with clearly articulated goals and familiarity with the type of rose and its varietal characteristics, will result in stress-free and horticulturally productive pruning sessions.

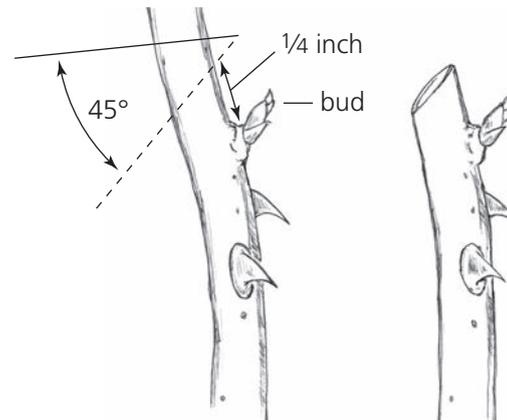
Types of Cuts: Heading and Thinning Cuts

Heading Cuts: The cutting back of a portion of a cane. The top bud remaining on the cane will initiate new growth (in the direction the bud is facing — think of the bud as an arrow pointing to where the new growth will go). The vigor of the new growth is directly proportional to the amount of wood taken off the plant—the harder the cutting, the stronger and longer the regrowth.

Note: Unlike pome fruits (apples, pears) there are no shortening cuts with roses. A shortening cut implies cutting slightly into two-year-old wood. The result in apples is no appreciable regrowth — it stops growth.

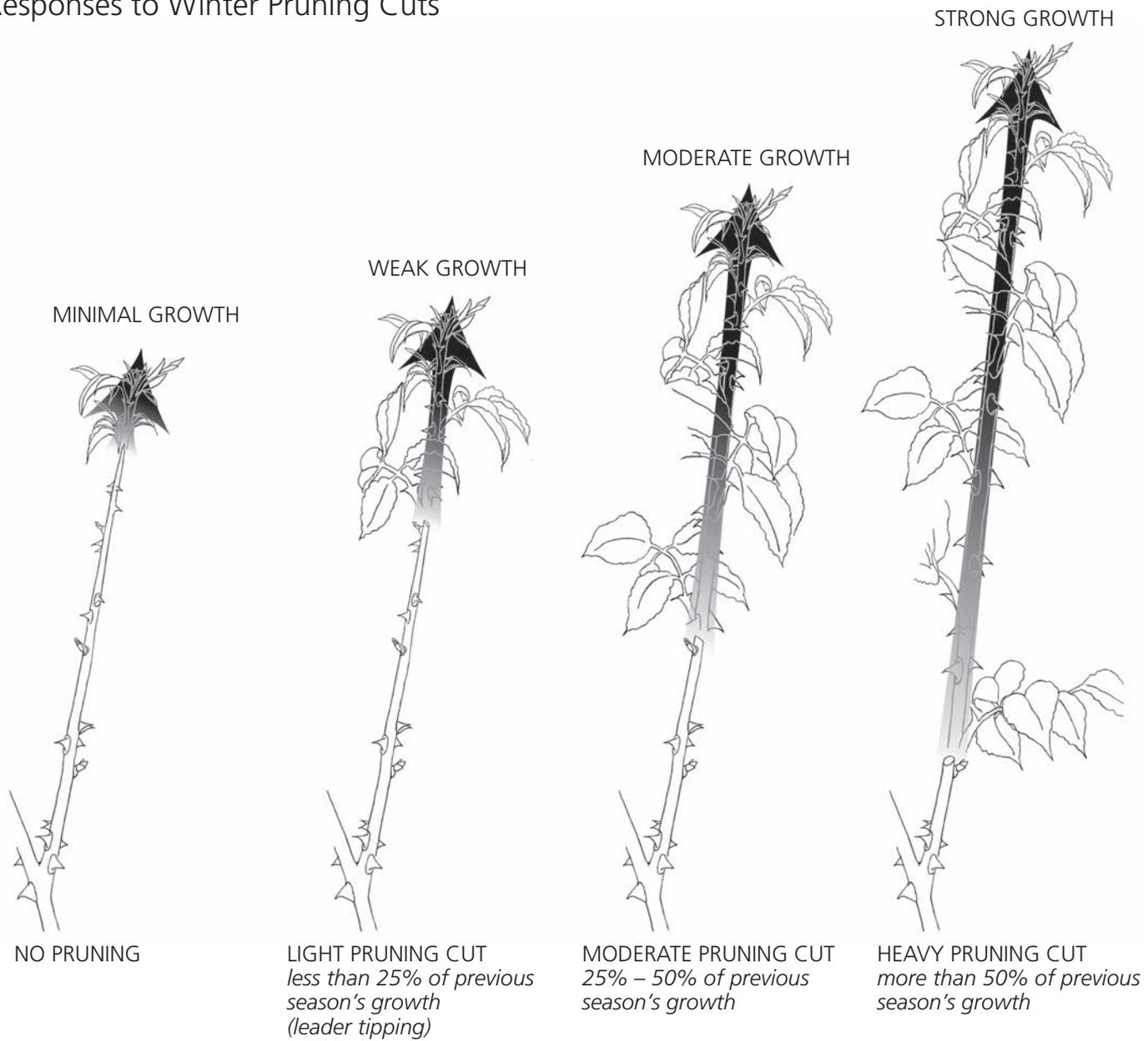
Thinning Cuts: The complete removal of a cane or branch at its point of origin. Thinning cuts are used to thin out and open up a bush to sunlight and air circulation, which helps minimize disease. The goal with roses is to produce an open-centered, vase-like slope to the bush. If done correctly there should be no regrowth after a thinning cut, as there are no buds left to regrow the branch. Check the bush at the outset of the growing season and pinch off any latent buds that express themselves.

How to Cut: Using sharp pruners, cut above a bud facing the desired direction of regrowth. Cut at a 45° angle sloping away from a bud so that water sheds away from, not into, the bud. Cut tight to the bud, leaving only a 1/8"–1/4" stub; leaving a longer stub may cause die back (a blackening and dying back along the stem, a few inches to the entire cane). Generally, cut to an outward-facing bud — new stem growth will be in the direction the bud points.



While in general roses require heavy pruning once a year, there are no dogmatic strictures when it comes to style and technique. Most roses (modern classes) bloom apically (at the tip) on current season's growth. The thicker the cane, the longer and stronger the stem and the bigger the bloom. Again, there are no absolutes, right or wrong. There is much latitude and it's a study in the art of form and/or personal preferences.

Responses to Winter Pruning Cuts



In a Nutshell:

Rose Pruning Guide

Modern Bush Types

Look at bush, study its characteristics, know its class

Decide on degree of pruning: light, moderate, hard. Know what you want to achieve:

- Prune lightly to get lots of small and medium-sized flowers, early in season for display or landscaping effect
- Prune hard to get a few long-stemmed, big flowers later in season
- Prune moderately to get a combination of both

First remove the 4 "D's": dead, damaged, diseased and disoriented

Remove any main canes less than 1/4" diameter or cut back canes until they are at least 1/4" diameter

Leave 3–9 well-positioned canes around the bush: 2–3 one-year-old canes; 2–3 two-year-old canes; and 2–3 three-year-old and older canes

The goal is to create an open-centered plant, thus always cut to an outward facing bud. Regrowth is in the direction the bud points.

Prune repeat-blooming roses in late winter (December–early February in Santa Cruz) or before growth starts. Prune roses that flower once annually only after they bloom (April–June). They bear on 1–2 year-old wood.

Hybrid Teas

Cut back one-third to one-half of last year's growth

Grandifloras

Generally pruned as Hybrid Teas. As they tend to be taller and thicker, do more thinning of canes and generally leave all canes longer than 3½'–5'.

Floribundas

Do not respond favorably to heavy pruning. Cut back main canes lightly, a little less than one-third of last year's growth. Thin out weak, twiggy growth at tips of branches. Note that many Floribundas feature a moderate twiggy growth habit, so don't apply the 1/4" diameter rule too strictly. As a rule, cut back the weakest canes the hardest to induce strong growth and the strongest canes the least to balance growth.

David Austins

Can be pruned like Hybrid Teas or Grandifloras

To create a bushy, many-branched plant, shorten long canes of current season's growth by one-quarter after bloom, and shorten laterals to a few inches. This can be done judiciously through late summer.

Older Varieties

Some older varieties that bloom repeatedly should not be pruned except to remove weak or dead growth and to thin out overly crowded canes. Their beauty is in a large plant with hundreds of flowers, and if pruned like Hybrid Teas or Floribundas they'll look awkward and have fewer flowers.

Disease Control

The principle diseases of roses are botrytis, black spot, rust and mildew (downy and powdery). And make no bones about it, roses are a disease-prone lot. This is all the more so if you reside in a cool, damp climate. While cool weather conditions often bring a vibrancy to flower color and intensity, they can wreak havoc with rose foliage and blooms.

Most spray programs call for conventional sprays every 7–14 days, April through October, to control fungal diseases. And yet almost all conventional rose growers suffer from some (moderate) fungal problems. To me it is a matter of risk: reward ratios—organic techniques can yield equal or nearly equal control of fungal diseases.

To control diseases in an organic garden, alternative sprays (see *In a Nutshell*, page 18) should be coupled with:

- Strict garden sanitation (picking up all fallen material once or twice a week)
- Periodic heavy pruning to remove infected wood and reinvigorate growth
- Picking infected leaves off plants
- A thick (3"–4" deep) mulch renewed periodically to act as a physical barrier against fungal spores splashing into the canopy
- A "plant positive" approach — a healthy plant, well-watered, fertilized and growing in microbially rich soil will be somewhat resistant to both disease and pests

DISEASE	SYMPTOMS	SOLUTIONS
FLOWER BOTRYTIS (<i>fungus</i>)	Gray-brown discoloring on flower buds and partially open flowers.	Dormant sprays of sulfur, good weather, low <35-40 petal count.
BLACK SPOT (<i>fungus</i>)	Lesions are found mostly on upper surface of leaves. Leaves turn yellow, and defoliate. On more resistant varieties leaves persist. Triggered by 7–8 hours of continuous wetness on leaves with temps. >55°.	Dormant sulfur sprays, good weather. Not wetting foliage. Heavy pruning to remove diseased wood. Ground sanitation, mulch. A spray of 3 teaspoons baking soda and 2 1/2 tsp. light oil per 1 gallon of water as a summer spray.
DOWNY MILDEW (<i>fungus, looks similar to black spot</i>)	Irregular-shaped lesions (spots) on underside of leaf, purple in color, then turning black, bounded by veins of leaves on one side, eventual leaf yellowing and drop may defoliate entire plant.	Dormant sulfur sprays, dry foliage, sunny weather, good air circulation. Ground sanitation, heavy pruning, mulch.
RUST (<i>fungus</i>)	Yellow/orange pustules first on underside of leaves, then spreading to topside and canes. Sometimes accompanied by black spot. Leaves wilt and fall off the plant. 65-69° ideal temp., accompanied by moisture or high humidity.	Dormant sulfur sprays, good air circulation, warm sunny weather, removing fallen and infected leaves. Heavy pruning, good sanitation. Baking soda light oil spray (see black spot solution).

- Growing resistant varieties — there are resistant but not immune varieties; however, some of the most alluring, must-have roses tend to be disease prone.

Note: The waxy, leathery foliage of Rugosa roses (*Rosa rugosa*), be they wild or cultivated varieties, offers almost bullet-proof protection from disease (though not insects). Any rose with such foliage will be more disease resistant — many Floribundas fit this class.

Rosarians argue endlessly (what else have they got to do besides be persnickety?) as to whether old garden roses are more disease resistant/prone than modern roses and *visa versa*. My experience says both categories are prone, with varietal exceptions in both camps. Basically, the environment trumps all; that is, if environmental conditions (cool climate and/or periodic cool, wet weather patterns) favor disease, you will have disease.

The remarkable and forgiving thing about roses is their rate of recovery, within a season and season to season. Early-season growth and bloom is almost always vigorous and healthy. With periodic bouts of bad weather and at the end of a round of bloom, disease will manifest. With aggressive treatment and good weather, recovery is mere weeks away.

Pest Control

Pest damage can be minimized with the “plant positive” approach described above—growing a healthy, well fertilized, watered, and pruned plant will help it resist pests. Diligent inspections to detect and deal with the pests that do crop up will help head off further infestations.

In a Nutshell:

An Organic Disease Control & Spray Program

Spray lime sulfur and dormant oil during dormancy (December–early February). Lime sulfur is a fungicide; dormant petroleum oil smothers eggs, insects, and mites.

Early in the growing season (late February–May) spray with micronized (fine particle size) sulfur for fungal problems if conditions warrant (55°–79°F and moisture on foliage for more than 7–8 hours, i.e., spring conditions in most localities).

With the onset of warm weather (May–June) spray periodically with fungicide/insecticide: mix 3 teaspoons baking soda and 2½ teaspoons light summer oil per one gallon of water.

Conditions that indicate spraying: Extended foggy stretches lasting more than 3–4 days; after each round of bloom, because older, beat-up leaves are more prone to fungal invasion, plus the leaves are weakened after manufacturing food for flowering.

Some varieties are prone to certain fungi, e.g., the Grandiflora Queen Elizabeth is a source point for rust (a fungal disease). If you’ve got Queen Elizabeth you’ve got rust. Deal with it proactively.

Overhead watering splashes fungal spores from fallen leaves on the ground into the bush, so don’t do it. Use drip tape, t-tape, or soaker hoses.

Other products available for fungal disease control:

- Neem oil products. Neem oil works effectively in low-disease-pressure situations for mildew, flower botrytis, rust, black spot and anthracnose. Products include:

Neem oil extract

Greenlight Rose Defense

Trilogy: broad spectrum neem oil

Max Power Organics Rose Protector (insects and disease) contains: white pepper, oil of lemongrass, garlic oil

PEST

APHIDS

ROSE CURCULIO

(rose weevil)

Reddish-bronze, long-nosed, winged beetle approximately 1/4-inch long. Each adult female will lay hundreds of eggs. Wild brambles are an alternate host.

FLOWER THRIPS

LEAF-ROLLER LARVAE

Larvae make cocoon-like structures with leaves.

SAW FLY LARVAE

Fly lays eggs on and under leaf surface

GOPHERS

They love rose roots!

SYMPTOMS

Curled, puckered leaves. Misshapen flowers. 1–2 cycles in spring on lush growth, and again prior to second round of bloom.

“Rambo” or shotgun effect on flower buds and petals. Blooms are desiccated, flower stems fail to stay upright. Generally one brief (3–5 week) cycle in spring as weather warms, 70–75°F.

Discoloration on flower buds and petals, blooms may fail to open. Occurs as weather warms.

Leaves stuck together, buds have a hole bored in them.

Skeleton-like leaf shredding. Veins remain, but rest of leaf is eaten. Can completely defoliate plant. Occurs April–May.

Plant damaged or missing!

SOLUTIONS

A jet of water or Safer’s insecticidal soap, hand control, predatory insects (beetles, wasps, flies)

Virtually no effective control except for hand picking. Remove spent blooms and hips, damaged blooms.

Beneficial insects as predators: beetles, lacewings, predatory wasps, flies, lady beetles, insect-eating birds. Remove damaged and old blooms.

Use Bt (*Bacillus thuringiensis*) as a spray.

Bt spray prior to infestation. Also hand control after larval stage if infestation is low.

Trapping or exclusion with wire basket.

Summer Care Program

Deadheading

The reference is not to Jerry Garcia and friends, but to cutting off the spent flower heads (petals and hip — the swollen ovary) just as or after petals drop. This achieves two ends:

- It thwarts the plant's effort and energy from enlarging the hip and producing seed, thus shuttling energy into beginning a new round of shoot growth that will terminate in a new round of flowering 4–8 weeks later.
- It decreases the incidence of disease. Flower petals left on the plant are a source of fungal organisms that spread to leaves and other flowers.

Deadheading can be done a little every day or two, or all at once toward the end of a round of bloom. Picking up fallen petals from the ground also lessens the spread of disease.

Summer Pruning

After each round of bloom, summer pruning “pushes” the plants (especially when done in tandem with fertilization and watering) to produce new flowers.

Rose plants have compound leaves composed of leaflets. The leaves come in 3-, 5-, 7- and occasionally 9-parted leaflets. For summer pruning: go down the cane (below the spent flower) until you find the first 5-parted leaf. Go down and make a pruning cut (at a 45° angle sloping away from the bud/leaf) 1/4” above the next 5-parted leaf that is facing outward — away from the center of the plant.

The idea behind cutting above the second 5-parted leaf is that the girth of the base of the new shoot needs to be thick enough to support the growth of the stem and flower. Cutting back to the second 5-parted leaf usually ensures this. The stem girth should be at least 1/4” around (the thickness of a pencil). The second 5-parted leaf is a reliable formula to achieve this end.

Summer Fertilization and Watering

Once a round of blooms is completed, aggressive fertilization kicks off a new round of growth, terminating in flowers. Nitrogen contributes to strong leaf and shoot growth. Phosphorous aids in new root growth and especially in flowering. Potassium aids photosynthesis and maturation, and promotes cell strength, i.e., strong, straight stems (see Fertility and Nutrient Sources, pages 11–13, for details).

Water is also critical to new growth. Plant roots grow into warm, moist soil and feed more extensively. Any time you apply a fertilizer, especially in a dry, concentrated, granular form, water activates it and moves nutrients into the soil solution and into the plant.

Leaf Patrol

After every round of bloom, pick up all fallen leaves and pick off any leaves showing signs of disease. If done in a timely manner this lessens the incidence and spread of disease. A reapplication of 3”–4” of mulch will also keep fungal spores from spreading. Leaves (not rose leaves, but deciduous maple, oak, birch, alder, etc.), straw (not hay, a source of weed seeds), wood chips, and cocoa bean hulls (exotic aroma) are good options for mulching.

In a Nutshell:

Cutting Flowers Guide

When to cut:

When rose bud has full color and sepals are at least horizontal to buds (at least one-quarter open)

Time of day:

Cool portions—cutting in the early morning or late afternoon adds to vase life

How to cut:

Use sharp bypass pruners (Felcos)

Cut long stems above a five-parted leaf that faces outward

Don't leave a stub longer than 1/4"–1/8" above the leaf as this contributes to die back

Cut stem bottom at 45° slant

Immerse flowers immediately in cold water and put in shade in a location with still air to condition or harden flowers, or immerse in warm water (90–100°F) for one hour and then transfer to cold water

You may wish to recut stems underwater to avoid an air lock that will prevent water from moving into the stems

How to extend vase life:

Recut stems 1/4"–1/2" every 1–3 days

Change water in vase every 1–3 days and wash out vase thoroughly

Combine one teaspoon sugar and one teaspoon bleach per gallon of vase water. Or use one teaspoon of any soft drink with citric acid and sugar per gallon of water. The sugar feeds the metabolism of the cut rose and extends vase life. The citric acid lowers the pH of the water and acts as a germicide, retarding the growth of bacteria, molds, yeasts, etc. that can plug the transport vessels in the rose stem, which will cause it to wilt. A teaspoon of vinegar will have the same effect.

A Rose Almanac for the Santa Cruz Area

January

January marks the brief period of rose dormancy in the Santa Cruz area, though new root growth is beginning.

- Purchase and plant bareroot plants
- Prune repeat bloomers (one-time bloomers are generally pruned just after they flower as they bloom on one-year-old wood)
- Apply dormant sprays for pest and disease control: dormant petroleum-based oil as an insecticide, lime sulfur as a fungicide
- Remove and burn prunings (don't compost)
- Clean up and remove fallen leaves (disease vector)
- Fertilization can begin, along with seasonal application of 3"–4" of mulch (wood chips, straw, compost, etc.)
- Make dormant hardwood cuttings for propagation

February

In February, root growth gets more active and budswell begins as the plant breaks its above-ground dormancy. Leaf and shoot growth begin — new foliage has a red, bronzy sheen to it and is extremely healthy. January and February feature the occasional blooming variety, including Banksia (particularly white), Gold of Ophir, Cecile Brunner, Madame Alfred Carriere, and the ubiquitous and omnipotent Belle of Portugal.

- Pinch off unwanted new shoot growth
- Apply foliar spray (sulfur powder) for disease, if rainy weather dictates
- Complete top dressing and mulching
- Complete bareroot planting

March

Early blooming varieties start up toward the end of the month (if it's warm and sunny).

- Begin purchasing and planting container roses
- Continue sulfur sprays if warranted
- Some attention to watering is usually requisite
- Apply first supplemental feeding — concentrated pellets and meals, liquids, foliar sprays

April

Despite what T.S. Eliot said, April is not the cruelest month, but rather, the most spectacular month in the rose garden on the Central Coast. Almost all classes of roses bloom, unfurling in profuse progression.

- Aphids often coat succulent tips of new growth — a blast of water or Safer's insecticidal soap is the remedy, although in a sadistic mood I've been known to squish by hand
- Rust, mildew and black spot begin to rear their ugly heads; continue spraying program
- Toward the end of the month, rose curculio—a ravishingly beautiful but extremely devastating (perforated buds) insect pest—is seemingly everywhere
- Regular watering schedule is in order until early fall rains

May

May is much like April, one of the two best rose months in Santa Cruz. Toward the end of the month the Pacific high pressure dome parks offshore and starts spinning fog-making ingredients toward the coast.

- Deadhead, summer prune, and re-up fertility as first round of blooms dies down

June and July

Often time for June gloom or June swoon with roses, the Santa Cruz weather (with the onset of fog) and in many years the San Francisco Giants. Mid June through mid July is arguably the most pedestrian month in the rose year, as April and May's dynamic catapulting from dormancy into bronzy-red foliage (as if growing faster than chlorophyll green can be manufactured) culminating in blooms aplenty ends with a thud. With little or nothing in bloom, "the bloom is off the rose," literally and figuratively. Remember, despite what the books, tags and catalogues say, there is no such thing as an ever-blooming rose, but rather repeat or "remondant" bloomers (some more strongly than others).

- Deadhead spent blooms
- Summer prune
- Clean up dropped foliage and strip any diseased foliage from the plant
- Continue with summer sprays, fertility, pruning, and watering to generate vigorous, healthy new extension growth that terminates in round 2 of blooms from mid July through August

August – mid September

It's spring again as per rose blooms. However it is a minor chord compared to April and May's major chord (enchanting melody though). See April tasks; be proactive with water if the weather is hot.

Late September and October

It's a bit like mid June through mid July — largely about maintenance. The goal is to initiate strong, new growth that will terminate in long, strong-stemmed blooms 4–8 weeks down the road. If all goes well, rounds 3 and 4 of blooms can extend well into November.

So, a rose-based bouquet for the Thanksgiving table is not out of the question. A lot depends on the care you provide and on an extended stretch of warm, sunny Indian summer weather. Remember, August through October features the warmest soil, air and water temperatures of the year.

September and October offer an excellent window of opportunity for propagating roses from semi-hardwood cuttings, and a good time to underplant spring-blooming bulbs (daffodils, narcissus, wood hyacinth, crocus, anemones, tulips and the like). Avoid too much root competition during the growing season.

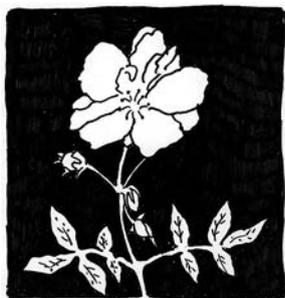
November and December

Still some bloom in warm, dry years.

Time to evaluate, make plans to do better next year, dream big, come back strong with loftier goals and better execution, peruse the catalogues, hunt for wild turkey, forage for mushrooms, join the migrating gray whales for their journey to Baja, yearn for spring in the garden and on the baseball diamond. Also an excellent time for things reflective, contemplative and poetic.

Ask and answer the question, "What did I learn about myself as a gardener (rose or otherwise)?"

Rose Classes



Old Garden Roses (Antiques), Renaissance–1800s

Prior to the 20th century, old garden roses were thought of first as distinguished-looking shrubs that also bloomed. Their brief bloom period in mid spring through early summer offered a seasonal

dividend along with a wide range of fragrances. Because of their brief bloom cycle, they were often combined in flower borders with pastel and soft-colored perennials, such as delphiniums, foxgloves, cottage pink carnations, sweet Williams, violas, and the like. While getting more difficult to purchase (modern varieties have eclipsed them and attained market share), old roses impart to the modern day gardener a badge of distinction, and are particularly prized for their nostalgia-invoking fragrances.

Gallicas were originally grown by the Greeks and Romans and eventually adopted by the French. Gallicas are short and spreading. Canes are composed of thin, wiry stems and can get quite thicket-like with many small thorns. Foliage is rough textured and dull. Colors range from pale pink (rare) through deep pink, purple, violet and mauve. Many varieties have striping. The fragrance of Gallicas is Damask-like. Most

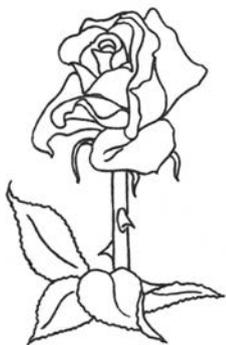
varieties are fragrant. They grow in poor soil and need little care. Brief, one-time bloomers in mid–late spring.

Damasks were widely grown in Persia and transported to Europe by Crusaders. They often feature large spreading shrubs, reaching 5'–6' x 5'–6'. The foliage is a rough, dull, matte gray-green. The thorns are many, large and malicious. The color range is largely a clear pink with some whites, with no purple-red shades. The scent is heavenly, distinct and powerful. They bloom briefly in early summer. Some varieties have an autumn bloom.

Albas were distributed throughout Europe by the Romans. They were appreciated for their beauty and medicinal purposes. Albas, as the name implies, feature primarily white blooms, with off-white and pale pink. A tough-looking shrub with delicate flowers, they can tolerate light shade and a minimum of care. The scent is pleasing and distinctive. They bloom briefly in spring.

Centifolias are probably a natural cross between Albas and Damask roses, occurring in the 1600s in France or Holland. They grow in a loose shrub-like form (3'–5' tall), with dull, gray-green foliage with many thorns. The flowers nod gracefully on long, arching canes and are intensely fragrant. They are often called cabbage roses because of their large, round flowers — the many petals curve inward, hiding the center. They bloom only briefly in the spring.

Moss roses are natural mutations of Centifolias originating in the 17th century and bred in the mid 1800s. Mosses feature large, loose, arching, thorny shrubs with soft gray-green foliage. Moss roses are mildew-prone, especially on the “moss”-covered buds, which is extremely problematic. The shrubs are a little stiff-looking. Blossoms are richly scented, with a color range from white to maroon. Plant size is variable from short to tall.



Modern Roses

Hybrid Tea Roses

In 1867 the prototype variety for Hybrid Tea roses was released. It would lead the way for Hybrid Teas to become the predominant rose class of the 20th century — the most popular home gardener’s rose, as well as the leading commercial cut flower rose. That prototype rose was La France, bred by J.B. Guillot. It was

a hybrid cross between hybrid perpetuals, tea roses, and China roses.

As is so often the case in hybrid crosses, the breeding parents contributed distinct qualities to the Hybrid Tea offspring: repeat blooming (3–5x per year), smaller bushes than the old shrub roses, and a remarkable, elegant new flower form. The Hybrid Tea flower is long-stemmed (good for cutting), high centered, pointed in bud, and at its peak of color and form from tight bud to midway open. After that it quickly loses form, intensity of color and all too rapidly (especially yellow colors), its petals.

Hybrid Teas feature 4’–6’-tall, “gawky”-looking upright bushes. While they are free flowering and repeat blooming, they are not the most attractive of shrubs as per landscaping effect. They perform best (long, strong, straight stems, well-formed big flowers) when disbudded to one bud per stem and aggressively grown with water and nitrogen.

Some Favorite Old Garden Roses

Gallicas

Cardinal Richelieu
Complicata
Dutchesse D’Angouleme
Tuscany Superb

Damasks

Blush Damask
Celsiana
Ispahan
Madame Hardy
Madame Zoetman
Quatre Saisons

Albas

Alba Semi Plena
Celeste
Felicite Parnetier
Great Maiden’s Blush
Madame Plantier

Centifolias

De Meaux
Faintin Latour
Ipsilante
Petite Hollande
Tour de Malakoff

Mosses

Alfred De Dalmas
Henri Martin
Salet

In a Nutshell:

Hybrid Tea Characteristics

Tall bushes, 4'–6' (but not shrub rose size)

Gawky, chicken-legged look to bush

High-centered, shapely pointed buds, big showy flowers

Long-stemmed

Long-lasting as cut flowers (the best class for cutting)

At their peak in tight bud through half-open

First class with wide range of yellows, orange-yellow-gold blends

Wide spectrum of brilliant colors—includes shades of white, pink, red, vermilion, mauve, yellow, orange-gold blends, bi-colors

Many scented, some not

Despite what books claim, not disease-resistant

Despite what books claim, not ever-blooming, but repeat blooming, with 3–5 flushes of bloom spring to fall

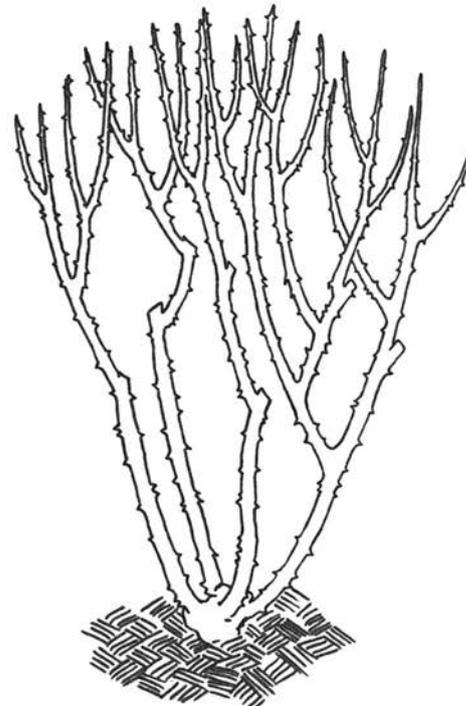
Either naturally or best grown one bloom to a stem

Arguably still the most popular class of roses (being eclipsed by Floribundas)

Flowers in the vase have an elegant, formal look



HYBRID TEA



Hybrid Teas represent the first successful breeding of both yellow and vermillion into roses. They have a broader color range than any previous class, with bold colors well represented. The tone and tenor of Hybrid Teas is bold, loud, even gaudy compared to the subtle colors of old garden roses. The same comparison can be made regarding the scents of modern Hybrid Teas versus old garden roses.

Greatest Hits of Hybrid Tea Roses

Whites

Lamentably, there are few really high quality pure white Hybrid Teas. This is especially true in cool coastal climates because of their tendency to spot and spoil due to a botrytis fungus that affects the petals.

Honor 1980 All America Rose Selection (AARS) winner*

BUSH: extremely tall (6'–7'), symmetrical; upright, open-center form

FOLIAGE: dark green (mildew-prone)

FLOWERS: pure white (pink lining on petals in bud), big in bud, enormous fully opened, long cutting stems, long-lasting cut flowers, 20+ petals

FRAGRANCE: moderate

Pascali 1969 AARS winner

BUSH: moderate vigor, 3'–4', upright form, well-branched shrub

FOLIAGE: shiny, disease resistant

FLOWERS: not truly pure white, but very close — creamy white. Good size blooms on thin but long, strong stems, very long-lasting as cut flower, 30 petals (increases in size as it opens). Strong, all season repeat blooming.

FRAGRANCE: sweetly scented

Pristine Introduced in 1978

BUSH: tall (4'–5'), upright habit, slender (columnar) form, thorny

FOLIAGE: mid-green, leathery

FLOWERS: white with pink edges, delicate look but strong petals (30–35). Classic hybrid tea form. Blooms grow only one per stem (as a rule), good repeat bloom.

FRAGRANCE: slight

Hybrid Tea Reds

Chrysler Imperial 1953 AARS winner (parent of Mr. Lincoln; see page 28). A striking rose when all goes well (which seldom happens), better disease resistance and overall performance in warm areas.

BUSH: 5'–7' tall

FOLIAGE: dull green

FLOWERS: velvety, dark red, large, many-petaled (45–50). Variable stem length.

FRAGRANCE: strong damask scent

Crimson Glory Introduced in 1935. Also has stronger-performing climbing form. A blast from the past, still worth growing.

BUSH: a symmetrical gawky-looking bush (can be remedied via pruning)

FOLIAGE: prone to black spot

FLOWERS: crimson dark red, velvet texture, 30 petals. Good cut flower size and shape, not high-centered, weak, short stems.

FRAGRANCE: alluring, strong Damask rose scent

* *Roses judged for the All-America Rose Selections (AARS) are evaluated over a two-year period at 24 sites around the United States. Evaluations are made for fourteen categories, which include flower form, bud form, vigor, growth habit, disease resistance, hardiness, fragrance, foliage, opening and finishing color, stem strength, flower production, and novelty.*

Ingrid Bergman Introduced in 1983. (Hey, if it's good enough for Bogie, it's good enough for you and me. "Here's looking at you Kid.")

BUSH: dense, 4'–5' tall

FOLIAGE: dark green, semi-glossy, serves as a good backdrop to deep red blossoms, 40 petals, prolific bloomer. Classic Hybrid Tea blooms and long stems.

FRAGRANCE: deeply fragrant

Mr. Lincoln 1965 AARS winner, the only Republican president in my garden. Arguably the most popular, darkest red rose.

BUSH: Upright, 4'–5' tall (although the clone seems to be declining in vigor in recent years)

FOLIAGE: dark green, prone to black spot

FLOWERS: dark, almost-black red in bud opens to cherry red color, classic high-centered buds, cup-shaped when it opens, symmetrical. Easily disbudded one to a stem, long cutting stems that last, 30–40 petals.

FRAGRANCE: very fragrant at all stages

Oklahoma Introduced in 1965. Same parents as Mr. Lincoln.

BUSH: upright form, 4-5' tall, thorny, even-shaped bush

FOLIAGE: dull-green foliage, disease prone (especially black spot)

FLOWERS: arguably the blackest red rose (too dark for some), dark red in bud to fully open. Classic Hybrid Tea form, good for cutting, 40–55 petals.

FRAGRANCE: strong

Olympiad 1984 AARS winner, released and named after the Summer Olympics in Los Angeles

BUSH: tall (5'–6'), strong-looking bush in the landscape

FOLIAGE: deep green

FLOWERS: scarlet red color, classic shape, many large blooms, long stems. Excellent cut flower, 30–35 petals.

FRAGRANCE: little or none

Hybrid Tea Pinks

Color Magic 1978 AARS winner

BUSH: 3 1/2'–4' shrub, upright, branched, moderately thorny. Prone to die back, which diminishes the size and shape of the bush.

FOLIAGE: large, dark green, semi-glossy

FLOWERS: pale salmon, blushing pink, huge blooms 5" across, 20–30 petals. Good stems for cutting.

FRAGRANCE: fruity, strong and distinct, some say unique

First Prize 1970 AARS winner

BUSH: short (3'–4') but full

FOLIAGE: dark, matte, susceptible to disease

FLOWERS: classic hybrid tea with pointed buds, blended hues of rose pink, enormous blooms, prolific bloomer especially in spring, variable stem length, 30–35 petals

FRAGRANCE: subtle, mild but distinct, mild tea scent

La France Introduced in 1867. Considered the first Hybrid Tea and as such is worth growing for its historical significance, but ...

BUSH: tall (5'–7'), columnar (uneven shape)

FOLIAGE: dull, disease-prone

FLOWERS: weak necked, heavy petaled, prone to fungal problems in cool climates, dull, almost flesh-pink color, 50–60 petals, variable vase life

FRAGRANCE: powerful

Hybrid Tea Yellows/Orange-Gold Blends

Brandy 1981 AARS winner. A show stopper and productive for a Hybrid Tea.

BUSH: tall, upright bush 4'–6' x 4' wide

FOLIAGE: mid-bronzy green (complements bloom color)

FLOWERS: apricot blend, 25–30 petals, big high-centered blooms, long, pointed buds, long, strong cutting stems

FRAGRANCE: strong and fruity

Just Joey 1972 AARS winner

BUSH: a bit short and wide for a Hybrid Tea

FOLIAGE: dark green, tough, leathery texture

FLOWERS: coppery orange (softer than Brandy), soft pink edging to fluted petals, 25–30 petals. Overly large blooms that sometimes bend the neck of the stem, but bent necks can add an artistic flare to arrangements.

FRAGRANCE: strong and fruity

Midas Touch

BUSH: short bush (3'x3')

FOLIAGE: mid-green

FLOWERS: strong, non-fading yellow. Classic bud form, 20–25 petals, good cutting stems. Performs (holds in bud) best in cooler weather.

FRAGRANCE: moderate/sweet

Peace 1946 AARS Rose of the Century

BUSH: 3'–4' tall, spreading and branching (takes several years to fully establish), thorny

FOLIAGE: large, dark green, glossy

FLOWERS: brilliant yellow with pink edges. A wide bloom (5"–6") when fully opened, with no two blooms identical, 40–45 petals. More attractive when open than in bud.

FRAGRANCE: slight

Sultry Productive and good as cut flowers

BUSH: Tall (5'–5 1/2')

FOLIAGE: matte, dark green

FLOWERS: apricot-yellow blend, large (5"–6" across) blooms, 30 petals, long stems, ovoid, pointed buds

FRAGRANCE: moderate/sweet



**Floribunda
Roses**

Floribundas are an early 20th century hybrid cross of Polyantha and Hybrid Tea roses. The result gave rise to a new class of roses that is now pulling even with, if not eclipsing, Hybrid Teas in popularity.

The plants feature a low-slung bush

(2'–4' high), often wider than tall. One notable exception is the classic Iceberg, which is 4'–5' tall. They are the most disease resistant of modern roses, partly owing to their waxy leaf surface. The waxy cuticle also offers shiny foliage that is a visual bonus in the garden.

Floribundas throw their blooms in sprays or clusters of 5–10 individual flowers. These blooms open sequentially, with the central bloom opening and dropping petals well in advance of the outer blooms. More rather than less, their individual flower form is like that of a mini Hybrid Tea. Some Floribundas have a stem length and flower-keeping quality that make them excellent cut flower candidates. Overall, they offer a full foliage look and the appearance of an avalanche of blooms in an even wider color range than Hybrid Teas. They have the longest bloom period and the shortest interval between rounds of bloom, are more cold hardy than Hybrid Teas, and a more reliable bet in wet, rainy weather.

In a Nutshell:

Floribunda Characteristics

Height and spread 2'–4', often wider than tall (compact)

Full, attractive shrub, good for landscaping effect

More flowers than Hybrid Teas, 3–5 rounds of repeat blooming, individual flower form much like Hybrid Teas in bud, smaller individual blooms in a cluster of 5–10 blooms (English call them cluster roses)

Wide color range, similar colors to Hybrid Teas

Stem length moderate to long, some make excellent cut flowers

Long lasting as cut flowers, buds open in sequence, faded buds can be removed

Flowers at their peak when 1/2 open to fully open

Center bud opens and fades first

Central bud is disbudded (removed) so rest of blooms open all at once

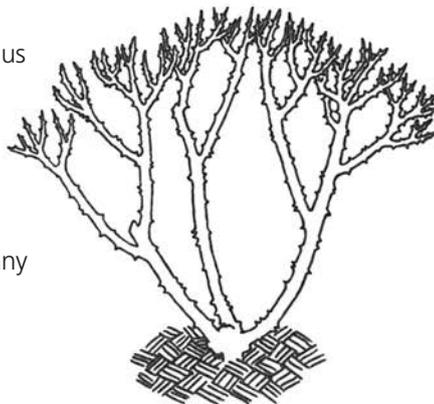
If removed, others in cluster open in sequence, thus disbudding strategy is opposite of Hybrid Teas

Most disease-resistant class of modern roses—foliage has waxy cuticle, contributing to disease resistance and a shiny look

Prune lighter than any other class. Plants have many twiggly laterals; remove one-quarter to one-third previous year's growth.



FLORIBUNDA



Greatest Hits of Floribundas

Amber Queen

Introduced in 1988

BUSH: low growing (2'–3') and wide, making excellent fill in a landscape setting

FOLIAGE: disease resistant, leaves large with a coppery look

FLOWERS: amber-yellow, fat buds, cupped flowers, 25–30 petals, big bloomer.

Flowers lighter in cool climates, dark with warmth and humidity.

FRAGRANCE: intensely fragrant

Apricot Nectar

1966 AARS winner

BUSH: large for a Floribunda (3 1/2'–4')

FOLIAGE: dark, glossy, but prone to both mildew and black spot

FLOWERS: 4"–4 1/2" wide, apricot-pink-gold blend, tight clusters of flowers are best disbudded to one bud à la Hybrid Teas, 35 petals. Good repeat bloom, especially from mid season on

FRAGRANCE: intense, fruity

Bolero

BUSH: 3' x 3'

FOLIAGE: glossy, dark green

FLOWERS: large blooms 4"–5" across, 3–5 buds/cluster, 100+ petals, pure white with the look of old garden roses

FRAGRANCE: strong, old rose fragrance

Brass Band 1995 AARS winner

BUSH: 3'–4'

FOLIAGE: bronze-green

FLOWERS: orange-gold color, good form, many small buds in many small clusters, 30–35 petals. Cool weather enhances color and size.

FRAGRANCE: fruity

Day Breaker

BUSH: 3' tall, columnar, upright

FOLIAGE dark green, glossy, disease resistant

FLOWERS: soft pastel-peach color with yellow developing as it opens, 25–50 petals

FRAGRANCE: mild, fruity

Gruss an Aachen A rose in search of a home: David Austin lists it with his English shrub roses. Many texts call it a Floribunda, but it was bred in 1909, before the advent of Floribundas. The name means "Greetings from Aachen," a small town in Germany. In some ways it exemplifies the Floribunda class but with a touch of old garden roses regarding shape, color and scent. It is similar in habit to David Austin's Fair Bianca, and like Austin's roses, very repeat blooming (3–4 times a year). All in all, Gruss an Aachen is an enchanting rose with versatility (tolerating both sun and shade) and enchanting blooms that are long lasting on the plant and in the vase. Each round of bloom seems to last forever.

BUSH: wide and low 2'–3' x 3', strong and spreading habit (note that there is allegedly a climbing form, too)

FOLIAGE: dull, bronzy color, tough, leathery and relatively disease resistant

FLOWERS: in clusters like Floribundas, but having "old rose" qualities, luscious shell pink to creamy white, old rose cupped shape, 4"–5" wide, very double form

FRAGRANCE: complex, old rose scent

Honey Bouquet

BUSH: upright, narrow, 3'

FOLIAGE: dark green, glossy, bronze sheen gives bush lush, full look

FLOWERS: rich, honey-gold color, large (4" wide), 35 petals, abundant

FRAGRANCE: moderate, fruity

Honey Perfume

BUSH: 3', bushy, full

FOLIAGE: dark green, glossy, resistant to rust and powdery mildew

FLOWERS: large, rich apricot-yellow, 25–30 petals, big clusters of blooms spring–autumn

FRAGRANCE: medium, spicy

Iceberg Striking in mass plantings

BUSH: unusually tall for a Floribunda at 5'–6'; there is a climbing form that reaches 8'–12' and is even more abundant in its flowering nature

FOLIAGE: waxy, glossy, very resistant to diseases

FLOWERS: pure white classic pointed bud, low-petal count (20–25). Many large sprays, very repeat blooming from early spring to late fall.

FRAGRANCE: if it had any it would truly be one of the great roses of the world

Salsa introduced in 2004

BUSH: low and wide, 2' x 3 1/2'

FOLIAGE: prototypically Floribunda — dark, waxy sheen to it, extremely disease resistant

FLOWERS: clusters of brilliant, hot red, small, pointed buds, midsize (3 1/2") flowers held well above the foliage,

20 petals in large clusters, look best half to fully open. Excellent repeat bloom 3–4x, stem length 14"–16", excellent for cutting.

FRAGRANCE: light (at best)

Sunsprite

BUSH: medium low growing (3' x 3')

FOLIAGE: glossy, disease resistant

FLOWERS: many medium-sized clusters of medium-yellow flowers, look like miniature Hybrid Teas

FRAGRANCE: light (at best)

Tuscan Sun 2005 (New) Floribunda of the Year

BUSH: 2 1/2' x 3', compact form

FOLIAGE: dark green, glossy, reasonably disease resistant

FLOWERS: pointed buds, clusters of 3–5 blooms 4" across, 25 petals, 12"–14" cutting stems, warm apricot in bud, opening to bronze-blush blooms with slightly fluted petals. Blooms finish off a light coppery-pink, which is a bit of a letdown—beautiful up until that point, though.

FRAGRANCE: moderate

Grandiflora Roses

Grandifloras originated in 1954 with the release of the cultivar Queen Elizabeth in conjunction with Elizabeth II's coronation. What with "Queen Mum" fervor, it is still widely sold and planted in England, America and beyond.

As a class, Grandifloras are the hybrid cross of a Hybrid Tea (Charlotte Armstrong) and a Floribunda (Floradora). As such, Grandifloras embody the traits of both parents: they feature elegant, high-centered, ovoid (pointed) buds with long, strong stems of Hybrid Teas, but produce their blossoms in clusters à la Floribundas. Leaving multiple blooms per cluster yields good results, unlike with Hybrid Teas. Unlike Floribundas, the Grandifloras open their sprays of blooms all at once, so they tend to be spectacular when in full bloom. And as such they need no disbudding, unless you want a single enormous Hybrid Tea-like bloom.

Greatest Hits of Grandifloras

Note there are not a great number of Grandiflora varieties, but most of them are outstanding performers.

Candelabra

BUSH: 4'–5' vigorous, upright, well-branched

FOLIAGE: dark/medium glossy

FLOWERS: glowing coral-orange, pointed, ovoid buds, 10"–15" stems, 20–25 petals

FRAGRANCE: slight

Fame

BUSH: 4' (plus) upright and spreading, good landscape effect

FOLIAGE: dark, glossy

FLOWERS: deep, hot pink, rich colors, long lasting on plant, in vase, 20-25 petals, 4"-wide blooms

FRAGRANCE: slight

Gold Medal introduced in 1982, best in warm regions

BUSH: tall, full bush 4 1/2'–5'

FOLIAGE: dark green, semiglossy

FLOWERS: a rich, tasteful blend of orange, gold-yellow, and apricot, blooms singly and in clusters, classic high-centered Hybrid Tea form with pointed, ovoid buds, fluted edges to petals when open. Long stems, 35-40 petals, 3"–4" wide. If disbudded to one bloom/stem, flowers will reach 4"–5" across.

FRAGRANCE: moderate

Queen Elizabeth 1955 AARS winner, the prototype and indeed, the first Grandiflora

BUSH: tall (8'–10'); do not prune lower than 4'–5'

FOLIAGE: dark green, glossy, leathery but subject to rust

FLOWERS: mid-pink, perfect Hybrid Tea-form buds, long-stemmed singly and in clusters, 3"–4" wide flowers, 37–40 petals, 3–5 rounds of bloom April–November

FRAGRANCE: unfortunately, virtually none

In a Nutshell:

Grandiflora Characteristics

Combine (best) qualities of Hybrid Teas and Floribundas: large Hybrid Tea-like blooms in clusters of 2–3 per stem (produce quality blooms without disbudding), long stems

Tall bush (someone once joked that Grandifloras could be called “Grandi Bushas”), often reaching 5’–10’, e.g., Gold Medal (6’–8’) and Queen Elizabeth (8’–10’)

Disease-free foliage similar to Floribundas; variable disease resistance

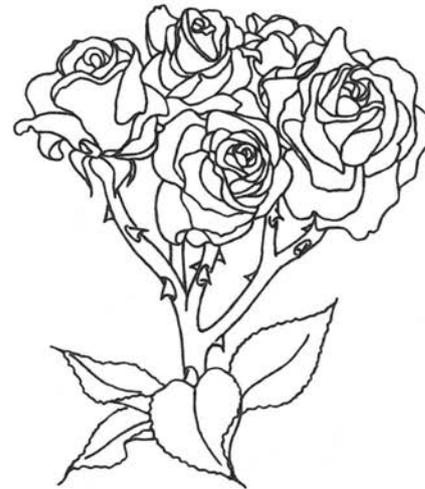
Color range similar to both Hybrid Teas and Floribundas

Blooms are Hybrid Tea-like in form, but larger

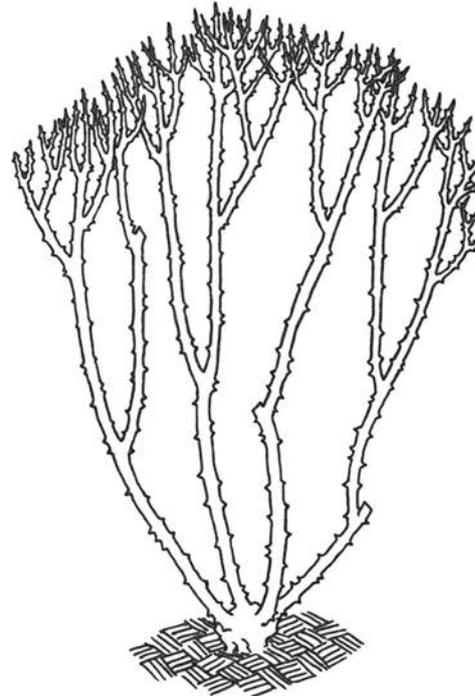
2–4 rounds of bloom per year, similar to Floribundas

Bloom in clusters like Floribundas, but all blooms open at once and stems are of relatively equal length

Pruning similar to Hybrid Teas (note: tall varieties such as the 6’–8’ Queen Elizabeth cannot be made short by heavy pruning — it will just take longer to regrow and bloom)



GRANDIFLORA



David Austin's Roses, aka English Shrub Roses ("New, Old-fashioned Roses")

"A rose by any other name..." Although not universally accepted as an official class of roses, David Austin's roses offer a startling breakthrough for home gardeners and commercial rose growers alike. Starting in the 1950s and culminating with the release of Constance Spry (an English garden writer) in 1961, Shropshire (Austin's hometown) in 1960, and Chianti in 1967, there are now almost 200 cultivars in the nursery trade.

What Defines an English Shrub Rose?

David Austins are a highly successful attempt to bridge the chasm between modern roses (flower factories) and old garden roses (once-blooming shrubs). They embody the full, soft, delicate, shrub-like nature of old garden roses with similar heavily-petaled, old-fashioned flower forms, and strong but subtle fragrance (Gertrude Jeckyl is almost unarguably the most intriguingly scented rose on the planet). From their modern rose parentage—which for many includes the exquisite Floribunda variety Iceberg—they receive "remondant," or repeat-blooming qualities and some disease resistance.

English shrub roses, like old garden roses, reach their peak of perfection from half to fully open. In fact, they hold their petals much longer than modern roses and have a soft-textural effect that makes them appear larger than they really are, even transcendent.

Initially, Austin's roses were largely in the soft pastel range, with shell pinks and whites. But the strong yellows of Graham Stuart Thomas, Golden Celebration, and recently, Teasing Georgia, as well as the current trend towards the bronze, apricot and gold-yellow tones of Pat Austin, Crown Princess Margarita and Tamora extend the color range. Throw in the deep crimsons to shades of purple embodied by Othello, Falstaff and The Prince, with their strong old rose pungency, and the color range and subtlety of Austin's roses far surpass their more gaudy modern counterparts.

In a Nutshell: David Austin (English Shrub) Rose Characteristics

Shrub is more the operative word than bush for David Austins. Whatever the height, they are full, luxuriously foliated (most matte, not glossy) garden specimens with the double dividend of masses of repeat-blooming, heavily-petaled flowers. The shrub gives off a soft, delicate fragrance. A presence in the landscape.

Flowers are many petaled, often cupped, quartered or rosette shapes — unremarkable in bud, at their peak half to fully open, strongly repeat blooming (with few exceptions)

Colors include a wide range of pinks, reds, yellows, whites and yellow-apricot-gold blends; colors and textures similar to modern roses, but more subdued, soft, gentle on the eyes

Generally strong, sweet scent, yet subtle; almost all cultivars are scented

Disease resistance is no better, no worse than the best of the Floribundas and Hybrid Teas

Big flowers, long stems and strong fragrance make David Austins "other worldly" as a cut flower

Greatest Hits of David Austin's English Shrub Roses

Fair Bianca Named after Bianca, the sweet and innocent sister of the shrewish Kate in Shakespeare's *Taming of the Shrew* (many of Austin's early roses are named for characters from Shakespeare and Chaucer)

BUSH: a tidy little bush 3' x 3' that can even be grown in a 5–7 gallon pot. Its petite stature is rare for Austin's roses.

FOLIAGE: dark green, nice contrast with flowers

FLOWERS: pristine white cupped flowers with a green eye in the center (similar to the Damask rose Madame Hardy), reddish-yellow in bud. Although short, Bianca produces long stems for cutting and when cut in bud last 7–10 days.

FRAGRANCE: when fully open on a warm day, strongly myrrh with a touch of fruit

Gertrude Jekyll If you could grow only one rose, this just might be it. It is grown commercially on a massive scale in southern Europe for perfume, rose oil, toiletries, potpourri, etc.

BUSH: substantial shrub, 5' x 7', of rather erect, stiff habit

FOLIAGE: green, matte finish leaves serve to offset the lush, large flowers. Canes covered with many small, bothersome thorns.

FLOWERS: large (4"–5" across), classic old rose-shaped pink flowers. On a foggy morning the rich pink blooms almost glow. A strong spring bloomer with only sporadic rebloom during the summer. A long-lasting (7–10 days) cut flower if cut just as it begins to open.

FRAGRANCE: while classified as old rose scent, it is actually other worldly

Golden Celebration

BUSH: a striking 5' x 5' full shrub

FOLIAGE: light shiny green

FLOWERS: fat in bud, opening to 3"–4" deeply cupped,

rich golden-yellow flowers with a hint of red shades around the edges of the petals. Darker, more golden-yellow bloom compared to Graham Stuart Thomas (below). Moderate to strong repeat bloom throughout the summer.

FRAGRANCE: strong and a bit spicy with fruity overtones

Graham Stuart Thomas Another winner, second only perhaps to Gertrude Jekyll. The rose's namesake is the leading English rosarian and garden writer of the 20th century.

BUSH: alternately a 6' x 6' shrub, an 8'–9' "wannabe" climber, or, if given a trellis, a 10'–12' climber

FOLIAGE: dark green, leathery, serves as a foil to the rich yellow blooms

FLOWERS: large (5"–6" across) and abundant, produced in clusters of 7–8 on the end of long, arching canes. Often features two or three strong rebloom periods, summer through fall, topped off with round yellow rose hips that persist into winter. Buds apricot-red tinged, opening to a glistening buttery yellow that is uncommon among old roses.

FRAGRANCE: as with so many of the yellow roses, Graham Stuart Thomas has a strong, fruity scent

Heritage Prefers cooler climates to inland heat

BUSH: 4' x 4' round, mounded shrub

FOLIAGE: dark green, canes nearly thornless

FLOWERS: soft shell pink, classically cupped old rose flowers, produced abundantly with 2–3 reblooms

FRAGRANCE: powerful old rose scent with hints of lemon

Pat Austin Named for David Austin's wife

BUSH: 4' x 6' shrub

FOLIAGE: shiny green edged with bronze, features bronze-colored, nearly thornless canes

FLOWERS: blooms are a bold departure for Austin roses — they begin with pointed red-yellow buds that open to large (5"–6" across), shallow-cupped, rich orange flowers with yellow on the underside of the petals, giving them a

volcanic smolder. Blooms are striking and long lasting in bouquets.

FRAGRANCE: tea rose

David Austin Reds

Some of David Austin's red roses are as strongly scented and intensely colored as any rose in any class.

Othello

BUSH: 4' x 3' in cool climates; 6'–8' x 5' in warm climates; can also be a short climber

FOLIAGE: dark green

FLOWERS: reddish, almost black, large, round, heavy-petaled roses that are all the more intense in cooler climates. Petal edges are tinged in silver. Excellent repeat bloom.

FRAGRANCE: fruity and as intense as the color

The Prince

BUSH: 2 1/2' x 3' in cool climates; 3' x 4' in warm climates

FOLIAGE: dusky dark green

FLOWERS: dark crimson-purple bloom that is similar in color to red old roses of the Gallica and Bourbon classes. The flower shape changes from bud to fully open. In bud, globe shaped and dark red with black markings on the petals; when fully open, domed flat rosettes of dark purple, red and shades of black.

FRAGRANCE: strongly old rose

Mail Order Sources

Antique Rose Emporium

9300 Lueckemeyer Road, Brenham, TX 77833

800.441-0002

www.antiqueroseemporium.com

A good selection of antique varieties

Garden Valley Ranch

498 Pepper Road, Petaluma, CA 94952

707.795-0919

www.gardenvalley.com

Wide selection, mostly modern varieties; open for tours

Jackson and Perkins

1 Rose Lane, Medford, OR 97501

877.322-2300

www.jacksonandperkins.com

Mostly modern varieties

Roses of Yesterday

803 Brown's Valley Road, Watsonville, CA 95076

831.728-1901

www.rosesofyesterday.com

Great spectrum of old garden roses

Wayside Gardens

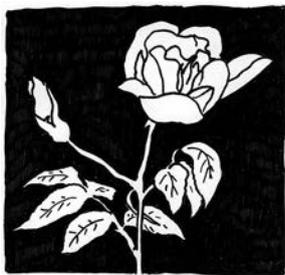
1 Garden Lane, Hodges, SC 29695

800.213-0379

www.waysidegardens.com

A good blend of old and new, including David Austin roses

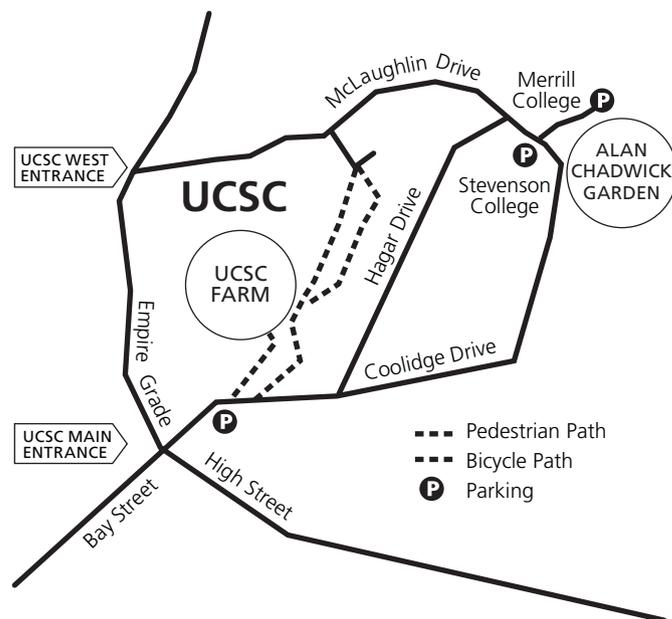
Visiting the Organic Rose Collection at the Alan Chadwick Garden



English master gardener Alan Chadwick planted his favorite old garden roses at the three-acre garden he founded on the University of California, Santa Cruz campus in 1967. Today many of those roses still thrive, along with a growing collection of heirloom and modern roses

being cultivated with organic techniques. In 2005, a grant from the Stanley Smith Horticultural Trust funded an organic rose demonstration area at the garden that now bears Chadwick's name.

The Alan Chadwick Garden also boasts a wide variety of annual vegetable and flower crops, perennial landscape plants, and a collection of more than 150 apple varieties and other semi-dwarf fruit trees. Visitors are welcome daily at both the Alan Chadwick Garden and the UCSC Farm from 8 am to 6 pm. Call 831.459-3240 or 459-4140, or see casfs.ucsc.edu for more information and directions.



About the Center for Agroecology and Sustainable Food Systems, and the Friends of the UCSC Farm & Garden

The Center for Agroecology and Sustainable Food Systems (the Center) is a research, education, and public service program of the Division of Social Sciences at UC Santa Cruz, dedicated to increasing ecological sustainability and social justice in the food and agriculture system.

The Apprenticeship, a six-month course in organic farming and gardening, is the Center's primary experiential training program. Initiated by Alan Chadwick in 1967, the Apprenticeship now brings participants of all ages from around the world to learn the basic skills of organic growing techniques, along with the complex social and environmental issues surrounding sustainable agriculture and food systems.

Supporting the work of the Center and the Apprenticeship training program are the Friends of the UCSC Farm & Garden. Through community education, the Friends help spread the word about the need for gardening and farming systems that are both environmentally and socially sound. Fundraising and volunteer efforts also support the Farm and Alan Chadwick Garden facilities, as well as apprentice scholarships. The Friends cosponsor a year-round program of organic gardening classes, plant sales, and seasonal celebrations for the community.

For more information on the Center, the Apprenticeship course, and the Friends of the UCSC Farm & Garden, contact us at –

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casfs.ucsc.edu

 *The CENTER for* AGROECOLOGY
& SUSTAINABLE FOOD SYSTEMS

About the Author and Illustrators

Author Orin Martin has managed the Alan Chadwick Garden and taught organic gardening skills since 1977. He presents public workshops for the Friends of the UCSC Farm & Garden, and writes extensively on a wide range of organic gardening topics.

Forrest Cook (cover illustrations and graphics) was a member of the 1991 Apprenticeship class at the UCSC Farm & Garden. He now uses his organic gardening skills as head landscaper at the Costanoa Resort (near Pigeon Point, California), and is a member of Molino Creek Farming Collective.

Larry Lavendel (technical illustrations) is a science illustrator and instructor. He owns Ikotomi Design in Aptos, California.



Proceeds from the sale of this booklet support the work of the Friends of the UCSC Farm & Garden, a community-based support group dedicated to promoting organic gardening and farming.

The UCSC Farm and the Alan Chadwick Garden, part of the Center for Agroecology & Sustainable Food Systems on the UC Santa Cruz campus, showcase organic growing practices and are open to the public daily. Both sites serve as outdoor classrooms and training grounds for UCSC students and for members of the Apprenticeship in Ecological Horticulture course, who spend six months learning the nuts and bolts of organic farming and gardening.

Through memberships and fundraising projects, the Friends of the UCSC Farm & Garden support the annual training program, and a variety of public workshops, classes and other community education efforts.

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