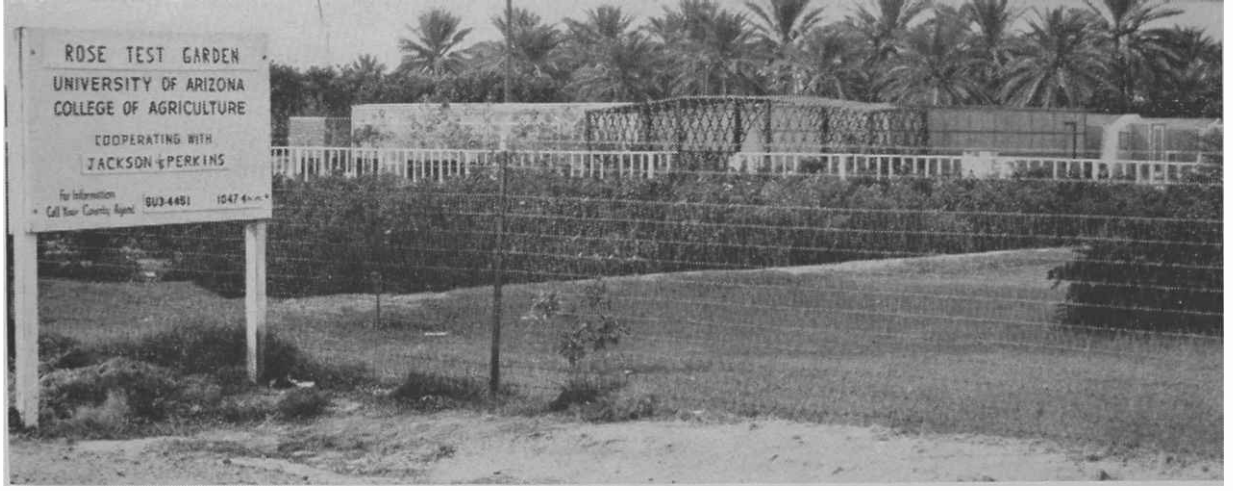

A NEAT SIGN along the highway tells passing motorists about the garden and the cooperation which has produced it.

UA ROSE GARDEN ON THE YUMA MESA

By Ross M. Allen and H. W. Knowles

Two kinds of growers of roses are found among the home gardeners residing on the sandy table land called the Yuma Mesa. There are those who have successfully planted a rose garden and maintained the same bushes in good health and flower productivity over a period of several years.

Then, there are the unsuccessful ones, far outnumbering the first mentioned group, who have tried rose-growing in the oven-hot sands of Yuma, only to suffer near-total defeat during the first or second year after planting.

Many of these luckless ones are hesitant to try again because the defeats frequently represent substantial losses of both time and money. It is mainly for the latter group that this article is written, in the hope that they may be encouraged to try once again for success in growing the "Queen of the Flowers." Possibly some of the methods in use at the University Rose Test Garden, located on The University of Arizona Citrus Farm at Yuma, may be helpful to the more successful growers of roses, also.

The University Rose Test Garden was established in March, 1962, with several objectives including, (1) Determination of varietal adaptability to culture under Yuma's environmental conditions; (2) Studies on cultural practices including pruning, irrigation, fertilization, and insect and disease control, and (3) Beautification of the farm headquarters area. Materials used in the garden have been restricted to those which are relatively inexpensive and readily available to the average home gardener of the Yuma area.

Dr. Allen is plant pathologist stationed at our Yuma Mesa Citrus Experiment Station, while Mr. Knowles is foreman at that station, active in helping establish the rose garden.

Nearly 100 Varieties

The garden, originally consisting of 68 bushes representing 17 varieties, has been enlarged each year and now contains 494 bushes, with 95 varieties of hybrid teas, floribundas, and climbers to be observed and compared. All of the rose bushes, field budded and grown in Arizona, have been donated to the university by Jackson & Perkins Co., whose Arizona operations include approximately 4,000 acres devoted to rose production near Buckeye, Arizona.

Each variety in the garden is represented by at least four plants grouped together for mass effect and ease of comparison. For visitors' convenience, name plates designate the variety, bush type and date of planting. Visitors are welcomed to the garden, which is now included in the American Rose Society's latest national listing of "Private and Public Gardens." The following is a summary of practices and experiences during the past three years:

Pre-planting preparations and actual planting are among the most important phases of establishing a successful rose planting. Beds measuring 6 x 88 feet were dug 6 to 8 inches deep to remove all silted phase soil so that all plants are being grown in pure Superstition sand like that predominant on the Yuma Mesa. Treble superphosphate was broadcast on the bed surface at the rate of 4 ounces per bush as indicated on the planting plan, and beds were pre-planting irrigated.

Precise Planting

All bushes were completely submerged in water for 18 to 24 hours prior to planting to replace moisture lost from the canes during storage. Planting holes, 4 feet apart, 20 inches wide and 20 inches deep, were prepared one day after the pre-planting irrigation by placing 2 inches of well-rotted manure mixed with a handful of soil sulfur in the bottom of the hole, followed by 3 inches of soil, another 2 inch layer of manure and sulfur, and capped with 5 inches of soil. Moist peat moss may be substituted for the manure, but the cost of this material may be prohibitive for more ambitious-sized gardens. In either case it has been found beneficial to pack the soil mix in the hole by tramping to prevent excessive settling of the plants.

Since all bushes obtained were of No. 1 grade (use of this grade is strongly recommended) they were thinned by pruning to 4 to 7 uninjured canes approximately 8 to 12 inches long. Roots were cut back to about 8 to 10 inches. Injured roots were removed.

In planting, roots were placed over a moist cone of soil so that the bud-union remained 1 to 2 inches above normal soil level. Soil filling the hole was settled by irrigating slowly by garden hose. A 4 to 6 inch mound of moist soil was placed temporarily over the bud-union, and lower canes and entire bushes were covered with gunny sacks to conserve moisture and prevent sunburn until after buds began to swell. All pruning wounds were covered with an asphalt-tar compound after 3 to 4 days of drying. Young bushes with new shoots were shaded by palm fronds stuck in the ground around them, especially on the west side, until rose foliage protected the canes from sunburn.

New bushes were flood irrigated twice weekly for the first 6 weeks. For established plants, flood irrigations (4 inches of water) are made weekly during summer and bi-weekly during winter. Since all bushes are mulched with 1 to 3 inches of barn-

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CLOSE UP VIEW of the rose garden. The ← trellis and fence add greatly to attractiveness of this test garden.

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yard manure all year long, no cultivation is needed except weed removal by pulling or digging to eliminate weed roots.

Early Planting Urged

Early planting of roses in the Yuma area is essential for obtaining maximum shoot growth and resultant cane shading by foliage before the arrival of continually hot (90° F.) weather. Planting dates for the Rose Test Garden during the past 4 years have ranged from Jan. 25 to March 5. The best planting period for the Yuma Mesa is thought to be from Jan. 15 to Feb. 15. Later plantings may sunburn badly before the plants become thoroughly established.

Roses are relatively light feeders and do not require frequent nor heavy fertilizer applications. For newly planted bushes, superphosphate is applied in the pre-planting preparations. Nitrogen is supplied as ammonium nitrate or ammonium sulfate at the rate of 1 pound of material per 50 square feet of bed area in late March or early April. A second application of half the above amount is made in early September. Four ounces of soil sulfur per bush, applied in a circle 6 to 8 inches from the bud-head, is made in late September.

Established bushes are fertilized somewhat differently. In early February 4 ounces of treble superphosphate per bush broadcast over the bed, 1 pound of ammonium nitrate or ammonium sulfate per 50 square feet area broadcast, and 4 ounces soil sulfur per bush. In late March the nitrogen application is repeated. In early September, ½ pound ammonium nitrate or sulfate per 50 square feet bed area and 4 ounces of soil sulfur about each bush yields vigorous fall growth.

Pruning Is Moderate

A moderate form of pruning is done in early January. We attempt to leave 5 to 7 canes about 12 to 16 inches high on hybrid tea varieties. One or two canes are being cut experimentally to 4 to 6 inches to learn if cane renewal is increased. Floribundas are headed back lightly with little thinning of canes. All pruning wounds are treated with asphalt-tar compound after wounds have dried 3-4 days.

Insect and fungus disease problems have not been great in Yuma. Cygon (Dimethoate), 1 tablespoon per gallon of water, applied as a spray has controlled aphids, thrips and mites. Dusting sulfur has been used for powdery mildew fungus control during the cooler months of November to January. Mildew has not been a problem during the warmer months.

Iron chlorosis (yellowing of foliage, terminal stunting, and tip die-back) may be severe, especially on lighter-colored rose varieties such as the whites, yellows, and light pinks. To correct or prevent this condition, chelated iron (Sequestrene Fe 138) has been applied twice each year, in May and September, in addition to soil sulfur applications previously described (sulfur acidifies soil and makes iron available to plants). A solution-suspension of 3 ounces Fe 138 per gallon of water is an easy way of handling this material. One-third cupful is poured into each of four holes punched 8 inches deep around each bush approximately 8 to 10 inches from the bud-head. This application is always followed by a flood irrigation. Some chelate may settle from suspension unless the mixture is stirred frequently during application.

A few special practices which have been helpful deserve mention. Early spring buds have been removed from newly planted bushes in order to encourage vegetative growth in the first season. This practice substantially reduces sunburn of canes and bud-heads.

Growth Inducements

Very slow-starting bushes have been encouraged to grow *in cool weather* by placing waterproof paper cylinders (12 inch diameter, 6 to 12 inch height) around each bush. Cylinders are filled with wet peat moss covering the bush except for 2 to 3 inches of the cane tips to allow observation of bud shooting. Cylinders and peat are removed when tip shoots are ¼ inch long. This practice in hot weather (above 90° F.) may be harmful to the plant.

Several 2-year-old bushes which had been planted too deeply were successfully lifted bareroot and re-set. These plants were pruned back 50 percent more than normally practiced.

Occasionally newly-purchased bareroot bushes arrive with long white or yellowish bud sprouts. Such plants are pruned more severely than normal for planting. Premature bud sprouts rarely survive under Yuma's environmental conditions.

While most of the 95 varieties in the Rose Test Garden have performed creditably, some have shown more adaptability to this area than others. Among the hybrid teas showing overall good performance in two or more years of observations are Avon, Charlotte Armstrong, Countess Vandal, Chrysler Imperial, Eclipse, Hawaii, King's Ransom, New Yorker, Peace, Pink Duchess, Red American Beauty, Rose Bowl, South Seas, Soeur Therese, Tanya, and Tropicana.

Because of greater cane production and denser foliage most floribundas seem adapted to Yuma's conditions. Some of those with generally high ratings include Baby Blaze, Betsy McCall, Fashionette, Fusilier, Ivory Fashion, Malibu, Pink Chiffon, Spartan, and Vogue.

Follow the Rules!

Many other varieties in the Rose Test Garden not listed above show much promise for local use but have not been observed sufficiently to warrant recommendation at this time. With reasonable care, however, it is concluded that most roses can be grown successfully on the Yuma Mesa despite the sometimes severe environment. The most important obstacles may be overcome by attention to the following general rules:

1. **Plan and prepare before planting time**
2. **Obtain strong, healthy plants whether bare-rooted or potted**
3. **Plant correctly at the proper time**
4. **Prevent sunburn and iron chlorosis**
5. **Avoid over-watering and excessive fertilization**
6. **Prune moderately while plants are still winter dormant**

Follow the rules, and success with roses should be yours!