

at FTG in 1977 are already grown in northern portions of the state, but we eagerly await seeds of other cold hardy species having outstanding qualities. *Nannorrhops ritchiana* from the the Himalays is not readily available in this country, but the blue-gray costapalmate leaves of this branching palm make it highly desirable for further testing in extremely cold areas. Blue-gray foliage can also be found in the California-Mexico palm, *Brahea armata*. Several species of *Brahea* from Northern Mexico are valuable ornamental plants with a high degree of cold tolerance. The Brazilian beach palm, *Allagoptera arenaria*, is both very cold tolerant and very salt tolerant. Most of the fishtail palms (*Caryota* spp.) at FTG were hit hard by the cold, but *Caryota ochlandra* from China had little browning.

Two meter long strands of fruit cascading like heavy ropes of beads make this an especially regal palm.

South Florida is only marginally tropical, yet it is reassuring to know that so many species of tropical palms and cycads can make a rather quick recovery from an unusually severe winter. After 9 months, FTG is lush and green again, and few visitors will detect the fading evidence of the freeze.

Literature Cited

1. Paxson, Dillwyn, Rt. 2, Box 172, Winslow, Ark. 72959, reported in a letter to Mrs. Teddy Buhler, The Palm Society, 1320 Venetian Way, Miami.

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MINIATURE ROSES: PERENNIAL FLOWERING PLANTS

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Abstract. Miniature roses are gaining in popularity each year with many new cultivars being introduced, most of which grow well in Florida. They are relatively easy to grow in ground beds, rock gardens, hedges, containers and hanging baskets. There are varied colors, flower shapes, and growth habits in miniature roses. They should be most favorably considered in landscape plantings where year around color is desired.

In recent years the popularity of the miniature rose has increased rapidly, and perhaps one of the reasons is the increase in the number of introductions of new cultivars year by year. These cultivars have many unusual features such as the color and/or form of the flower, the size of the plant, the number of flowers that each plant will produce, and the freedom of the foliage from the predominant pests of roses. These plants are remarkable for small garden areas, rock gardens, regular sized pots, or hanging baskets. There are also climbing miniatures. Miniature roses range from the very small flower and plant size to that almost equal to the smaller polyanthas. There has been much discussion among rose hobbyists about the classification of some of these introductions.

Records indicate that the first named miniature propagated and cultivated was *Rosa rouletti*. There are many versions of the story as to how this rose was found and given generic status. It is believed that most of the miniature roses today have in their genetic background genes from *R. rouletti*. Since the 1930's the following hybridizers have bred miniature roses: Jan deVink, Señor Pedro Dot, M. Tantau, R. Kordes, Alain Meilland, all from European countries; while here in the United States, Ralph S. Moore of California began an intensive study and breeding program in 1936. (3) Since his work began, Moore has introduced a large number of miniature rose cultivars that have excellent qualities. In recent years other hybridizers have made introductions: Ernest Williams, E. M. Schwartz, Harmon Saville, and Sam McGredy.

Some of the first hybridized miniature rose introductions that followed the *R. rouletti* were 'Red Imp,' 'Pixie,' 'Bo-Peep,' 'Tom Thumb' (Peon), and 'Cinderella.' Of these, 'Cinderella' and 'Red Imp' are still among the favorites

that are grown. There are probably over 200 patented and non-patented varieties today. Therefore, it is not possible to name all of the varieties that are better adapted to Florida conditions. Any introduction (usually) will grow in Florida, but like the other types of roses some will grow better than others because of soil and climatic conditions.

Of the many roses that have been rated according to form, color, and production of flowers as well as size and growth of the plants, the following are the top 12 that are being grown today:

Cultivar	Color Description
'Starina'	Coral-orange
'Beauty Secret'	Crimson red
'Cinderella'	White
'Toy Clown'	White, edges red
'Judy Fischer'	Deep rose pink
'Mary Marshall'	Orange blend
'Magic Carrousel'	White with red edge
'Starglo'	White
'Over the Rainbow'	Red and yellow
'Simplex'	Single white
'Chipper'	Pink
'Yellow Doll'	Clear yellow

All of these grow and flower beautifully in Florida. There are several others that should be named for the record that grow very well and are worth growing in Florida:

'Green Ice'	White (green with age)
'Kathy Robinson'	Pink blend
'Lavender Lace'	Mauve
'Janice'	Deep pink
'Red Imp'	Deep red

Miniature roses can be grown on their own root or grafted on various root stocks. Dr. Sam McFadden did a great deal of work with the miniature roses in the early fifties while he was developing the *Rosa fortuniana* as a possible rootstock for roses in Florida. He grafted miniatures on *R. fortuniana* at various heights from 12 to 36 inches. (1) Those on 12 inch and higher heights are called standards, or by some, tree roses; however the latter term is often used particularly when referring to the hybrid tea types.

The two-leaf graft (2) has been most successful as a means

of propagating roses on *R. fortuniana*. The cost of grafted miniature roses is much higher than that of the own-rooted plants, but the greatest difference between grafted miniature roses and those on their own root is the size of the plant and the number of flowers the same aged plant will produce. In a landscaped area, standards can be used as accent points. When a miniature rose cultivar is on a standard, there is no change in the size of the leaf or the size of the flower.

The most frequent question asked is: Do miniature roses have to be cared for any differently from the larger type roses? The answer is: No. However, these roses like a high-organic, well-drained soil that retains moisture and nutrients. These roses need to be fertilized frequently, every 3 to 4 weeks, using any well-balanced fertilizer. A high nitrogen content will produce more vigorous bushes and more flowers. The amount to use of a 6-6-6 or a 10-6-8 would be one-fourth to one-half cup per bush when miniature rose plants are *in beds*. Only one teaspoon of fertilizer should be used per 6 or 8 inch *pot*. Adequate watering is necessary because the plants on their own roots have shallow root systems, and when they are under moisture stress, the damage to the rose bush becomes visible.

Besides fertilizing and watering regularly throughout the year in Florida, it is necessary to protect the foliage from the common pests that attack other roses: blackspot, spider mites, and powdery mildew. One should use the same materials on miniatures that are recommended for control on other roses. Good coverage on the underside of the leaf is most important, but the plants should not be whitewashed or phytotoxic conditions can cause defoliation.

Some cultivars have a tendency to drop their foliage after a flush of bloom. The cause is unknown, if mites have not been the culprit. Both mites and blackspot will cause foliage to become yellow and drop off. Whatever the cause, the bush should be trimmed back with sharp, clean shears. With sufficient fertilizer, water and protection with spray, the plant will resume active growth.

Some cultivars have a tendency to have large canes that

will die back throughout the season. Other cultivars do not have this problem. The hybridizer does not understand why this die back is a problem. The author suggests that perhaps it is a genetic weakness, and the recommendation is to cut the dead canes out, thus opening the bush, and new growth will fill in the void. Cultivars that have shown this problem are 'Beauty Secret,' 'Judy Fischer,' 'Toy Clown,' 'Janna' and 'Jet Trail,' to name a few. These varieties have similar parentage lines. Even with *this problem* they are still among the most popular cultivars grown.

The author recommends that at least once a year the plants be pruned. There are different ways to prune, depending on the growth habits of that particular cultivar. For example, 'Starina' and 'Yellow Doll' should be pruned in the early spring using the same practices of pruning for larger type roses. More compact types like 'Cinderella' or 'Gold Coin' can be pruned by reducing the size of the plant with sharp hedge clippers and a little thinning and removing of dead wood with sharp clippers.

There are basically two flower forms: the hybrid tea type and the decorative (fully open form). The choice to make is influenced by the purpose for which one is growing the roses. If they are for exhibition, the hybrid tea type usually will be the blue ribbon winner. If they are for color and a multiple amount of bloom is desired, as in a garden, then the decorative types are preferred.

Miniature roses make beautiful small rose gardens outdoors and indoors. They can be used as hedges or within rock gardens. They are relatively easy to grow and can provide much enjoyment for the young, the old and all those in between! These tiny roses make wonderful conversation pieces!

Literature Cited

1. McFadden, S. E. Jr., 1959. Production of tree roses on *Rosa Fortuniana* stock. *Proc. Fla. State Hort. Soc.* 59:413-417.
2. ————. 1963. Grafting leafy stem cuttings, a technique for propagating roses. *Proc. Fla. State Hort. Soc.* 76:412-416.
3. Moore, Ralph S. 1966. All About Miniature Roses. Diversity Books, Kansas City, Mo.

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LEARNING BY DOING—ANOTHER APPROACH: A SABBATICAL VIEW OF INSTRUCTION AT THE LARGEST ORNAMENTAL HORTICULTURE SCHOOL IN THE UNITED STATES

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Abstract. Ornamental horticulture students at California Polytechnic State University, San Luis Obispo, California, receive an education that differs from traditional university programs. Instruction is occupationally oriented to prepare the graduate to enter commercial practice. Courses in ornamental horticulture are taken during the first 2 years, while basic university courses are taken later. Lecture and laboratories stress the application of the latest, practical information rather than history and theory. Students are required to

conduct a research project and write a thesis. A non-profit corporation within the university finances individual student-grown crops which serve both as a learning experience and as a method of financing one's education. Many aspects of Cal Poly's program merit consideration in the traditional university program, especially in a state such as Florida, where large industrial employment opportunities exist, similar to California's. This report is based on the teaching experiences of a traditional, land-grant university, teacher-researcher on sabbatical leave.

Undergraduate enrollments in ornamental horticulture are at an all time high (3). Witte and Johnson (10) reported an almost 14-fold increase in the student body at the University of Florida between 1966 and 1976. Similar increases have occurred in all colleges and universities teaching ornamental horticulture (4, 6, 7).

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