

## Production and Marketing of Roses in the U.S.A.

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### CALIFORNIA PRODUCTION SYSTEM

In California, roses are field-grown on a massive scale in the central San Joaquin Valley, an area renowned for fruit production, viticulture, and nuts. The valley floor is a vast, level area of fertile soil, with a system of pipes and canals bringing water from the surrounding mountains. It is virtually frost free, and summer temperatures are consistently high. Mexican immigrant labour is freely available. Jackson and Perkins, at Wasco, currently has an annual production of 14 million roses. Other large growers such as J and M Roses and Weeks also produce several million roses per year. Possibly 70% of America's roses are produced in California and shipped bareroot to wholesalers and processors in the populated areas of the South and the Northeast.

There is an "accepted" Californian way of producing roses, which is used with only slight modifications by all the major growers. It is very different from the European system, but has been developed for an area where roses start blooming in gardens in early April. For garden roses the standard rootstock is 'Doctor Huey', a *Rosa multiflora* selection. Each grower has a hedge or bed from which hardwood cuttings are taken and lined out with a stock planter in March. At the same time, stocks of *R. 'Manettii'* are lined out in a similar manner to be budded with cut-flower cultivars for selling as one-year plants for glasshouse forcing. A high percentage of the cuttings (80% is claimed) will have rooted in time for budding the following March.

Irrigation is usually by the furrow system, whereby water is pumped from a canal to giant manifolds at the top of the fields from where it is allowed to run down, under gravity, in the shallow furrows left between the rows. Earth-moving equipment, guided by laser, is used to produce the correct gradients in fields prior to planting. Jackson and Perkins also operates a traveling boom irrigator over half a mile long in one field.

Budding, with cold-stored budwood, starts in early April, and is usually undertaken by itinerant Mexican gangs on a contract basis. The operation is physically similar to that used in the U.K., apart from the difficulties inherent in using hard buds. Work rates are comparable, on an hourly basis, but federal labour laws limit the working day to 8 hours, making 2,500 buds per person an acceptable rate.

Plants for greenhouse forcing are grown in the "one year garden system". The *R. 'Mannetti'* stocks are "crippled" by bending over the top of the stock at 15 days after budding. This forces the bud to grow out, and the stock is headed back 45 days later. The grafted plant is lifted in November (six months after budding) and sold as a "started eye" to a glasshouse cut flower grower. Garden roses are grown on the "two year garden" system. "Crippling" is practiced by some growers, but in all cases the stock is headed back during the first growing season, and the bush pruned, by tractor mounted circular saws, during the following winter. A second full growing season ensures a strong, bushy plant. Lifting begins in November, delayed by the difficulties of inducing dormancy in the Californian climate, and the need for ripe

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budwood to go into cold store.

Standard or "tree" roses are usually budded on stems that have been run up from ordinary stocks, but J and M Roses, of Cutler, insert a 4-ft hardwood cutting of 'Doctor Huey', and bud it during the first season.

It is considered necessary to use soil sterilisation prior to planting, and this is usually done by contractors injecting methyl bromide under polythene sheeting at a cost of \$1,000 per acre. Weed control is mostly mechanical and pest and disease control mainly uses bupirimate. California has very strict environmental protection laws, and an operator certification scheme, similar to that introduced under the U.K. Food and Environment Protection Act, is in force. The range of pesticides available for use is probably smaller than in the U.K.

This, then, is the standard Californian system for producing bush roses. It is also used in Arizona where it is even hotter and drier, and water has to be extracted from bore holes. There is fairly widespread agreement that to produce a first grade rose using this system costs around \$1 (65p) per plant.

### TEXAS FIELD PRODUCTION SYSTEM

The bush rose production system in Texas is modified as a result of the climatic differences. The main production area, around Tyler in East Texas, has relatively high rainfall, high summer temperatures (often accompanied by relative humidity approaching 100%), regular winter frosts down to 0°F, and tropical storms are common. This is an area of small truck farms set in undulating wooded country. No one is quite sure why roses became such a popular crop in this area, but it seems to have been promoted as an alternative source of income when cotton became uneconomic as a small scale crop in the 1920s and 1930s. The local industry is currently worth \$10 million annually.

Rootstocks tend to be either 'Doctor Huey', 'Brooks 56', or the individual grower's own selection of *R. multiflora*. Frost can delay rooting so that many stocks have barely started root initials before budding.

Skilled labour is often hard to find for the smaller growers, with Mexican contract gangs employed only by organisations such as Co-Operative Growers. The climate encourages weed growth, so expensive hand hoeing and herbicide spraying are necessary; disease is also favoured by the climate, and weekly sprays are necessary to keep black spot at bay. No irrigation is provided and no "crippling" is practiced. Yields of 52% to 55% are the target but yields can be as low as 10% (of cuttings inserted). Unit production costs of around \$1 are quoted. This can only be as a result of low labour costs, with little being accounted for family wages.

### MINIATURE ROSE PRODUCTION SYSTEMS

Two systems of miniature rose production were studied by this author. At Jackson and Perkins, miniatures are grafted onto *R. xodorata*. The scion and stock are bench grafted, tied with rafia, and struck in a rockwool cube under mist in an open sided, lath-roofed shade house.

Ralph Moore (California) and Mark Chamblee (Texas) both propagate miniatures using soft leaf-bud cuttings inserted in trays. Rooting is rapid (14 days), and thereafter Moore uses an intermediate pot-liner stage for single cuttings, while Chamblee pots three rooted cuttings directly into a final 4-in. pot. With both systems, propagation takes place throughout the summer period, as long as



material is available.

### SHRUB ROSE PRODUCTION SYSTEMS

While propagation of miniature roses from cuttings is not unusual, in Texas, Mike Shoup's system of shrub rose production is probably unique. A wide range of "old garden" and modern shrub roses, representing all the major groups, are propagated from cuttings and grown on as container plants. Four-inch pencil-thick cuttings are inserted under mist in October/November. Rooting takes 2 to 3 weeks with most cultivars, although with some, it may be delayed until spring. More vigorous cultivars are potted straight into a 2-gal container, while most cultivars pass through an intermediate, pot-liner stage before being final potted in May. In both cases there is a bushy, saleable container plant available in 9 months from striking. For bareroot mail order sales the plants are simply knocked out of the pots, and surplus compost shaken off.

### CONCLUSIONS

When one strips away the obvious differences of climate and scale, there are many similarities to the U.K. rose industry. While reliable figures are hard to establish, there is no doubt that production is declining from a peak in the 1960s. Jackson and Perkins' output of 14 million has fallen from a figure of 20 million only five years ago and this seems fairly typical.

The basic field production system is suitable only for regions with a Californian climate, and is not even really effective in Texas—the European system based on lining out seedling rootstocks would be an advantage there, if suitable clones were available. For early budded stocks in the south of England, there may be some benefits to be had from experiments with "crippling" to induce buds to grow out during the first season, but timing would be critical and consistent results essential; at the moment "shot eyes" are seen as a nuisance as much as anything else.

The most interesting area in production terms is that of propagation from cuttings. The field budding procedure is physically demanding and expensive in labour. Skilled budders are becoming harder to find, and young people today rarely have the patience and dedication to learn the job properly. Despite "budding-guns" and self-powered trolleys, the operation does not lend itself to mechanisation. These factors have tended to keep the rose business in the hands of specialist growers, who have a vested interest in maintaining the "mystique" of the field budding operation. The arguments have been advanced that own-root roses are less hardy, and less colourful, and that many cultivars can not be struck from cuttings.

The widespread use of micropropagation to introduce new cultivars of landscape roses has disproved the first two points, and the experience of Ralph Moore, Mike Shoup, and others has gone a long way to disproving the third. Techniques are available to produce a wide range of cultivars from cuttings, and in the future "rootability" may well be a factor to be assessed in introducing new cultivars. Budded roses may soon have the same status as grafted rhododendrons do today. Micropropagation may have a role to play in this "own-root revolution", but the American experience suggests that its routine use in production will be limited by cost.

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