

We grow our own original mother plants, both rootstocks and scions. Our selections and methods are based on "research," if you will pardon our usage of this word with this definition — "If one appropriates another man's idea, that is stealing; but if you combine the ideas of many experts along with your own, that is research." We should confess plagiarism in "twig-grafting." Dr. Halma and fellow member Ted Frolich of UCLA really taught us their methods. Ted not only grafts two twigs, he often sandwiches them 3 or 4 high in his researching at UCLA. We hold to this belief — to secure identical results and keep on producing identical results, we must use identicals, both rootstock and scion. While the specific scion strains are generally well known and recognized, this does not hold true with rootstocks. Citrus seedling rootstocks are quite variable. That is why we use twigs of rootstock mother plants, not seedlings, in our propagation. Most of our scion varieties are progeny of one mother tree of the variety. To a lesser degree this is true of our rootstocks. Our objective is to have every twig-graft, both rootstock and scion, the progeny of a specific mother plant. Conditions change, however; nucellar strains are causing the abandonment of old-line strains. The California citrus industry now is committed to a long range program of producing an indexed, disease-free planting at Lind Cove, in Tulare County. This is being ably developed by Dr. William Bitters and associated horticulturists of the University of California at Riverside. It takes a long time to draw conclusions. When such new, indexed, budwood is available, our mother plants will be replaced with new mother plants which will grow from Lind Cove buds.

An ample supply of the right hardened-off twigs of new growth are a must to successful twig grafting. Both scionwood and rootstock wood must be simultaneously available at the right time.

## **SIMULTANEOUS GRAFTING AND ROOTING OF CITRUS UNDER MIST**

### **Part Two—"Propagation"**

FRED REAL

*Four Winds Growers*

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In grafting and rooting citrus simultaneously, our propagators go out into our mother blocks and cut twigs of scion wood and understock, using the last growth cycle. When the twigs are grafted and ready to be flatted, they are on the average 12 inches long. Our propagators gather their own wood each morning and never is the wood allowed to get dry. The twigs are always kept moist and when they are brought into our propagating room they are dipped into a fungicide solution containing 1/2 cup P.C.N.B. and 2 1/2 cups of Captan (40 percent wettable powder) in 20 gallons of water.

When the preceding preparations have been made, our propagators start making their grafts. The cut for the graft is 1/2 to 3/4 inches long at about a 30° angle. After the graft has been made, it

is tied with a rubber band. The grafted twigs are put back under mist. After making twig grafts, our propagators dip the plants into the fungicide again before "stumping" them. The cut on the base of the plant is made square, dipped in hormone and flattened up.

The hormone we use is a formula given to us by O. A. Matkin, head of the Soil and Plant Laboratory, Inc., Orange, California. At one time we used Hormodin No. 3, and indolebutyric Acid in a liquid. The hormone we are now using consists of:

1.0	grams indolebutyric acid
25.0	grams fermate
99.0	grams talc
<u>125.00</u>	grams

We find it cheaper and it works just as well, if not better than, the hormone previously used.

During the course of the day if any twig is dropped or has fallen to the floor, it is always put back through the fungicide before it is returned to the working bench. Flats used to carry or hold plants while flattening, or when grafting, and containers used for the hormone are dipped in fungicide before being put away for the day. All excess hormone is thrown away every day.

Our grafting room is maintained in a state of "kitchen cleanliness." Access is limited to people who work there. At the end of each day's work, it is thoroughly cleaned. All prunings and left-over wood are discarded. The mist case in which twigs and completed twig-grafts are held during the day is scrubbed, using 16 ounces of 25 per cent Clorox in 2½ gallons of water. The table and counter tops, which are covered with vinyl linoleum, are scrubbed with the same solution. All tools are cleaned and stored in lined drawers. The floor is scrubbed, even the windows are washed daily. When completed we can go home.

## **SIMULTANEOUS GRAFTING AND ROOTING OF CITRUS UNDER MIST**

### **Part Three—"Hot House Operation"**

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We have adopted the U. C. System for container-grown plants, as discussed in University of California Manual 23, as the foundation of our growing operation. We are convinced that mother blocks of clean planting stock are essential for a sound growing operation. This is the first principle to support the production of quality nursery stock. The second principle is proper soil treatment. We use a modified U. C. soil mix, in that we use redwood sawdust instead of peat moss. The soil mix is an essential part of our operation. The last principle is proper sanitary practices. We make a real effort here also. All of these practices are necessary. They are goals. We rec-