

MODERATOR HAUSCH: Next on our rose program we will have Mr. Ralph S. Moore who is well known for his growing of miniature roses. His subject will be, Mist Propagation of Miniature Roses. Mr. Moore!

MIST PROPAGATION OF MINIATURE ROSES

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I have been interested in mist propagation of cuttings for at least fifteen years. An article published in the American Nurseryman some eleven or twelve years ago reported experiments with misting over a two-year period and so I decided to experiment on my own. At about this time I found where a mist nozzle could be obtained which looked as if it would work, so I installed about a dozen mist heads.

As little information was available on the use of misting as an aid in rooting cuttings, I had to learn the hard way. For example, such items as amount of water, duration, drainage, rooting medium, hardening off cuttings after rooting, etc. had to be learned by the trial and error method.

I have observed a number of different misting nozzles but for my purpose still prefer the original Thompson #215 (made in Los Angeles by Thompson Sprinkler Co. and available through various dealers). It is relatively inexpensive and trouble-free.

These heads operate on low pressure (our's varies from 40-60 psi at the pump). Each head is adjustable — from full open to completely closed. This is important to us for several reasons. Individual heads may be turned on as the cutting bed is filled or one or more heads can be temporarily turned off to permit working in an area without interfering with misting the rest of the bed.

At time of hardening off, any individual area may be separately controlled by merely closing down the screw adjustment; all varieties do not take the same time to root, or a bed may not be all filled at the same time.

In addition to the above individual nozzle control, each line of seven to fifteen mist heads is separately controlled by an ordinary garden valve. In the past we have used globe valves and pipe unions but now have converted to the garden valve with a short section of rubber garden hose connecting to the mist line.

All of our propagation is outdoors (or in semi-outdoor houses) usually with no cover at all. Our winter temperature sometimes drops to as low as twenty-six degrees and we found that the loss of regular garden valves was nearly zero while we were losing nearly one-half of our globe valves. By using the short (18 inch) section of garden hose which is easily discon-

nected in winter, we also eliminated the more expensive pipe union.

At this point I should state that we are "primitive" — we do not use automatic or "interval" misting. In our area, with low humidity and high light intensity, we have not found constant misting to present any undue problems. However, we do intend to install time controls before another season to turn mist on in the morning and off in the evening.

As soon as freezing weather comes we discontinue use of misting until spring. All mist heads are removed from lines to prevent damage from freezing. They are cleaned and repaired during the winter and replaced on the lines early in the spring as needed.

Our first propagating structure using mist consisted of two beds, 3' x 16' built similarly to those we now use except that the bottoms were solid with 2" wide spaces between 1 x 12 boards which were covered with screen. Rooting medium was sand. As an experiment we tried a 3' section of a one-half peat moss and one-half perlite mixture, which proved so successful that we have continued to use this mix as our standard medium.

At present we have the following propagation space under mist:

3 houses — 4 beds 3' x 24'
2 houses — 4 beds 3' x 30'
1 house — 4 beds 3' x 48'

This makes a total of 2,160 square feet. In addition we have an outside area under mist which holds approximately 200 flats (18 x 18" square by 2½" deep).

Our "houses" are really raised beds supported by a frame made of redwood 2 x 4 uprights on mud sills; bracing is 1 x 4. Beds (or benches) are of rough 1 x 4 redwood. These are made by nailing 1 x 4 sides of convenient length (8, 9, or 10') on 34" end pieces. One-fourth inch mesh galvanized hardware cloth, 36" wide, is rolled out and stapled to make a bottom for each "box." This is then reenforced by nailing 1 x 4 x 36" rough redwood pieces, spaced at 18" centers, over wire mesh. Spaces between these 1 x 4 supports are filled in along the edges with 1 x 1" pieces to give added support.

The finished wire-bottomed boxes (beds) are then turned bottom side down on the underframing. Thus, we have light, easily-built bench units which may be dismantled for moving, if necessary.

These benches are set up in house units with two benches down the middle and a path and bench on either side. A light framework is now added all around to support 3' wide (high) screen glass (coated wire screen) which serves as a wind baffle. A light framework is included over the top which we sometimes cover with polyethylene during the winter. This affords protection for the workers and also helps to prevent overwatering during heavy rains.

Mist lines are set up on wood brackets about 18" to 20" above the beds. Mist heads are spaced about 40" apart in the line. With our pressure this gives good coverage of the 3' wide beds.

The rooting medium we like best is a mixture of approximately one-half Canadian peat moss and one-half perlite. This mixture is used the first time as it comes from the bag. Before a second use, the beds are treated with a Clorox solution. All of the remaining mix is then removed down to the layer of gravel (approximately $\frac{3}{4}$ to 1" layer in bottom over the wire mesh). All the beds including the gravel are treated with Vapam before refilling with fresh mixture.

Cuttings of miniature roses are made of both soft and hard (or semi-hard) wood depending upon variety and material available. Some varieties seem to do best using rather short cuttings (1 - 2"). Usually cuttings are made 2 - 4" long. We find that if cuttings are made longer there is a tendency to stick them too deep into the medium.

Cuttings are dipped into a Clorox solution immediately after making, then drained and dipped into a solution of Orthocide just before sticking. Hormone treatment is regular Rootone powder. Too deep placement of cuttings seems to delay rooting and cuttings are more inclined to rot. We have found that cuttings root quickest and best in the top 1" of medium, probably because they get more air.

Depending upon time of year and variety, cuttings root under mist 3 to 5 weeks — sometimes sooner. During the winter in the same beds, but without mist (using hard or dormant cuttings), rooting may take eight to nine weeks or more.

As soon as cuttings are sufficiently rooted the hardening off process begins. During hot, sunny weather and high temperature, close attention is essential. In cooler, fall weather or on cloudy or overcast days the minimum of attention is required. Water is turned on for a few minutes at a time at intervals. The entire hardening process usually takes about five days. After that, cuttings are on their own, needing only the minimum of care until potted.

MODERATOR HAUSCH: Thank you, Mr. Moore. I certainly enjoyed your talk and I think everybody else did too. Our next speaker will be Mr. E. P. Dering who will discuss storage and refrigeration of rose budwood. Mr. Dering!

STORAGE AND REFRIGERATION OF ROSE BUDWOOD

E. P. DERING

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My experience in freezing budwood, came as a result of a rather freakish circumstance. We had just built a warehouse and a refrigerator. We had some wrapped roses left over at the