if we did not use poisoned bird seed as a control measure. This seed which contains thalium sulfate can be obtained from any exterminating concern. We take cylindrical cans, such as the type that canned grapefruit juice comes in and place a few tablespoonfuls of the poisoned bird seed in them. These cans are then placed under the straw cover and tilted so that the seed doesn't quite roll out. The action is almost instantaneous.

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MODERATOR MAHLSTEDE: For another method of handling mist propagated cuttings overwinter, I will call on Mr. Ralph Shugert of Forrest Keeling Nurseries, Elsberry, Missouri, who will discuss banding.

Mr. Shubert presented his paper entitled: "Handling of Rooted, Mist Propagated Cuttings in Plantbands." (Applause.)

HANDLING OF ROOTED, MIST PROPAGATED CUTTINGS IN PLANTBANDS

MR. RALPH SHUGERT

Forrest Keeling Nursery, Elsberry, Missouri

Our procedure for handling rooted cuttings from mist is to bring the cuttings to the potting bench and pot directly into cypress plantbands. The cypress bands are set up in flats, and after a flat is filled it goes into a "storage area," for a hardening-off period. In 1953 and 1954 we experienced, in certain varieties, losses immediately after banding-off. This past summer we used a shade house which provided approximately 70% shade. As added insurance, we have two auxiliary mist lines, manually operated, using the Florida "B" type nozzle, with the nozzles spaced on twelve foot centers. The operation of these lines held down top dessication and assisted materially in the development of a secondary root system.

After the cuttings have rooted out in the bands, the flats are then moved to an unsheltered propagation area. At this location each band is removed from the flat and placed in beds—five feet in width—on a sand base. The thin layer of sand encourages roots to stay within the band and not grow down into the underlying soil strata. We have found that two or three inches of sand aids materially in lifting the bands when it is time to line the plants out in the field.

The bands then remain in this area until fall transplanting time, or may even remain over the winter,—with a sufficient straw mulch, until spring. At transplanting time they can go in the ground with or without the bands affixed to the soil ball. At the Forrest Keeling Nursery we remove the cypress bands before planting.

I have neglected to mention our potting soil, but as most of you know, we use the John Innes formula with a #1 base. We shall continue the use of John Innes compost next year, with certain modifications.

Our bands are cypress, and I don't believe I shall add to that statement, except to make mention of the fact that we anticipate using some

fastened bands next summer as well as the slotted bands. We feel in our operation bands are much more feasible than clay pots, considering cost, weight and labor expense.

That very briefly is our procedure in handling rooted cuttings in bands. In summation, we believe the most critical phase of mist propagation is not the rooting period, but rather the hardening-off process from the time the rooted cutting is removed from the mist house until it is established on the plantband. We feel the extra shade, and careful watering, during this critical time to be extremely important.

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MODERATOR MAHLSTEDE: Last, but by no means last, it gives me a great deal of pleasure to introduce to you a fellow who I am sure you all will be hearing more about in the years ahead. As a graduate student at Michigan State University he has been doing some very interesting work in the field of Plant Propagation. Here to discuss "A New Approach to the Problem of Rooting Cuttings under Mist" is Mr. Dale Sweet. (Applause).

A NEW APPROACH TO THE PROBLEM OF ROOTING CUTTINGS UNDER MIST

MR. DALE SWEET

Michigan State University, East Lansing, Michigan

I would like to discuss a few points about the propagation and survival of difficult-to-root plants. There are certain fruit stocks which we are particularly interested in from the standpoint of being able to root them economically on a commercial basis.

The mound or trench layering method of propagating fruit stocks is laborious, necessitates the use of heavy equipment and takes a lot of crop land out of production. Consequently, for the propagation of such material as the Mahaleb Cherry, which has to be clonally propagated, it would be desirable to have a simple method of rooting cuttings. This project has been under study for the last two or three years at Michigan State.

Our research has made use of a combination of several techniques and practices currently in use. One is the mist technique. Another one is the polyethylene tent method of propagation; and the third is the use, especially in Europe and certain hot, dry areas of the United States, of air washing for cooling greenhouses.

This past summer, after considerable study, not only of the literature, but also of the propagation operations in mist beds in the south, we came to the conclusion that we would have to manufacture an atmosphere, possibly with controlled wind movement in which to root cuttings of these difficult-to-root plant types. With this in mind we constructed an experimental rooting chamber. The first step involved the selection of suitable greenhouse bench, one which was approximately 25 to 30 feet long.