

MODERATOR McNEILEN: Our next speaker is Bill Smith, production manager at Briggs Nursery, Olympia, Washington. Bill:

## **PALLETIZATION IN THE PROPAGATION OF NURSERY STOCK**

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The use of pallets in the nursery industry isn't new. In fact, shipping of most nursery stock is handled on pallets at one point or another. In propagation this hasn't been the case because cuttings have been handled in solid beds or small flats. The need to develop ways of palletizing cuttings has become increasingly important as rooting costs per square foot of greenhouse space have increased greatly. The faster cuttings can be rooted and moved from the propagation bench, the lower the costs per square foot becomes. I believe a pallet system can speed up the moving process. There are many factors to consider when rooting cuttings in pallets. The size of pallet, rooting media, watering, and moving are a few. These will be outlined below in more detail. One problem that did develop, and we are still working on, is how to keep the pallets at the right height to be comfortable for the women to work at, and still be moveable.

**Size of Pallet:** The size of pallets for propagation is usually limited to the size of greenhouse and equipment available to move the pallets. Ease of moving the pallet in and out of the greenhouse is the main basis for using the pallet system.

After testing different sized pallets, we settled on two basic sizes. One is a 2' x 4' x 4" pallet or box and a 4' x 10' pallet. The smaller size may not be a true pallet, but it does fill our needs within the confines of the greenhouse.

The 2' x 4' pallet holds between 450—1200 cuttings, depending upon the size, foliage, and length of time the cuttings will be in the pallet. There seems to be less heat loss from the edges of the pallet as compared to the same area utilized with regular flats. There is also less drying around the edge of the pallet as compared to a flat type system.

It takes two men to handle the pallets onto and off of the propagation bench. When we compared the amount of cuttings handled, we still found the pallet system was more efficient.

The 4' x 10' pallets that we use at the nursery are of two types: one with a 4" side board and one that is flat. The flat type pallet is used to move flats or the 2' x 4' pallets of cuttings into a growing area from the propagation bench. We are able to put 5 of the 2' x 4'

pallets on the larger pallet. In this way we can move 5000—7000 rooted cuttings per large pallet. With a fork lift this can be done quickly and efficiently.

The 4' x 10' pallet with 4" side walls is used for direct rooting of cuttings. In the direct rooting of cuttings, on the pallet system, as many as 7000 cuttings have been stuck and rooted. A good example of this is ivy cuttings. We put 5200 cuttings in the one pallet. This will give up to 5000 rooted cuttings which we can bare root or ship in the pallet.

To make the pallet system workable, a new greenhouse and special propagation beds had to be built. The new greenhouse was separated into 12' beds, which allows a 2' walkway for weeding and hand watering.

A fork lift and pallet jack are necessary to move the 4' x 10' pallets as they are very heavy. These two pieces of equipment were used mainly during the shipping season, so the propagation department was able to make use of them during the full year.

Another use of the pallet system, which we believe will be a great labor saving device, is direct rooting of cuttings in 4" pots or smaller. The nursery used this system on grapes and we were very pleased with the results.

**Rooting Media:** The type of soil mixes that we used this last year in the pallet system consisted mainly of sawdust and peat. With rhododendrons, the mixture was 80% sawdust and 20% peat moss. Sawdust as a rooting medium may not be the best, but for the purpose we needed, it worked quite well. In a rooting medium, we were looking for two factors:

- 1) good drainage throughout the 4" column and,
- 2) an economical medium which could be discarded after one use.

For cuttings that needed a drier mix we used 2" of sawdust on the bottom and 2" of perlite on the top of the pallet. This mixture worked well for conifers.

**Watering:** The watering of cuttings in the pallet system can be fairly difficult because of the number of cuttings per pallet and the number of pallets per bed area. It is very easy to mix plant material that have different water needs in the same bed. As in all propagation, water is still a variable factor between rooting and rotting of cuttings.

**Results:** During the past year we have become more involved with the use of pallets in propagation and have been pleased with the results. There have been failures and problems, due, mostly, to a lack of understanding of how to water the pallets. It is possible to move many thousand cuttings from the propagation bed

to a growing area in a very few minutes. We feel that with the higher level of efficiency and speed by which we can handle many cuttings with the pallet system, it has been a worthwhile experiment and we plan on making use of many more pallets next year.

MODERATOR McNEILEN: Mr. Richard Bosely from Plant Systems, Mentor, Ohio, will speak to us next on overwintering structures as used in the East. Dick Bosley:

RICHARD BOSLEY: Thank you. This is the second time I've come to the Western Region meeting, the previous time being at Disneyland several years ago. I had such a fine time there primarily because of the nature of the people on the West Coast. I think they are more friendly and out-going than the more conservative Easterners, so it is very enjoyable to visit out here.