

## Tote-Racks-Disposable Shipping Trays for the Ray Leach Super Cells

David Grierson

*Nursery manager, Lone Peak State Forest Nursery, Draper, UT*

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*Cardboard tote-racks were designed for shipping seedlings grown in Ray Leach Super Cells. The disposable trays hold thirty Super Cells, can be assembled in seconds, and feature two hand holds for ease of carrying.*

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Small conservation nurseries such as the Lone Peak State Forest Nursery have many customers who need relatively small amounts of trees. Container systems designed for large containerized seedling tree nurseries are often only available in unsuitable sizes. At the Lone Peak nursery we have adopted a container system that features the Ray Leach Super Cells because of its ease of use in the greenhouse, the size of plugs for outplanting, and more importantly, the preference of our customers. The trays made by Ray Leach Container Nursery pose a potential problem in shipping because our minimum order for containerized stock is 30 plants and the trays hold 98 seedlings.

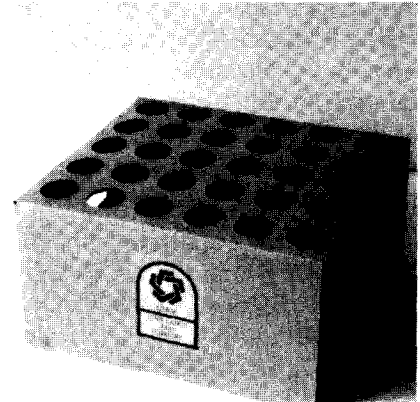
We considered a number of alternatives, including removing the trees from the rack and bundling them in groups of 10 with a rubber band. This practice is inexpensive, but the seedlings become badly damaged during transport.

We also considered charging a deposit for the temporary use of the trays to some of our larger

customers. This resulted in the racks being distributed over a wide area with no guarantee of the time or condition of their return. In addition, we would have had to maintain many extra trays on hand to ensure that we had sufficient trays for the next greenhouse crop.

Finally, we developed a disposable cardboard rack that holds the minimum container order of 30 trees, keeps the trees upright, and is easily shipped either alone or inside a cardboard box. The idea came from the Colorado State Nursery, which uses a shipping tray made of plastic for its tarpaper pots. We simply turned the tray upside-down, punched some big holes in it, and came up with a rough model. We then sat down with a representative of a local paper products manufacturer and together developed specifications so that a prototype could be made. After a few modifications, a die was fabricated to facilitate mass production and the final cardboard tote-rack was manufactured (figs. 1 and 2).

The holes in the top are  $1\frac{7}{16}$  inches in diameter, spaced on 2-inch-diameter centers. The holes were made a little smaller than in the Ray Leach Super Cell trays to allow for a little settling in case the tote-rack got wet. When the cells are in place in the tote-rack, they are still suspended so that the roots are kept air pruned if the trees are



**Figure 1A**—An empty tote-rack. **B**—A tote-rack holding pine seedlings in the Super Cells.

not planted immediately. There are hand holds cut in the sides of the tote-racks.

The tote-racks are  $10\frac{1}{2}$  inches wide,  $12\frac{1}{2}$  inches long, and  $6\frac{1}{2}$  inches high. The cardboard is rated at a 150-pound test and made of heavy-duty Kraft paper. Cost for the tote-racks varies according to the quantity ordered, but our cost was less

than 35 cents per tray.

The tote racks have proven to be a low-cost solution to the container shipping problem we had at the nursery. We have control over the plastic trays we use in the greenhouse because they never leave the nursery. This cuts down on breakage and lengthens

the average life of the tray.

The cardboard tote-racks look more attractive and professional than the alternatives we explored. They easily accommodate a nursery logo or other printing on the side. They are surprisingly sturdy and more than adequate to withstand the everyday use

and abuse that they may be subjected to. The tote-racks can be assembled in seconds, are easy to load and carry, and have the added advantage of costing very little. Finally, our customers are quite satisfied with the tote-racks, which keeps our public image at a high level.