

# A RACKING AND CONVEYOR SYSTEM FOR INCREASED EFFICIENCY

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This year Zelenka Nurseries shipped over 2,000 truck loads of plants into 34 states and regions of Canada. We presently ship from 3 loading and staging areas and during the peak shipping season we will load up to 40 trucks per day.

We have developed an aluminum 3-deck racking system to maximize loading area and minimize damages. This system consists of 12 racks and 96 boards for a 40 foot trailer. The racking system weighs 2,322 lbs. and the cost is \$3,894 (Tables 1 and 2). We will have 80 sets available for spring 1981 shipping.

Variable speed electronic conveyors are used to load plants into a truck. We presently have 16 conveyors ranging from 35 to 40 feet in length. Currently conveyors are costing about \$4,000. Electronic eye counters are mounted on the conveyors to improve loading accuracy. Counters can be set for subtotals as well as totals. It takes 4 to 8 man-hours to load a full trailer and we are able to load over 1,700 spreading junipers 12 to 15 inches on a truck. The end of the load is secured with clamps and load locks to insure it stays intact. Some haulers have made special brackets underneath their trailers to store the racks. This helps allow for more profitable return hauls for the drivers.

**Table 1.** Advantages of Aluminum Racking Systems.

1. Longer life span — 10 years opposed to 3 years for wooden systems.
2. All racks are uniform and deck height is consistent.
3. Rack design allows us to load right up against the walls on the middle and top decks, and out 1 3/4" on the floor. This is a gain of approximately 10% in volume.
4. Aluminum racking systems weight less than wooden systems:

Wooden Item	Quantity/ 40' Trailer	Weight (lbs.)	Total (lbs.)	Aluminum Item	Quantity/ 40' Trailer	Weight (lbs.)	Total (lbs.)
Wooden Rack	18	87	1,556	Aluminum Rack	12	57	684
Wooden Board	100	25	2,500	Aluminum Board	96	16	1,536
Z-Clamp	12	7	84	Z-Clamp	12	7	84
Load Lock	2	9	18	Load Lock	2	9	18
			TOTAL 4,158 lbs				TOTAL 2,322 lbs.
				4,158 lbs. - 2,322 lbs.			
				1,836 (44% less weight)			

5. Aluminum planking inter-locks making shifting of planks on racks less likely.
6. Eliminates use of nails — resulting in less flat tires, less injury to loaders and drivers, and no split boards

**Table 2.** Material Costs for Aluminum 3-Deck Racking System.

Item Description	Cost/Item	Quantity 40' Trailer	Cost 40' Trailer
Boards	24.50	96	\$2,352.00
Racks	108.00	12	1,296.00
Z-Clamps	13.00	12	156.00
Load Locks	45.00	2	90.00
Total Cost			\$3,894.00

Note: The aluminum boards are made to your specifications regarding length. When measuring inside width of trailer, deduct 3½" for the racking systems; this will give the proper board length.

### **Tuesday Afternoon, December 9, 1980**

The afternoon session was convened at 1:30 p.m. with John P. Sparmann serving as moderator.

Editor's Note: Francis Gouin moderated a group of presentations on techniques to reduce energy use. The following papers by Francis Gouin, D.C. Milbocker, William Devine, James Kyle, and Adrian Knuttel were part of that session.

## **VEGETATIVE PROPAGATION UNDER THERMO-BLANKETS<sup>1</sup>**

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Polyethylene film covered propagating chambers have been demonstrated to be effective for rooting cuttings of many species of woody ornamentals (1). These chambers can easily be constructed within existing greenhouses, and when filled to capacity with cuttings, will maintain near 100% humidity with minimum care.

Nurserymen have long recognized the advantages of direct sticking cuttings into individual containers. In addition to saving time, cuttings rooted by direct sticking grow faster and losses from transplanting are eliminated. Plants from direct stuck rooted cuttings develop faster because their roots are never disturbed. However, direct sticking requires 5 to 50 times more space than conventional high-density-sticking methods. The amount of additional space depends on the size of containers being used.

Nurserymen in southern regions have made extensive use of direct sticking because of their longer growing seasons and milder winters, while growers in colder regions must rely on

<sup>1</sup> Scientific Article No. A-2915, Contribution No. 5972 of the Maryland Agricultural Experiment Station, Department of Horticulture.