

Mechanization reduces lifting labor costs

70 percent at the Coeur d'Alene Nursery

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The Coeur d'Alene Nursery, in common with other nurseries in the United States, Canada, has been faced with

skyrocketing wage rates for labor in recent years. One area of work where mechanization can effect large labor savings is the seedling lifting process. Consequently after some investigation, the nursery purchased a Model-TH hydraulic drive Grayco Harvester from the Grayco Harvester Company of Heidelberg, Ontario, Canada. Most nurserymen are acquainted to some degree with the Grayco harvester. Essentially it is a modified potato digger which undercuts the entire seedling bed, lifts seedlings and soil onto a digger chain, transfers the mass onto an inclined "agitator" chain where vibration shakes the dirt from the seedlings' roots, and delivers the trees, without soil.

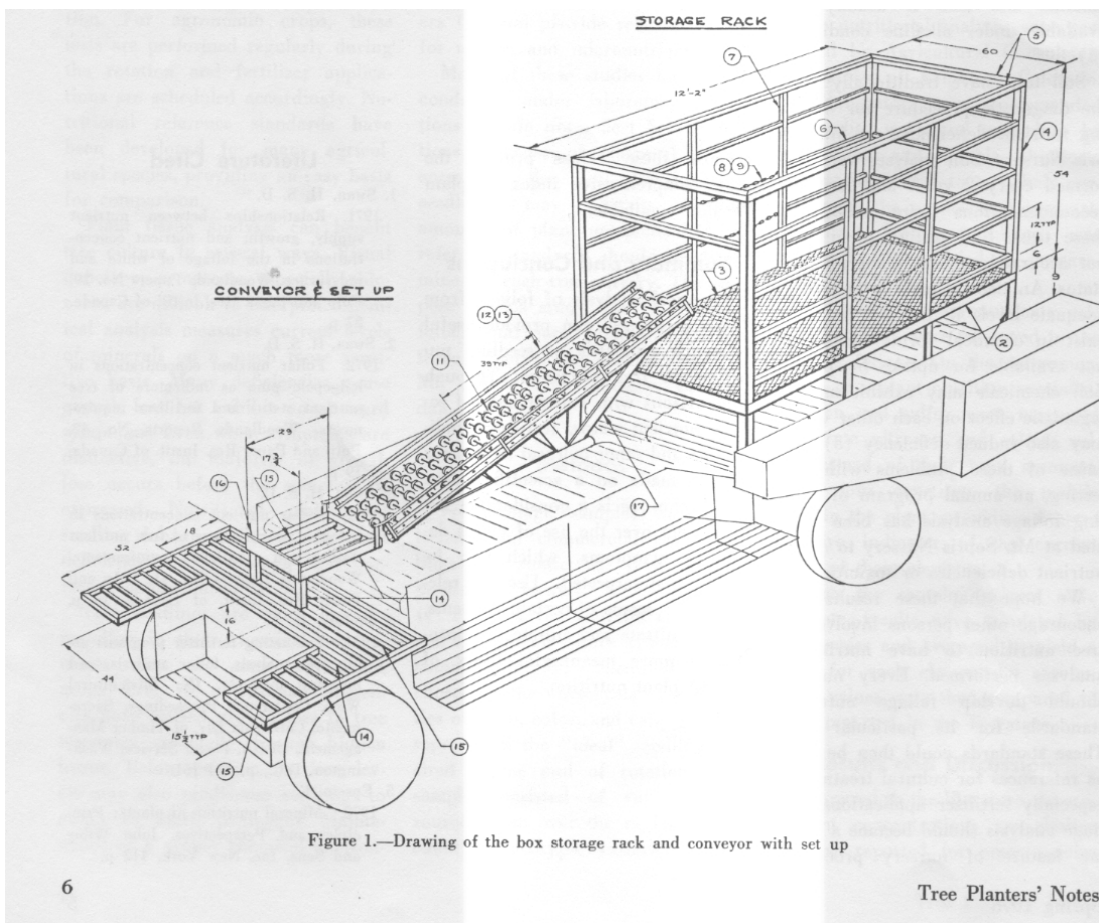


Figure 1.—Drawing of the box storage rack and conveyor with set up



Figure 2.—Seedling lifter at work

to the rear of the lifter. Three things may be done with the trees at the rear of the lifter: (1) the seedlings fall onto the ground or into a box at the rear of the lifter, (2) the seedlings fall onto a side delivery loader which loads them, en masse, onto a trailer traveling alongside the lifter, or (3) the seedlings fall onto a "hulk handler" which is a trailer behind the lifter where seedlings can be oriented and packed in tubs or field boxes for delivery to the packing shed.

At Coeur d'Alene we rejected option (1) because a large number of workers would be required and the seedlings would be exposed too long. Option (2) was also rejected because our packing shed was set up for small field boxes, not large pallets of trees. Using large pallet-boxes with this type of lifter is probably the most effective application of the lifter. This system is employed in several places with remarkable efficiency, such as New York's Saratoga Nursery. However, to accommodate the current packing shed arrange

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ment at the nursery, the bulk handling option was selected.

The first "bulk handling" trailer was constructed by Grayco for the Forest Service's Ashe Nursery in Mississippi; Coeur d'Alene ordered a similar unit. However, the bulk handling system had one crippling drawback. Each time the boxes or tubs were filled with seedlings, the machine had to be stopped, the full boxes off-loaded, and empties put on. Obviously, a more effective system needed to be devised. Therefore we set about constructing a system that would provide a constant flow of empty boxes to the people on the bulk handling trailer. The system designed to solve this problem is portrayed in figure 1. It resulted from a cooperative effort by the Nursery and the Forest Service's Missoula Equipment Development Center. Copies of the drawing are available from the Coeur d'Alene Nursery. In the process of using this apparatus, numerous other modifications were made to the lifter and bulk handling unit. These changes have been dis-

cussed in two nurserymen's conferences and they are available in those proceedings: 1 Western Nursery Conference, Portland, Oregon, 1974, and the Intermountain Nurseryman's Association meeting, Missoula, Montana 1975).

The result of this work was that 13 people were able to lift, box, and transport 250 to 300 thousand trees per day to the packing shed whereas 15-50 people were required to do the job previously. The lifter paid for itself very rapidly. Assuming a gross labor rate of \$4 per hour, a lifter cost of \$11,000, and a crew reduction of 32 people, the lifter would be completely amortized by labor savings in a little over 11 work days. While lifting the 8 million trees in 1974, the Coeur d'Alene Nursery saved approximately \$30,000 in lifting labor costs; enough to amortize the lifter and the new International hydro 70 tractor that pulled the lifter.