IMPROVEMENTS TO GRADING TABLES AND ROOT PRUNERS

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The grading and root-pruning of nursery stock at the time of shipment are almost universal practices. Several methods have been used. An increasingly prevalent procedure is to grade the seedlings and place them on a conveyor belt, usually in bunches containing a determined number of trees. The seedlings are carried by the belt past a root pruner which prunes the roots at the desired length.

A single belt conveyor, 18 to 24 inches wide, is usually used. The conveyor is of various lengths but is usually about 30 feet long. At the lower end of the belt, a root pruner is mounted, and as the seedlings are carried past the pruner, the roots are cut off. This system is highly suitable for seedlings that have taproots or stiff perpendicular roots. However, for seedlings with a more fiberous root system, such as on red pine, white pine, jack pine, and the spruces, this type of belt does not work as well. The roots to be pruned extend beyond the belt and tend to drag; consequently the roots are not pruned at all or are cut at various lengths.

To support the ends of the roots and carry them along the conveyor, our nursery used two belts (4 and 20 inches wide). A line was painted on the 20-inch belt, 8 inches from the edge and adjacent to the 4-inch belt. The root pruner was placed between the belts. In operation the trees are placed on the wide belt; the root collars are set on the painted line, with the roots extending on to the 4-inch belt (fig. 1). The two belts carry the trees past the root pruner, with the root system extended so the roots are pruned at a uniform length (fig. 2). To assist inholding the trees and carrying them past the pruner, two rubber-tired wheels were mounted alongside the pruner; a smaller wheel that pushes down any roots that tend to bow-up is mounted directly in front of the pruner blade (fig. 3).

In the past, made-up pruners, similar to the one used by the Ashe Nursery (Brooklyn, Miss.), have been used. This type of pruner was used on the single-belt and double-belt conveyors to prune red pine, white pine, and white spruce at the Chittenden Nursery. It required frequent cleaning and was difficult to keep sharp; thus, frequent shutdowns resulted.

It was decided to contact a manufacturer of cutters used to cut cloth and other fabrics. A machine was tried, and after a few alterations of the conveyor belt and cutter, it did a very good job. It is a self-contained unit and can be mounted between the two belts or anywhere without interfering with the operation of the belts. It gave very little trouble and was easily cleaned and adjusted. The cutting blades would prune about one million trees before replacements were needed. The blades cost about $2.50 each. The cutter is an Eastman, Class 355-L6; the wall bracket is made by Eastman Machine Company, Buffalo, N.Y. A similar cutter that is adapted for use on conveyor belts was tried this season and was not well adapted for this task. The combination of two belts and cutter provides a very good grading and root pruning unit which will operate with a minimum of shutdowns.

In our operation the conveyor is 30 feet long, with the root pruner placed about 3 feet from the lower end. Ten to 12 girls are stationed along the belt, 5 or 6 to a side. They cull and count the trees and place them on the conveyor belt in bunches of 5 or 10, depending on the age class of the stock. After root pruning, two men assemble the bunches of 5 or 10 into bunches of 10 or 50 and tie them with rubber bands (fig. 4). This crew can handle 20,000 to 30,000 3-0 seedlings per hour.

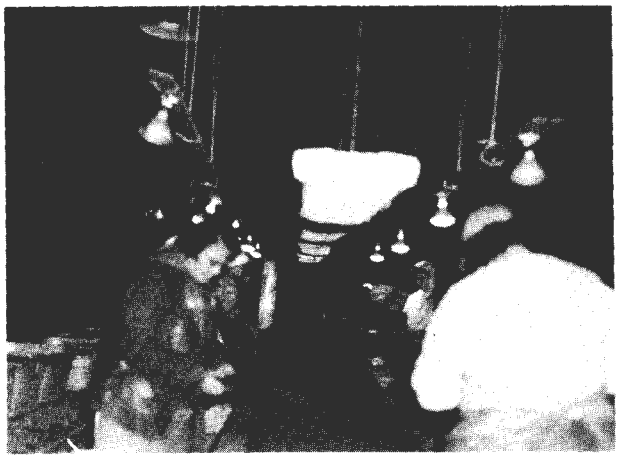

Figure 1.--Grading, counting, and placing nursery stock on conveyor belts.

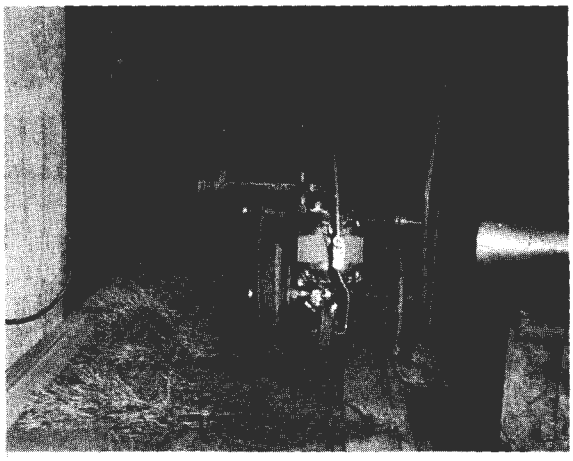

Figure 2.--Root pruner in position to prune roots.

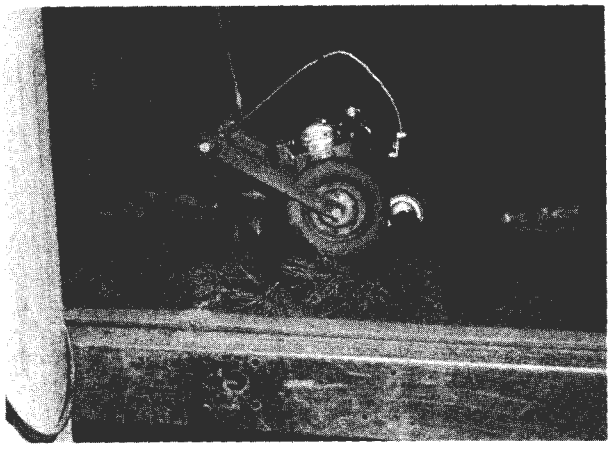

Figure 3.--Side view of pruner showing how wheels hold stock in place while roots are pruned.

Figure 4.--Assembling bunches and tying them together with rubber bands.