

# CONTAINER MECHANIZATION AT RIVERSIDE'S EAGLE ROCK NURSERY<sup>1</sup>

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Over the years we have focused on mechanization as a major part of our approach to control labour costs, maintain productivity and reduce the potential for injury. This has been especially important during seedling extraction and grading, which accounts for a major portion of annual labour costs as well as injury potential. Initial attempts to mechanize seedling extraction and grading were unsuccessful. They did, however, provide useful information and insight as to what might be feasible. At least we discovered what would not work. Our current system has worked out reasonably well. It is centered around a Vancouver Bio Machines pin extractor. The extractor is a dual outfeed model. It delivers seedlings onto two Byronix counting and bunching lines. Culls are removed by one person on each line, with the remaining seedlings being electronically counted and grouped into bunches for wrapping. The bunches of seedlings are manually gathered and placed vertically into two Byronix seedling wrappers. The wrapped bundles of seedlings drop onto conveyors which transport them to powered carousels, from which the stock is packaged. The pin extractor, outfeed conveyors, and counting / bunching conveyors are variable speed controlled, allowing for a high degree of calibration. Manpower required to operate the line is 10 persons:

- 1 person loading/hauling stock to operations building
- 1 person loading extraction line/washing blocks
- 2 persons grading/culling
- 2 persons feeding wrappers
- 2 persons packaging
- 1 person carton assembly, labelling/palletizing packaged stock
- 1 person quality control/lead hand

Production is relative to stock quality. With net seedling recovery in the 75-80 percent range we can expect the following:

PSB 160	125-140,000 net seedlings over 7.5 hours
PSB 112	90-100,000
PSB 77	65-75,000

Mechanized extraction has reduced manpower requirements by 40 percent from the manual method, while maintaining similar production levels. Risk of repetitive motion injury has been greatly reduced. All persons are cross-trained and rotate to a different job every 2 hours. The manual line is kept on standby in case of downtime or if hand lifting is required. Pay back on the extraction line was projected at 3 years. In fact it paid for itself in under 2.5 years. Several areas still require additional development. The wrappers work adequately with most stock types, but could be more robust to improve reliability. Packaging is another area that has been considered for mechanization.

The innovations of people in this industry and the technological advances we have witnessed over a relatively short time have combined to get us where we are today. The future of container seedling nursery mechanization is only as distant as the next good idea.

<sup>1</sup>DeBoer, G.; Kusisto, J. 1999. Container mechanization at Riverside's Eagle Rock Nursery. In: Landis, T.D.; Barnett, J.P., tech. coords. National proceedings: forest and conservation nursery associations—1998. Gen. Tech. Rep. SRS-25. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station: 147.

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