

EQUIPMENT DEVELOPMENT PROGRESS REPORT
MECHANICAL TREE LIFTING

by
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(Presented by Lloyd Soule, U.S.F.S., Region 6)

As many of you know, the Development Center has been assigned a project to develop a mechanical tree lifter. I would like to address most of my remarks today to this project -- what we have done, what we are doing and what are our plans for the future.

Mechanical lifting isn't new. Sometime ago you probably read a brief article on a mechanical tree lifter in Tree Planter's Notes. This lifter was developed by the Georgia Forestry Commission and was moderately successful, its main weaknesses being in rapid wear and slippage of the lifting belts.

A few years later the state of New York picked up the idea of mechanically lifting seedlings. They talked with the Georgia people about their lifter and ended up with what you see in this slide.

(Slide a - New York lifter)

Unfortunately, the machine wasn't completely successful in its trials at the Saratoga Nursery and was loaned to the state of Virginia where it was modified and given additional tests last year. Personnel at Virginia's New Kent Nursery termed the lifter 900 successful and are very encouraged about the prospects for even greater success.

You may be interested in seeing the modified lifter in use at the New Kent Nursery. The following slides were taken during the test and show:

Slide #2 - Lifter being pulled down a bed of loblolly pine. Beds are undercut prior to lifting.

Slide — Close-up of roots being lifted from soil by action of inclined belts.

Slide #4 - Roots during movement up belts after soil has been removed by beater.

Slide #5 - Seedling coming off belts onto conveyor at rear of machine.

Slide #6 - Overall view of mechanical lifting operation.

Seedling bundles in foreground ready for transport to grading tables.

Last year personnel at the Indian Head Nursery in Saskatchewan also built a conifer seedling lifter.

Slide #7 - Indian Head lifter

This is a five-row unit contrasting with their two-row, hardwood lifter and the eight-row conifer lifters built in the United States.

Mr. Patterson at the Indian Head Nursery feels that it will be at least two or more years before their lifter will be operating satisfactorily.

Other countries have also tried their hand at mechanical lifting. Germany has used a single-row lifter successfully on large transplant stock. The machine they used is called the Plant-lift and only recently I saw an ad for it in the American Nurseryman magazine. We have also found references to tests of mechanical lifters in Hungary and other Iron Curtain countries.

That's the background --- now what are we doing about it?

First of all, we know what problems have caused mechanical lifting to be unsuccessful in the past. We have traveled to many nurseries and talked to many people about the conditions under which a lifter must operate. Some of you here today have given us your ideas on how lifting should (and should not) be accomplished.

We are contacting manufacturers of mechanical harvesting equipment for any leads they may offer. Just yesterday, one of our engineers talked to a manufacturer of asparagus harvesters about a novel concept he has that may be applicable to seedling lifting.

One of the reasons I can't be with you today is that I'm putting together a report on our findings in the lifter project and recommending future courses of action. This report will be sent to the advisory committee that was appointed to assist us in this project and our Washington office. Mr. Baker from Elkton is one of the five members of the advisory group.

The lifter will be designed this fall and will be ready for testing early next spring at which time we hope to get it used at as many locations and in as many different conditions as possible.

A program is being worked on whereby an electric eye will be placed near the stems to count the trees as they are lifted. A baling machine will bundle the trees as they come from the lifting machine.

I would like at this time to be able to tell you what the lifter will look like, how much it will cost and how fast and successful it will be. Unfortunately, until the sponsors of this project are informed and agree to our recommendations, any disclosure would be premature as you can well understand.

We sincerely appreciate the time many of you have spent with us and the pledges of support we have received for this project. Please be assured that we will reciprocate by keeping you informed as work progresses.

I would like to express my regrets at not being able to attend your meeting this year. I do appreciate the opportunity to talk to you, but I would have appreciated even more the opportunity to hear the rest of the program and to see the Bend and Elkton Nurseries. Hope to see many of you in the near future.