USE OF A POTATO DIGGER FOR LIFTING NURSERY STOCK

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The most costly project in the operation of a nursery is the lifting and packing of the stock. It sometimes costs more to lift and pack the stock than it does to grow it for 2 or 3 years in the seedbeds. Some improvements have been made in the past in the method of lifting the trees, but it is still a slow hard job which in 3-0 stock requires considerable energy to pull and shake the stock to remove the soil from the roots.

During World War II the author was on the Emergency Rubber project, and when field planting of the Guayule was stopped the seedlings remaining in the seedbeds were lifted, baled and sent to the mills for extraction of the rubber. Inasmuch as the roots were also used, it was necessary to lift the plants with about 6-8 inches of the roots. The lifter used in nursery operations did not lift the plants free of the soil so they could be baled. A 2-row potato digger was secured and did the job in a fine manner. However, this type of digger was not suitable for lifting seedlings in that it had a divider that ran down the middle of the machine and caused the plants from the middle of the bed to turn over.

About 1952 the Pennsylvania Forest Service tried out a double row potato digger made by the John Deere Company that did not have this divider down the middle. They found that this machine, with a few minor changes, did a very good job of lifting conifer seedlings and transplants in their nurseries.

In the Chittenden Nursery a large amount of 3-0 red pine stock is raised, and this has been very hard to lift. The roots are so interlaced and heavy that it is hard to shake off the soil. An agitator was tried on the lifter but could not handle the job.

A 2-row potato digger was secured, and with a few minor adjustments and additions did a very good job on 2-0 and 3-0 seedlings. It shakes more of the soil from the roots and what remains falls off with a shake or two. The potato digger was also tried on 2-1 transplants but could not be used for lifting them. All the soil falls off the roots of this class of trees as soon as they start up the shaker chain, and the trees become hopelessly jumbled. However, it does work on 2-2 transplants where the root systems are more matted. With a few changes, as perhaps by using a link belt on the shaker chain, it is believed that the potato digger can be used on the 1st year transplants from light, sandy soils such as are found in the Chittenden Nursery.

The changes and additions that were or are being made on. the potato digger are rather minor. A sheet metal apron was attached at the rear to catch the trees as they came off the shaker chain and permit them to slide down to the ground in an upright position. The blade was moved in about four inches on each side so that the soil in the paths was not disturbed so much. This eliminated the trouble caused by light soil sometimes allowing one side of the machine to settle and run too deeply. Also it was found that some of the trees on the outside rows of the bed were having the roots split due to their long root systems extending out into the path.. It is planned to place two coulters on the digger so that these roots will be pruned off at a length of about 6-8 inches. It is hoped that this will prevent this difficulty.

Our use of the potato digger has reduced the time required to lift and pack a thousand trees. With the old digger it required 75 minutes to dig, pack and store a thousand trees. (This included time to haul moss, paper, put trees into storage, and otherwise serve a complete operation.) In the Fall of 1955 the same operation with the potato digger on the 2-0 and 3-0 stock required only 50 minutes per thousand. The use of the digger has made the lifting job much easier. The daily production was increased and the employees were not as tired at the end of the day.