

MACHINE FOR LIFTING TRANSPLANTED HARDWOOD SEEDLINGS

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Figure 1. – *Lifting machine for hardwood transplants.*

Except for container grown stock most forest tree seedlings, both pine and hardwoods, are usually lifted from seed beds as 1-0 or 2-0 stock. Our hardwood silviculture studies have proven that in order to realize satisfactory initial and continued growth of hardwoods, a large seedling with a well developed root system is

required. To realize satisfactory growth of oaks and hickories a 1-2 or 2-2 transplant is preferred.

The transplanting, and subsequent cultural operations, produce a seedling with a much larger root collar diameter and feeder root system that must be kept intact in order to realize rapid initial growth following field

planting.

Conventional lifting machines used by most forest tree nurseries are designed to lift seedlings from standard width seed beds. Whether the seed is sown in rows or broadcast, the seedlings are small and flexible compared to transplanted stock. The conventional lifter is usually

located under the belly of a tractor or towed behind the tractor. Either method causes the tractor to bend the taller seedlings over, and will damage the stiffer stems of transplanted seedlings. This damage can also occur when lifting large 1-0 stock such as black walnut, butternut, sycamore, and yellow-poplar. The scraping or bending action that occurs when the tractor passes over the trees damages the cells, which burst when growth begins, resulting in extended lesions.

Until recently, the most satisfactory method of lifting larger hardwood seedlings and transplants, to retain the entire feeder root system and not damage the stems, was a front loader on a small crawler tractor. Naturally, this system was slow, costly, and disturbed considerable soil; however, the root systems were intact.

The lifting machine described here, not including tractor, cost a total of \$150 to construct, reduced lifting time by 88 percent and lifting cost by 80 percent.

The blade is 16 in. wide and 14 in. deep. It is sold as a plant digger and root pruner by the Green Hoe Company, Incorporated, Portland, N.Y. 14769. Various size blades are available.

The tractor is a 5000 Ford with a Howard gear reducer. The tractor speed found most desirable was fifth gear at 1600 RPM.

The speed will vary because of the soil type and moisture conditions. When the proper tractor speed is maintained, the trees will remain upright as the blade cuts under them. If the tractor speed is too fast, the trees will lean toward the tractor as they are being undercut. One person removes the trees as they come to the end of the lifter tines. No additional root pruning is necessary.

EVERY READER IS A POTENTIAL AUTHOR OF AN ARTICLE FOR TREE PLANTERS' NOTES

Please write in if you have developed or found useful a new piece of equipment; a nursery operation; a technique or method of planting or seeding trees, handling or packing seedlings, improving seedling growth, or site preparation; a seed collecting, processing, or storage procedure which might be helpful to someone else. You will facilitate our work if you type your article double space and finish each paragraph on the same page it begins. **Send Clear, Glossy Print Photographs or Black Ink Drawings, if Possible, to Increase Readers' Interest and Understanding.** Black and white negatives or color slides are also acceptable, and will be returned as soon as glossy prints can be made.

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