

MECHANIZATION - COST

Jim Wynens
Georgia Forestry Commission, Macon, Georgia

Production of nursery stock being in the position of first place in the chain of events necessary from raw material to finished product depends very much on efficiency in operation for its survival. If the cost of planting stock to the landowner is too high, then this discourages reforestation by means of mechanical planting. Reforestation is a long term investment for a landowner with more or less a ceiling on returns. His first consideration is naturally the initial amount of money being invested which is made up of site preparation, cost of planting stock and planting cost.

Nursery operation is continuously bombarded with various deterrence to its successfully meeting its objective. One of the most important is the spiraling cost of labor. Because of this, nursery operation is gradually becoming more mechanized and streamlined. Several of the requirements for large labor crews have been practically eliminated. There are others that can be eliminated through scientific research and mechanical developments. A few of these problem areas are:

1. Weeding - No sure fire method has been developed either chemically, mechanically or by techniques, such as row cropping.
2. Lifting or harvesting of seedling crops especially in heavy soils has its problems. Mechanical lifters in light soils are looking very promising.
3. The mulching of seedbeds has come a long way mechanically. There are areas that can still be improved. We, in Georgia, are considering Winter cover crops planted on the prepared seedling bed in the Fall and used as mulch in the Spring. This has been tried several times in the past with various agronomic crops with little or no success. We plan to precisely drill a cover crop such as crimson clover. In the Spring, this can be killed back with mineral spirits prior to planting. Planting will be done between the drills, and if necessary use a sickle bar mower to cut the dried crimson clover tops letting them fall on the seedbed as a mulch.

In order to meet the demand for efficiency in nursery operations, it may be necessary to change the techniques, conversely to the methods we are accustomed to.

I don't have anything unusual to report in the new equipment line. For our hardwood, we use a two row lifter which consists of a U-blade mounted on a two-point hitch. This blade can be used for root pruning as well as lifting. The blades are horseshoe shaped and are 16 inches wide from side to side. The frame is 48 inches wide. The cutting blades are spaced on 36 inch centers to match the 36 inch rows planted to hardwoods. An adapter makes it possible to be used on a three-point hitch tractor.

We use sawdust to mulch our hardwoods. This is accomplished by modifying an International Model 101 manure spreader. This is a wheel driven machine instead of the power take-off driven. A cover is built over the rear of the machine with two small down spouts installed in the discharge opening on 36 inch centers. The spouts are 6 inches wide in order to cover the tops of the small bed or row in which the hardwood seed are planted.

We have experienced difficulty using the mechanical lifting machine in our heavier soils, due to unusual long lateral roots on Loblolly. Due to the closeness of the drills, coulters mounted on a tool bar to prune roots was difficult to control. A hydraulically controlled trailer type machine was made using veneer blades mounted at a 30 degree angle and designed to run between each drill cutting the roots prior to running the lifting machine. This lateral root pruner worked very well in heavier soils but was unsatisfactory in the lighter soils because it disturbed the soil making it difficult to pick up the seedlings with the machine.

Another area improvement would be advantageous is the extension of the planting season. A lot of work is being done along these lines from containerized seedlings to chemical retardants. We have used chemical retardants at the request of an industrial organization, and it appears to work very well in the nurseries. I do not have any results after the seedlings are out planted.

Nursery operations require a continuous conflict between your ingenuity and current events in order to keep your head above water and maintain an efficient operation.