

BALINGTREE SEEDLINGS BY WEIGHT

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A number of packing techniques have been experienced in the past four decades of forest tree seedling production.

Methods range from the table graded, heavily mossed bundle to present day light polyethylene contained packages of custom grown seedlings. Other methods are being considered to facilitate future shipping programs.

The Georgia Forestry Commission gradually worked into the field graded weighed wrap-around crate method the past three years. Customer reaction to a sudden change from an established practice prompted the gradual variance in packing. Seedlings are grown from seed sized into three diameters. Cultural practices are applied to produce uniform beds of seedlings.

Weeding crews are instructed to take out cull sized trees as final weeding is made in August and September.

The system of inventorying and marking off within each bed, plots containing a certain number of trees, was tried. Problems of supervising lifting crews, moving of plot stakes by equipment, and errors in counting, prompted us to try the weighing system developed by the New York State Conservation Department.^{1/}

Trees are lifted in the field and as much dirt as feasible shaken from the roots. They are brought into the packing shed in tubs. The weight control man takes a sample from each lot and calculates the number per pound. The scale man is constantly informed on weight variations by lots of seedlings so that adjustments can be made when weighing. The seedlings are packed in an open end, poly-lined wood veneer crate, mossed root to root, with tops protruding from each end. A more concise operation description is as follows:

The field graded seedlings are lifted into tubs with dirt shaken from the roots. These are brought into the packing shed. The plant layout within the packing shed consists of a receiving area, a weight control station operated by one person, two weighing stations, and six packing stations operated by two men each, with one person furnishing packing supplies. The three sets of scales are laundry-type with platform pan and dial graduated from 0 to 100 pounds in 1/4-pound markings.

The weight control scales have 11 containers (cans), 10 on the platform and 1 off. The operator randomly samples each load of trees by taking samples from each tub until a 500 count sample is taken. That is, all 10 containers are filled with 50 trees each. The weight is reported to

^{1/} Eliason, E. J.
1962. Counting trees by weight. Tree Planters' Notes 54:13.

weighers who in turn weigh by this factor. The weight controller takes another sample of 50, filling the empty can and removing the oldest can on the scale. This is replaced by the new sample. Any variation in weight is reported to the weighers. This removal of the oldest can and refilling with a new sample is continuous throughout the operation. Counting of the 50 samples is done over a sheet of paper so that soil from the roots is caught and added back to the sample to be weighed. This continuous sample gives a moving average and reflects any variations due to environment.

Another variation of the weighing process is the use of a balance scale with a low-high beam to platform ratio. A counted sample is placed on the beam and trees are placed on the platform until a balance is obtained. The number by weight is instantly given this way by multiplying number in sample by ratio of beam to platform. The beam sample is constantly replaced.

Examples of actual counts by quality control are as follows:

500 size bale count:	Number bales counted	152
	Average number shippable trees per bale	508
	Average number culls per bale	17
	Cull percent	3% of total counted

1500 size bale count:	Number bales counted	131
	Average number shippable trees per bale	1543
	Average number culls per bale	16
	Cull percent	1% of total counted

The counting by weight of forest tree seedlings is not new. The procedure herein described is very similar to the New York State system.

Comments

1. Cost.--The Georgia Forestry Commission nurseries source of labor is primarily prison inmate and is not exacting as to the amount of labor needed at any one time. (The best comparisons we can make between table grading and weighing indicates labor costs are less by 100 man-hours per million trees by the weighing method).

2. Workload.--By weight packing, the grading process is completed several weeks earlier, at the convenience of the nursery personnel. The workload is distributed over a period of time.

3. Production.--Five-hundred thousand trees can be packaged per day with two weighers and six packers. Bottlenecks due to mechanical breakdown are nil. No automatic or continuous running stationary equipment is needed.

4. Root exposure is minimized.

5. This system is recommended for uniform size seedlings with a Iva cull percent.

6. It can be used on field-run uncultured stock, if cull percent is determined by calculating from weights the number of usable trees per pound. High overrun in total bale count has to be tolerated if cull percent is high.

7. Planting crews can make allowances for possible under counts and probable over counts by calculating the number planted from area planted.

8. Possible refinements of the method can be made to fit an operation.