STOCK PACKING BY THE ACTUAL COUNT METHOD VERSUS THE WEIGHING METHOD

McCormick Neal, Georgia Forestry Commission 2/

The Georgia Forestry Commission nurseries have used, over the past 25 years, both the actual count and grading method, and the weighing method of preparing seedlings for shipment. Because of the high cost, as well as the non-availability of labor, we changed to the weighing method about 8 years ago.

1/ Panel presentation. Papers of panel participants are included.

2/ Terrell Brooks, Georgia Forestry Commission, presented this paper for McCormick Neal.

COUNTING METHOD

Most of you are familiar with the method of handling seedlings across grading tables. Some nurseries still grade and count. The 1960-61 season was the last year this method was used at our nurseries; therefore, the season is used as an example for the counting method. At that time, most day labor was $0.75 per hour and 100 employees were required to process one million seedlings per day. This figures 10,000 seedlings per man-day at a cost of $0.65 per 1,000 seedlings labor cost (lifting, grading, counting, and packing). Using today's labor price of $1.50 per hour and the same ratio of 10,000 seedlings per man-day, the cost per 1,000 seedlings for lifting, grading, counting, and packing would be 1.20.

WEIGHING METHOD

In the custom-grown seedlings, good soil management practice is a must to produce a uniform seedling size over all the beds. As you know, this involves soil tests, fertilization, preparation of soil, fumigation, seed sizing and sowing, irrigation, disease control, and weed control. Time to accomplish each of these operations varies with each nursery. It is also important to know the land and soil, what it takes in fertilizers, how the land absorbs water, and when to practice weed and grass control. One also needs to know when to root prune (if this is practiced at a nursery), when to start hardening off nursery stock, and when to begin harvesting. Since fertilization is one of the most important factors in producing seedlings for the weighing method, I would like to give an example of how we fertilize at a given soil test at Morgan Nursery.

Soil tests

Field number	Soil acidity	Phosphate	Potash
5	5.3	102 lbs./acre	84 lbs./acre
3	5.8	56 lbs./acre	148 lbs./acre

Soil type for both fields is Magnolia fine, sandy loam with from 1 - 1.5 percent organic matter. Based on the above soil tests, fertilizer used per acre is as follows:

Field number	Applied	Fertilizer	Amount per acre (lbs.)	Analysis
5	before planting	dehydrated manure	4,000	2-0-2
5	before planting	commercial fertilizer	600	5-10-15
5	July	nitrogen	100	33.5 N
3	before planting	dehydrated manure	2,000	2-0-2
3	before planting	commercial fertilizer	800	5-10-15
3	July	nitrogen	100	33.5 N

This is the second consecutive year seedlings have been grown in field number 5 (fumigated a year ago) while it is the first year for field number 3 (fumigated this year), using 500 pounds per acre of 67 percent methyl bromide.

Eighty percent of the 18 million seedlings planted this year at Morgan Nursery are loblolly. Seed were planted with an anticipated production of 26-28 seedlings per square foot. Our July inventory averaged 31 seedlings per square foot; top height of 6.5 inches; root length of 4.5 inches; lateral roots good; and a diameter size of 3/16-inch.

When the trees have been prepared for harvesting, a sample of 50 seedlings is picked from five tubs (used for collecting seedlings) and weighed. The figure obtained is multiplied by 10 to get the weight for 500 seedlings. These are counted to insure 500 seedlings. One employee makes all samples and counts, making necessary adjustments. Excess soil from the seedling roots is caught and weighed. According to the size of the seedlings, weights will vary from 12 to 22 pounds per thousand. The weighed seedlings are placed in tubs, then onto a conveyor belt for conveying into the packing station.

Prior to packing the seedlings into bags, a large double handful of wet sphagnum moss is first placed in the bottom of the bag. One-half of the 500 seedlings are then placed in the bag with roots to one side. The remaining 250 are placed in the bag with the roots turned in the opposite direction. Another handful of moss is put in the bag over the roots of the seedlings. This method is continued until the bag is full (approximately 1,500-2,000 seedlings). In the top of the bag enough moss to cover all roots is applied. The last step is to sew the bag with a portable sewing machine to insure it being as air-tight as possible.

Seedlings prepared in this manner will keep well in unrefrigerated, well-ventilated storage rooms for approximately 2 weeks. We do recommend that seedlings be planted as soon after lifting as possible.

Using the above weighing method, the cost is computed as follows: A total of 17,000 seedlings per man-day can be produced at a cost of S0.98 per 1,000 seedlings. Using the counting method, it would cost 50.22 more per 1,000 seedlings. Noteworthy is the fact that we are actually producing 7,000 seedlings more per man-day than in 1960, so the savings are substantially higher.

1960	(counting)	1.20	- cost per 1,000 seedlings using today's labor price
1970	(weighing)	0.98	- cost per 1,000 seedlings
	Savings	0.22	

While the grading and counting method was utilized, we noted a 5 percent cull count in the crate and an overrun of 10-15 seedlings per 1,000 (or 1 - 1.5 percent). When custom growing and weighing was put into effect, we came up with a 6-8 percent cull count and an overrun of 20-25 seedlings per 1,000 (or 2 - 1.5 percent).

ADVANTAGES OF THE GRADING AND COUNTING METHOD

1. Accurate count.
2. Keeps labor on a production basis.
3. More culling can be done.

DISADVANTAGES OF THE GRADING AND COUNTING METHOD

1. High labor cost.
2. Less seedlings per man-day.
3. Non-availability of labor
4. Upkeep of machinery.

ADVANTAGES OF THE WEIGHING METHOD

1. Requires less labor use (one-third less than counting).
2. More seedlings per man-day (approximately 7,000).
3. Saving in cost per 1,000 (0.22).
4. Can use primarily women laborers in this operation (men impossible to get).
5. Could be weighed and packed in the field--at a greater saving.

DISADVANTAGES OF THE WEIGHING METHOD

1. Counts will vary.
2. Weights must change as seedling size varies.
3. Must allow for wet seedlings (tops and roots).
4. Will ship from 1.5 percent more culls.
5. Cannot be placed on production basis as well as with the grading and counting method.