ROW SEGMENT STOCKING - A NEW CONCEPT OF PLANTATION SAMPLING

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The usual planting survival count yields only a figure for percent of survival. However, the percent of survival does not give an accurate estimate of the surviving number of seedlings per acre. In addition to percent of survival, it is sometimes desirable to know the percent of stocking at a specified spacing, surviving trees per acre, spacing of trees in the row, spacing between the rows, and the location of failures.

The method described here for collecting this information was first demonstrated by T. C. Croker, Jr., U.S. Forest Service, Brewton, Ala., for testing percent of stocking in furrow-seeded longleaf pine plantations. It was expanded to provide the additional information listed above, and it has been used for the last 4 years to sample the results of furrow seeding and row planting of seedlings by the author.

One or two men can apply the system, using a 2-chain tape, a 6.6-foot stick marked at its midpoint, tallying materials, and maps. Stretch the tape across the rows as closely as possible at a right angle to them, starting just outside the first row about a third of the way down the field. The tape need not be kept straight; it can meander to stay perpendicular to the rows. At each row lay the stick across the tape (along the row) with its midpoint on the tape. Count the living seedlings that are within the limits set by the ends of the stick. Each time the tape is laid out for its full length, there is recorded:

1. A tape tally, which is the count of the times the tape is laid out.
2. A tally of the number of trees in each row within the length of the stick. Tally under headings 0, 1, 2, 3, or 4, or more if needed.

The amount of sample to take is a decision for each manager. On small plantations one round trip across the rows should be sufficient. Since each tape length takes a sample area of 0.02 acre (2 chains long by 0.1 chain wide), it is simple to calculate the number of tapes to lay out for any desired percent of sample of a plantation of known acres. A 5-percent sample of a 10-acre field requires that the tape be laid out 25 times:

.05X10 acres = 0.5 acres of sample

(0.5 div. by 0.02) acres = 25

All calculations are from the two items tallied and from the dimensions of the measuring instruments, the 2-chain tape and the 6.6-foot (or 0.1-chain) stick.

Percent of stocking: A row sample point is considered stocked if at least one living tree is within the ends of the stick.

$$\frac{\text{Number of stocked points}}{\text{Total points counted}} \times 100 = \text{percent of stocking}$$

Average tree spacing in the row:

$$\frac{6.6 \text{ feet} \times \text{total number of row sample points}}{\text{Total number of living trees counted}} = \text{average tree spacing}$$

Average spacing between rows:

$$\frac{\text{Tape length in feet} \times \text{tape tally}}{\text{Total rows counted}} = \text{average spacing between rows}$$

Trees per acre:

$$\frac{\text{Total trees counted}}{\text{Tape acreage} \times \text{tape tally}} = \text{trees per acre}$$

Survival percent: If the number of seedlings planted per acre is not known, the survival percent cannot be calculated. Otherwise,

$$\frac{\text{Surviving trees}}{\text{Number planted}} \times 100 = \text{Percent survival}$$

For row- seeded plantations the survival percent can be calculated if a germination count was made in the same manner soon after germination was complete.

Many elaborations or refinements can be added to this sampling method. Seedlings can be tallied by species when wildlings other than the planted or seeded species are present, which would at the same time sort the planted ones from the wildlings. A separate tally could sort overtopped seedlings from those free to grow. Another tally could separate those in row from those between rows. The location of poor stocking can be recorded by numbering each layout, sketching it on the map, and recording its tree tally on individual lines numbered to match.

Obviously this method cannot be applied to sampling natural seeding or broadcast direct seeding. The same general idea can be, and has been, numbers of seedlings per acre, their approximate spacing, and the location of good and poor stocking.

Other tape lengths and strip widths may be used, if desired. The ones described here were selected because they were available and provided ease in calculations. On large area or under difficult cover, the crew should use a pocket compass to maintain prescribed direction across the area being sampled.