SEEDBED DENSITY AFFECTS LONGLEAF PINE SURVIVAL AND GROWTH

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Is the usual nursery bed density of 30 seedlings per square foot too high for spring-sown longleaf? A test in 1953 indicates that there is a substantial gain in survival and first-year growth of outplanted seedlings when seedbed density is decreased from 30 to 10 per square foot. These results are similar to the findings of Scarbrough and Allen-[1]/ in south Mississippi.

A 90-foot section of a bed at the Stuart Nursery, Pollock, La., was thinned to precise densities of 10, 20, and 30 seedlings per square foot soon after germination was completed. The bed then received normal nursery culture. When the seedlings were lifted for outplanting, their root-collar diameters averaged 0.41, 0. 33, and 0.28 inch for the 10-, 20-, and 30-density levels, respectively.

In June the initial survival of outplanted seedlings was exceptionally high, averaging 98 percent for all densities. After the first growing season, however, there were highly significant differences between density levels in both survival and seedling vigor, as shown below:

Nursery density	Survival		
	First-year (percent)	Vigorous (percent)	Vigorous, per 1,000 plantable seedlings (number)
10	77	81	622
20	71	45	319
30	58	28	162

These data indicate that the current practice of growing spring-sown longleaf seedlings at densities of 30 or more per square foot does not produce planting stock capable of highest survival.

Of greater importance, perhaps was the effect of seedbed density on first-year vigor. The yield of survivors with sufficient size and vigor

to start height growth in 1 or 2 more years increased twofold when bed density was cut from 30 to 20 per square foot. It nearly doubled again when the nursery density was further reduced to 10 per square foot.

If additional tests now underway confirm these findings, better survival and faster initial growth of longleaf seedlings produced at lower densities may easily offset the higher nursery costs.