DEEP PLANTING HAS LITTLE EFFECT IN A WET YEAR

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Deeper than normal planting has been advocated to enhance pine seedling survival in dry years, especially where small stock is used.

In February 1957, undersized slash and loblolly seedlings were planted to three depths--normal, half-stem, and deep--in a Texas field where Bermuda-grass and weeds competed heavily for moisture. Seedlings were set as they grew in the nursery for normal depth, with the base of the bud at ground level for deep, and halfway between these positions for half-stem depth. The soil was Cahaba fine sandy loam.

The seedlings represented standard grade 2 and three substandard grades: 3a (stems with slightly under 1/8-inch diameters, 5-inch tops and good roots); 3b (stems with about 3/32-inch diameters, 5-inch tops, moderate roots); and 3c (stems with 1/16-inch diameters, 4-inch tops, poorly developed roots). Planting was done by machine in furrows made by a 12-inch middle buster. Survival and tree growth were observed on three randomized blocks, each containing one 25-tree row of each of the 24 species-grade-depth combinations.

Rainfall of 63.7 inches was 16.7 inches above normal, but 26 rainless days caused a June-July drought, and 39 nearly rainless days in July and August subjected the seedlings to temporary moisture stresses.

Deep planting reduced survival for both species, though for slash the differences were not significant. Among loblolly seedlings, survival was 41 percent for those planted normally, 34 percent for those planted to half-stem, and 23 percent for those planted to the bud. During this season, neither of the deep plantings was beneficial to the smaller seedlings of either species.

When all planting depths were averaged, survivals of both species were significantly related to seedling grade. Among loblolly seedlings, survival of grade 3c--42 percent-was significantly inferior to that of all other grades; survival of grades 2 and 3a--63 and 64 percent, respectively--was significantly above that for grade 3c. Slash pine survival was more variable, but the 18 percent for grade 3c was significantly lower than the 46 percent average for grade 2. Average survival of grade 2 seedlings was 46 percent for slash and 63 percent for loblolly.

Height growth during 1957 averaged somewhat greater on deep-planted than on normally planted seedlings. Differences, however, were not significant for loblolly, and barely significant for slash. Despite their greater elongation, deep-planted seedlings still had less total height above ground at season's end than those planted to normal depth. Growth of both species was best on grade 2 seedlings and decreased with each poorer grade, but the differences were not statistically significant.

While the relatively moist season prevented a good test of the drought-hardiness of deep-planted seedlings, the results suggest that deep planting may have a slightly adverse effect in rainy years. Some of the deep-planted seedlings that died had been buried by silt from excessive rains. The slightly better growth of surviving deep-planted seedlings may be a favorable response to deeper root placement that, in a drier season, could have improved survival.

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