

Elevation and Tree Growth

A Six-inch Difference in Elevation: Its Effect on Seedling Survival and Growth in South Florida

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Because more than half the total forest land is unstocked or poorly stocked, most of the forest planting in south Florida is done on wild land. But there is also an increasing area of land that has been farmed for truck crops for a

few years and then abandoned. Many of these abandoned fields are converted to pasture, but many lie idle and are available for reforestation.

Before cultivation, the low-lying sites selected for truck cropping are ordi-



FIGURE 2.—Robert E. Byrd, forester for the Atlantic Land and Improvement Company, is pointing out the differences in height growth. The larger trees in the background are growing on the ridge, and smaller ones in the foreground are growing in the furrows. There is a difference of about 1½ feet in average height of these trees.

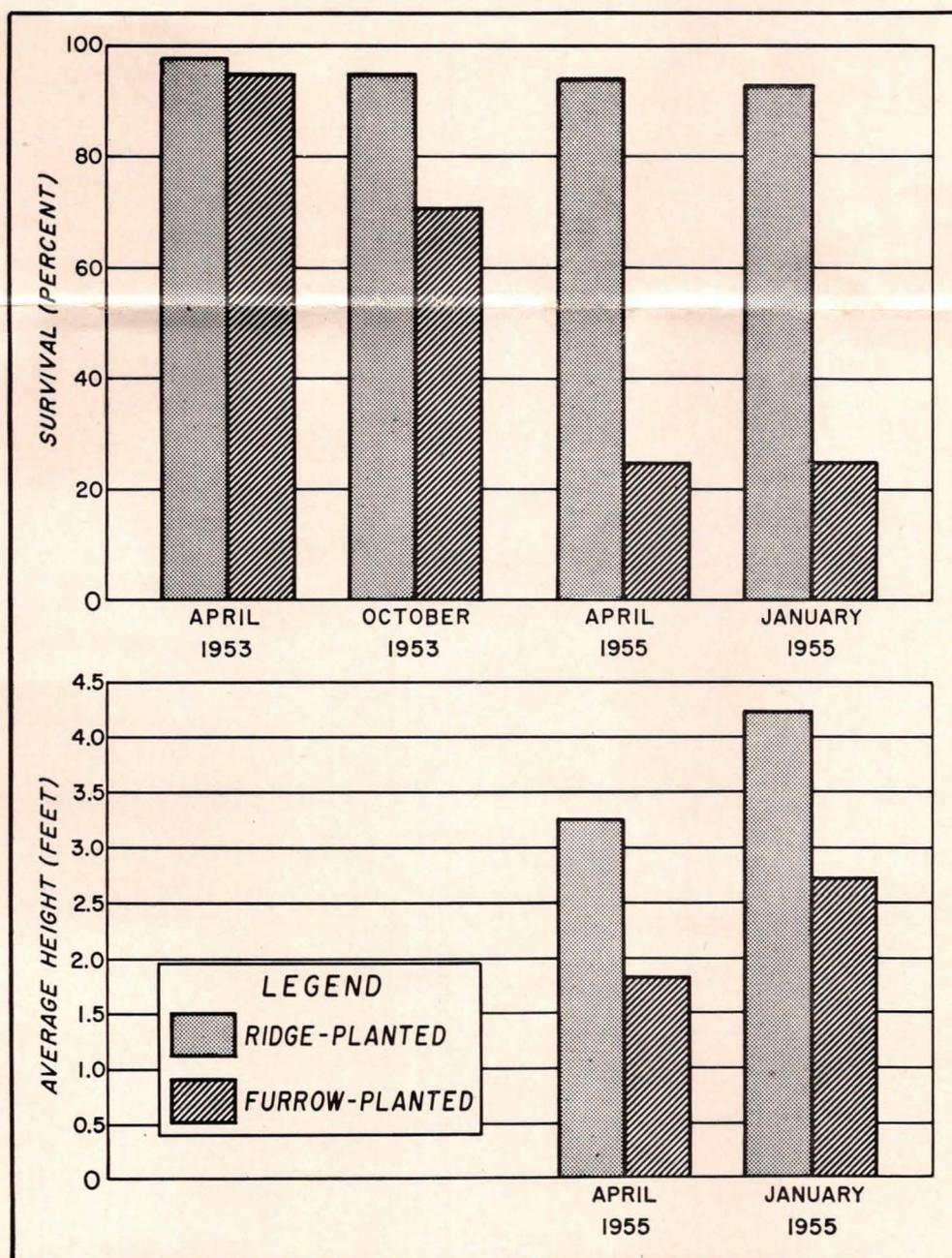


FIGURE 1.—Ninety-six per cent of ridge-planted seedlings survived, and they averaged 51 inches at the end of the third year.

narily too wet to grow pines. But after abandonment, the ridges and furrows left by cultivation do provide a miniature topography which is most important to the establishment of pines on these flat, wet lands. A preliminary test showed that after three years survival of South Florida slash pines planted on the ridges was three times that of trees planted in the furrows, even though the difference in elevation amounted to only 6 inches.

The test was made on lands of the Atlantic Land and Improvement Company, near LaBelle. In the spring of 1953, 100 seedlings were planted in furrows and 100 on ridges, in a randomized block design on an old field. Figure 1 shows trends in survival and growth of the seedlings for the ensuing three years.

During the first year, the difference in survival between ridge and furrow-planted seedlings was evident, but not significantly so, with survival of 96 and 71 per cent, respectively. By the end of the second year after planting, survival of the ridge-planted seedlings was 94 per cent, compared to only 26 per cent for furrow-planted trees. This significantly, different survival continued through the third year for both planting positions.

Growth on ridge positions was also impressive; average tree height was 39 inches at the end of two years. Trees in the furrows were only 22 inches tall

—a difference of nearly 1½ feet in two years. This 1½-foot growth difference has held up through the third year, with trees on the ridges averaging 51 inches, and those in the furrows 33 inches. (Fig. 2).

What caused these large differences

in survival and height growth? The best answer seems to be that water stood in the furrows at several prolonged intervals during the rainy seasons of both 1953 and 1954. Most of the observed seedling mortality occurred during periods of high water which result from

the excessive rains occurring in the summer in this subtropical climate. The south Florida landscape is so flat that even such a small difference as six inches in elevation can govern the water level and hence markedly affect the establishment of successful pine plantations.

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