LONGLEAF NEEDLE-DERIVED ROOTED SEEDLINGS AFTER 5 YEARS IN THE FIELD

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Needle fascicles were collected from 1-3 year old longleaf pine stock plants in January of 1991, treated with an auxin solution (75 to 150 ppm auxin, pH 5.5) for 16 hours, and cultured according to standard protocols (Tree Planter's Notes 43(3):67-71: 1992). Open-pollinated seeds collected from eight different parent trees selected for growth and brown spot resistance, were germinated and grown in 1.5 gallon pots until out planting. Needle-derived seedlings (hereafter referred to as needlings) and seedlings of similar size and vigor were selected for out planting. A total of 71 needlings and 219 seedlings were planted in March of 1994 on the Harrison Experimental Forest near Saucier, Mississippi. All seedlings and needlings were treated with 10% benlate prior to out planting to control brown spot needle blight. All trees were measured the third year after out planting for height, and after the fifth year for height, diameter, and height-to- live-crown. The field planting consisted of ten rows planted 10 feet between and 10 feet within the rows. The first tree in each row was a seedling, followed by a needling, then every fourth tree was a needling with seedlings in between. The eight seedling families were randomized, with one tree per family every eight seedlings. After three years in the field, the differences between needlings and seedlings in total height (needlings 149.4 cm vs. seedlings 142.9 cm, LSD
and survival (needlings 95.7% vs. seedlings 96.7%) were not significant. No significant differences among longleaf pine seedling families were noted. After five years in the field, no significant differences were found between needlings and seedlings for any of the traits measured (total height: needlings 391.9 cm vs. seedlings 392.1 cm; diameter: needlings 5.8 cm vs. seedlings 5.6 cm; and crown length: needlings 308.5 cm vs. seedlings 310.6 cm). Differences observed among longleaf seedling families for height, diameter, and crown length were significant. In general, the needlings were very similar in survival, growth rate, and appearance to the seedlings. Since all the families included as seedlings were selected for early height growth our results indicate that field performance of needlings derived from fascicle culture should survive and grow as well as seedlings.

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