A Progress Report: Plantation Survival of Nursery Grown Seedlings in Georgia

by

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Abstract.--Preliminary information from a study of tree survival in plantations in Georgia indicates very little seedling mortality attributable to nursery source, method of lifting, date of planting, or method of transportation. Poor handling and poor planting techniques by landowners or planting contractors appear to be the primary causes of seedling mortality.

Because landowners across Georgia have complained that seedlings purchased from Georgia Forestry Commission nurseries were of inferior quality and died at higher rates than those purchased from other sources, a study was begun this past year (1979). The study was divided into three phases. The first phase was designed to determine if substantial numbers of seedlings purchased from Georgia Forestry Commission nurseries died when processed and planted by the average landowner. From each county in the State one landowner who had ordered one thousand or more slash or loblolly pine seedlings was randomly selected. In each landowner's plantation, 10 plots of 100 trees each were established to measure survival. In this manner sur-

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vival was measured for one plantation in each of 140 of Georgia's 159 counties.

The second phase of the study attempted to determine if method of lifting, transportation to the landowner, or treatment of seedlings by the landowner caused substantial numbers of seedlings to die. In this phase six landowners were randomly selected and permission was obtained to make an experimental planting on their land. We supplied and planted 400 trees for each owner at the spacing planned for the remainder of the plantation. A day or two before the landowner was scheduled to receive his order, the bundle of seedlings stored for the longest time was selected from the packing sheds of one of the two Georgia Forestry Commission nurseries. From that bag plantable trees were removed, tied, labeled and packed into another bag. Another group of seedlings was lifted on the same day with "tender loving care" (TLC) to preserve the maximum number of feeder roots. These seedlings were placed in bags and sealed. Half of the TLC lifted and half of the regular-lifted seedlings were refrigerated for the 3 to 4 days prior to planting. The other half were stored and transported to the planting site in the standard manner by the Georgia Forestry Commission. Thus, there were two methods of shipment and two methods of lifting for a total of four treatment combinations. Each combination was replicated four times in 25-tree-plots. We planted all 400 seedlings by hand with great care. Rate of survival of our seedlings was compared to that of seedlings planted by the landowner to see if handling after receipt of seedlings by the landowner and care in planting was influencing survival.

In phase three of the study the merits of the lifting method used at each of the eight forest tree nurseries in Georgia were compared, along with the relative quality of seedlings from these nurseries. Both regularly and TLC lifted seedlings were collected from the eight nurseries in Georgia in January, February, and March of 1980 and outplanted by machine on three sites. Four 25 tree replicates were outplanted on each site and date for each nursery source and lifting method.

Preliminary results indicate very little mortality that can be attributed to method of lifting, nursery source, date of planting, or method of transportation. The handling of seedlings by the landowner appears to be the primary cause of mortality, and early indications are that poor planting techniques are the real cause of mortality.