SOUTHERN FOREST EXPERIMENT STATION

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APPALACHIAN LOBLOLLY GROWS WELL IN ARKANSAS OZARKS

William R. Maple

SOUTHERN FOREST EXPERIMENT STATION

In northern Arkansas, loblolly pine grown from seeds collected in the eastern part of the species' range has survived and reached pulpwood size in 15 years.

A 1.6-acre plantation was established in March 1960 in cooperation with the Tennessee Valley Authority to compare survival and growth of 1-0 loblolly seedlings from nine sources. Seeds were collected from northern and southern Alabama, northern Georgia, Maryland, eastern and northern Mississippi, South Carolina, southeastern Tennessee, and Virginia.

The plantation is on an old field in Newton County, Arkansas. The soil is a deep loamy sand. Trees were hand-planted at 8- by 8-foot spacing in three randomized blocks.

During its 15 years, the plantation has been subjected to all the rigors of the Ozark Mountains—insect attacks, extended droughts, wind, hail, sleet, and temperatures ranging from a low of −14° F. to a high of 110° F. The venture appeared risky when 22 percent of the 2-year-old trees were top-killed by an early November frost,[1] but the plantation recovered and has grown well since.

Survivals range from 90 percent for Tennessee trees to 8 percent for South Carolina trees. If 50 percent survival after 15 years is an indication of species adaptability, seedlings from all sources except South Carolina appear to be suited to Arkansas' climate.

Survival, stocking, and growth for all sources except South Carolina are shown in table 1. In 1965, average diameters by source ranged from 7.1 to 7.7 inches, and average heights ranged from 39 to 40 feet. Merchantable volumes were from 12 to 23 cords per acre. Trees from six areas produced at least 1 cord per acre per year.

Because growth characteristics were similar for trees from many of the areas, survival and volume production are probably the best criteria for source selection. Seedlings from the Appalachian Mountains in southeastern Tennessee and northern Georgia survived best. In terms of volume produced, seedlings from northern Alabama—also in the highlands—

[1] Shoulders, Eugene. Cold hurts loblolly in Ozarks. U. S. Forest Serv. Southern Forest Exp. Sta. Southern Forest. Notes 82. 1952.

Table 1.—*Fifteen-year loblolly pine survival and growth, by seed source*

Seed source	Survival	Stocking (per acre)	D.b.h.	Total height	Merchantable volume (per acre)
	Percent	*Trees*	*Inches*	*Feet*	*Cords*
Tennessee	90	613	7.3	39	19
Georgia	81	552	7.5	40	23
North Mississippi	73	497	7.2	39	17
East Mississippi	69	470	7.5	39	18
South Alabama	69	470	7.1	39	12
North Alabama	65	443	7.7	40	19
Virginia	58	395	7.4	40	13
Maryland	56	381	7.3	39	15

performed as well as the seedlings from the other mountain sources. Probably the similarity in soil, topography, and climate of the Appalachians and Ozarks accounts for the success of Appalachian trees.

Until larger plantings than the one in this test are made and evaluated, native shortleaf pine is recommended for large plantations in the Ozarks. Forward-looking land managers, however, may want to consider planting loblolly on a small scale for post, pulpwood, and small saw log production on deep loamy sands in the area. Seeds from the southern Appalachians are recommended for such ventures, at least until seeds from southern Arkansas and other points close to the Ozarks are tested.