CONIFERS FOR CONVERSION PLANTING IN NORTH MISSISSIPPI

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In February 1949, a study was established near Oxford, Miss., to compare the survival and growth of loblolly, longleaf, shortleaf, slash, and Virginia pines and eastern redcedar underplanted in low-grade upland hardwood stands, with and without release before planting. Ten-year results are reported herein.

Methods

Four plots, each containing six one-tenth-acre species subplots, were planted each year for four successive years. All were on ridges and upper slopes with Lexington or Ruston soils. Tree cover averaged 64 square feet of basal area per acre and consisted predominantly of blackjack oak, post oak, and hickory.

Two plots were released each year just prior to planting, and the remaining two were never released. On the released plots saplings up to 3.6 inches d.b.h. were felled, and Animate was applied to the stumps. Trees between 3.6 inches and approximately 12 inches d.b.h. were treated with Ammate crystals in low cups about 6 inches apart. Trees above 12 inches d.b.h. were frilled. At the end of the first growing season, saplings and shrubs directly overtopping planted seedlings were cut and the fresh stumps treated with Ammate crystals.

Results

Heights and survivals of the **six** conifers are compared in table 1. Ten-year differences in survival among species were significant at the 0.01 level. Also significant at the

TABLE 1.--Stand characteristics after five and ten growing seasons

Period after planting and species	Survival		Height		D.B.H.[1]	
	Released	Unreleased	Released	Unreleased	Released	Unreleased
5 years:	*Percent*	*Percent*	*Feet*	*Feet*	*Inches*	*Inches*
Loblolly.....	56	46	8.0	3.1		
Shortleaf.....	54	51	4.9	1.8		
Virginia.....	53	60	6.2	2.9		
Slash.....	18	20	6.2	2.0		
Longleaf.....	10	7	1.1	.0		
Redcedar.....	66	70	2.6	.5		
10 years:						
Loblolly.....	56	45	23.5	10.7	4.6	1.5
Shortleaf.....	54	46	14.3	5.0	2.8	.5
Virghia.....	53	56	12.9	10.3	3.3	1.3
Slash.....	17	14	21.6	6.6	3.8	.7
Longleaf.....	8	4	12.5	.4	2.1	--
Redcedar.....	65	63	8.8	1.5	.8	.2

[1] Only trees attaining 4.6 feet in height are included.

0.01 level were differences in height development due to treatment; to species; to their interaction; and to the interaction between species, treatment, and year of planting.

During the first 5 years of the study a 3-year drought caused abnormally heavy mortality. During. the second 5 years losses were negligible on released plots. On unreleased plots losses have averaged less than 1 percent annually, but future mortality may be high because vigor of many of the suppressed seedlings is declining rapidly.

Heights of all released seedlings, except those of Virginia pine, have approximately tripled during the last 5 years (fig. 1). Virtually all released trees are at least 4.6 feet tall, but on the unreleased plots only loblolly, slash, and Virginia pine have attained this height in large numbers. The released trees are 2 to 3 inches larger in diameter than the unreleased. Released loblolly are nearly an inch larger in diameter than their closest competitor, slash pine; 54 percent are in the 5-inch d.b.h. class or larger.

During the study period the average basal area per acre of hardwoods on the unreleased areas remained the same. Pole-sized trees decreased an average of 11 square

Figure 1.--Ten years after they were planted on upland sites in north Mississippi, loblolly pines, right, average 31 feet in height, while shortleaf, left, are 15 feet. The trees were free of hardwood competition.

feet, while sawtimber trees increased 5 square feet per acre and the number of saplings more than doubled. Once these sites were easy conversion chances, but as the density of the hardwood understory increases the task becomes more difficult.

Conclusions

At the end of ten growing seasons in the field, loblolly pine still appeared to be the best species for restocking depleted stands on dry loessial ridges in north Mississippi. Where released, it has survived better and has outgrown all the other five conifers. It has also proved surprisingly tolerant of overhead competition.

Tip moth attacks have slowed the growth of shortleaf pine but have not caused any serious deformation. Even though shortleaf is native to this area, its slow growth and intolerance make it a poor choice for conversion planting.

Unreleased Virginia pine has done well the last 5 years, outgrowing the unreleased loblolly on three installations out of four. It is nearly as tall as the released Virginia pine, though not as thick-boled, and it is of good form. The released Virginia pine has been repeatedly attacked by tip moths, and consequently is very scrubby and limby.

During the last 5 years released slash pine has grown rapidly and has escaped damage from two 4-inch snowstorms. Even though slash pine is being planted in north Mississippi, its history of poor survival makes it a risky choice.

Poor survival, slow early height growth, and known susceptibility to ice damage rule against longleaf pine for planting in north Mississippi.

Eastern redcedar on the released plots was browsed heavily by deer during the early years. In the last 2 years it has escaped serious damage, either because it has grown beyond the reach of the deer or has lost the attractive flavor attributed to nursery-grown stock. Deer have continued to browse the unreleased redcedars, most of which are now in such poor condition that they are unlikely to survive much longer.