

**PLANTED YELLOW-POPLAR OUTPERFORMS SIX OTHER SPECIES
ON LOESS SITES**

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After 2 years in an experimental plantation on the brown loam bluffs near Vicksburg, Miss., yellow-poplar trees averaged two to six times taller than southern red oak, cherrybark oak, water oak, swamp chestnut oak, Shumard oak, and sweetgum.

The study began in the fall of 1960, when over story trees, predominantly American beech, were cut (when merchantable) or deadened on four separate blocks in a mixed stand of bluff hardwoods. Then, in January 1961, 20 locally grown 1-0 seedlings of each of the seven species were planted on each of three sites within each block. The sites were bottoms (0-5 percent slope), medium slopes (15-22 percent slope), and steep slopes (29-35 percent slope). Soils were Vicksburg, Memphis, Wakeland, Falaya, and Collins silt loam. All can produce good hardwoods.²

After two growing seasons, the average height of yellow-poplars was 8.5 feet. Sweetgum, swamp chestnut oak, and Shumard oak heights were slightly less than 5 feet, and the heights of water oak, cherrybark oak, and southern red oak were 3.4, 2.9, and 1.4 feet, respectively (table 1). The differences between yellow-poplar and the other species were statistically significant at the 0.01 level.

For all species combined, there were no significant differences in growth or survival among the three sites. Survival percentages were 89 or higher for all species except southern red oak, which averaged 69 percent.

Eventually the other species may grow as fast or faster than yellow-poplar. But when all seven species are planted in a mixture and begin growth together in a closely spaced stand, yellow-poplar can be expected to grow taller during the first few years--at least on the sites tested in this study (see fig. 1).

TABLE 1.--Average and greatest individual heights of 3-year-old trees, by species

Species	Site				Tallest tree
	Bottom	Medium slope	Steep slope	Average	
	<i>Feet</i>	<i>Feet</i>	<i>Feet</i>	<i>Feet</i>	<i>Feet</i>
Southern red oak.....	1.3	1.4	1.4	1.4	3.5
Cherrybark oak.....	2.5	3.3	2.9	2.9	6.4
Water oak.....	3.0	3.6	3.5	3.4	7.5
Swamp chestnut oak...	4.3	5.1	4.9	4.8	9.0
Shumard oak.....	4.2	5.2	4.7	4.7	9.0
Sweetgum.....	3.9	5.4	5.4	4.9	10.0
Yellow-poplar.....	7.3	9.5	8.6	8.5	14.7
Average.....	3.8	4.8	4.5	4.4	

¹The authors are stationed at the Southern Hardwoods Laboratory, which is maintained at Stoneville, Miss., by the Southern Forest Experiment Station in cooperation with the Mississippi Agricultural Experiment Station and the Southern Hardwood Forest Research Group.

²Broadfoot, W. M., and McKnight, J. S. Soil suitability for forest trees in deep loess area. Miss. Farm Res. 24(9): 5; Miss. Agr. Expt. Sta. Inform. Sheet 722. 1961.



Figure 1.--Top: A test block immediately after trees were planted. A bottom site is in the foreground, a steep slope in middle to left center, and a medium slope in middle to right center. Bottom: Same plot 2 years later. Note dominance of yellow-poplar.