

COMPARATIVE DEVELOPMENT OF PLANTED CHERRYBARK OAK-SWEETGUM MIXTURES: IMPLICATIONS FOR FUTURE MIXED-SPECIES PLANTINGS IN THE LOWER MISSISSIPPI ALLUVIAL VALLEY

Brian R. Lockhart

USDA Forest Service, Southern Research Station
Center for Bottomland Hardwoods Research
Stoneville, MS 38776

Andrew W. Ezell and John D. Hodges

Department of Forestry, College of Forest Resources, Mississippi State University
Mississippi State, MS 39763

and

Wayne K. Clatterbuck

Department of Forestry, Wildlife & Fisheries, University of Tennessee
Knoxville, TN 37996-4563

Planting oaks in abandoned agricultural fields and pastures in the Lower Mississippi Alluvial Valley has received much attention in the past 20 years. A common afforestation prescription is to plant oaks on a 12- x 12-ft spacing. Recently, concern has been expressed about planting 302 oaks per acre and the resulting effects of early intra-specific competition following canopy closure. Recommendations have included planting a greater number of species in intimate mixtures, but little is known about how such stands will develop.

A mixed-species case study was installed in Oktibbeha County, MS in 1982 and involved intimate mixtures of cherrybark oak (*Quercus pagoda* Raf.) and sweetgum (*Liquidambar styraciflua* L.). Spacing arrangements included 8- x 8-ft and 5- x 5-ft spacings where a row of alternating cherrybark oak and sweetgum seedlings was surrounded on both sides with rows of pure sweetgum. An additional spacing arrangement involved two pure rows of sweetgum on each side of an alternating row of cherrybark oak and sweetgum in a 5- x 5-ft spacing. Height and diameter-at-breast-height (d.b.h.) were measured following the 8th, 10th, 17th, and 21st growing seasons.

Sweetgum was taller in height and larger in d.b.h. than cherrybark oak early in plantation development. By the 17th growing season, cherrybark oak was similar in height and d.b.h. with sweetgum and by the 21st growing season was taller in height and larger in d.b.h. than sweetgum in two of the three spacing arrangements.

The ascendance of cherrybark oak above sweetgum in an intimate plantation mixture follows documented natural cherrybark oak-sweetgum development patterns. Afforestation objectives in the Lower Mississippi Alluvial Valley that involve mixed species plantings must be based on known stand development patterns.