A CONCEPTUAL MODEL FOR DEVELOPING MIXED-SPECIES PLANTATIONS IN THE LOWER MISSISSIPPI ALLUVIAL VALLEY

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Oak (*Quercus* spp.) afforestation in the Lower Mississippi Alluvial Valley has involved planting 1-year-old bareroot seedlings on a relatively wide spacing in single species stands or planting light-seeded species with oaks to form mixed-species stands. In the former case, the developing single-species stands have limited future management options because they do not provide structures that favor quality wildlife habitat or quality sawtimber production. In the latter case, species mixtures are being planted with little knowledge of subsequent stand development, leading to an inability to predict future stand composition for management purposes. We present a conceptual model to determine bottomland tree planting mixtures that will create single-cohort, mixed-species stands with a component of high quality bottomland oak. Using individual species' ecological life-history characteristics, such as early height growth patterns, relative twig diameter and durability, and developmental patterns in natural stands, bottomland species are rated for their ability to provide beneficial training effects that will lead to the development of quality oak boles. Incorporating such a system to determine species value in mixtures should provide an increased number of future options to meet explicit management objectives and promote improved bottomland hardwood restoration.