Stand development patterns and silvicultural opportunities for young planted oak stands on bottomland hardwood restoration sites. Brent Frey, Mississippi State University, Mississippi, USA.

Additional Author: Jonathan Stoll

Over the last several decades, bottomland restoration efforts have established hundreds of thousands of acres of planted hardwood stands throughout the Southeastern U.S. Much of the initial research focused on planting approaches and early growth and survival, contributing to more effective establishment methods. However, relatively less research has evaluated stand development or identified silvicultural options for these planted stands as they age. Given that many afforestation stands are approaching 10-20 years old and undergoing crown closure, an improved knowledge of stand development is needed to evaluate opportunities for silvicultural treatments aimed at improving the delivery of goods and services that forest restoration seeks to provide (such as wildlife habitat, timber, carbon or water). This study is investigating stand development, growth and biomass allocation of young (~10-20 year old) planted oak stands and evaluating opportunities for silvicultural treatments to improve their condition. Given low initial planting densities and limited natural recruitment, many planted oak stands exhibit poor natural pruning with trees characterized by large, persistent lower limbs. Furthermore, many stands undergoing crown closure are characterized by simple, uniform canopy layers with limited light transmission for understory growth. Thinning represents an obvious choice to increase the light environment to improve understory development (e.g. for wildlife habitat or enhancing diversity). However, if thinning treatments are applied too early they are likely to exacerbate the development of poor form of individual trees, thereby reducing potential timber value. Ongoing studies are evaluating the application of these treatments to evaluate the optimal timing and intensity. An increasing demand for such knowledge by landowners is becoming evident, particularly by those that have participated in hardwood planting initiatives such as those under the Conservation Reserve Program. Indeed, improving our knowledge of stand development, growth and yield, and silvicultural treatment options could prove critical for ensuring the continued commitment of landholders to the management of their hardwood plantings and ongoing participation in these restoration programs.