ENHANCING OAK GROWTH AND DEVELOPMENT ON LOUISIANA WETLANDS RESERVE PROGRAM EASEMENTS

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The Wetlands Reserve Program (WRP) provides the technical and financial assistance to restore agricultural land to a functional wetland state. The restoration process addresses soil, water, wildlife and other related natural resource concerns in an environmentally beneficial and cost-effective manner. Current tree establishment practices in Louisiana fail to provide the vertical structure and hard mast production in a "near-immediate time frame" necessary for sustaining avian and deer populations. Field trials in Georgia and Arkansas have shown that planting large 1-year-old potted seedlings enhances oak performance. The purpose of this conservation field trial was to evaluate the potential of potted and containerized seedlings for special applications on WRP restoration projects and determine the impact of comprehensive site preparation on bare-root, potted and containerized seedling survival and growth.

The trial was established in 2003 on a WRP easement north of Natchitoches, LA, which included three soil texture components: Severn sandy soil, Gallion loamy soil, and Moreland clayey soil. Nuttall oak (*Quercus nuttallii* Palm.) was chosen as the potted and containerized seedling species and the bare-root seedling species included Nuttall, water (*Q. nigra* L.) and willow oak (*Q. phellos* L.); and sycamore (*Platanus occidentalis* L.) and green ash (*Fraxinus pennsylvanica* Marsh.). Pre-plant site preparation practices included mowing, herbicide treatment and a deep-rip plus herbicide treatment. In addition, half of each pre-plant treatment received a post-plant herbicide treatment. The pre-plant herbicide was applied at 75.7 l ha^{-1} (20 g ac^{-1}) as a tank mix of glyphosate and sulfmeturon methyl (9.4 l ha^{-1} and 220 ml ha^{-1}, or 4 qt ac^{-1} and 3 oz ac^{-1}, respectively). Post-plant herbicide application was a banded spray of sulfmeturon methyl at 146 ml ha^{-1} (2 oz ac^{-1}).

Containerized Nuttall oak seedlings were susceptible to animal predation. By the fall of 2004, container survival on all soil texture components was less than 10 percent. Pre-plant herbicide treatment increased bare-root seedling survival rates by 15 percent, while post-plant treatment had no apparent impact. Deep-ripping had no impact on potted Nuttall oak or bare root green ash survival but did improve bare-root oak and sycamore survival by 20 percent.