

Joint Conference of the Southeast Exotic Pest Plant Council and Southeast Society for Ecological Restoration, May 11-13, 2010, Chattanooga TN

Loblolly Pine Reforestation Succeeds in Significant Cogongrass Suppression after 8 years

James H. Miller, USDA-Forest Service, Auburn, AL
Wilson H. Faircloth, USDA-ARS, Dawson, GA

Cogongrass (*Imperata cylindrica* var. *major*) is an invasive grass that is rapidly colonizing the Gulf coastal plain, with spread into the interior of the Southeastern U.S. underway. It is particularly harmful to forests by hindering forest regeneration and recreation, contributing to crown fires, and displacing native plants and wildlife. A study begun in 2001 investigates reforestation options in cogongrass-infested areas using loblolly pine (*Pinus taeda*) and quantifies cogongrass suppression relative to pine production and plant species diversity. The research site is near Mobile, AL, on crop lands abandoned about 10 years before this study that had a complete cover of cogongrass. Research treatments included combinations of herbicide site preparation (SP), mechanical SP, first -year pine release with herbicides, and both non-treated and “complete” controls using four blocks. Herbicide SP used a mixture of glyphosate (Accord) and imazapyr (Arsenal AC) applied in early October. Mechanical SP in December used row scalping with a fire plow that folded back thatch and rhizomes to reveal bare planting rows. Re-graded one-year-old loblolly pine seedlings were planted on an 8.2- x 8.2-foot spacing. Plots mostly consisted of 36 measurement trees with two border rows. Pines were measured after 1, 2, 3, 5, 7, and 8 growing seasons along with cover estimates for cogongrass, pines, and other plants. The site has withstood three hurricane events during the study period resulting in some leaning and damaged pine trees.

After varying initial suppression that influenced early pine growth, cogongrass re-grew to cover all treatments after 3 years. Early pine survival was excellent at 90% to 99%. After 8 years, less than 1% cogongrass cover was found on the combination of herbicide SP and first year release owing to pine shading and needle litter from significantly larger trees (95% pine cover). The degree of cogongrass suppression is related to the size and canopy closure of pines and recruitment of understory shrubs: wax myrtle (*Morella cerifera*), yaupon (*Ilex vomitoria*), and Chinese privet (*Ligustrum sinense*). Leaning or wind damaged pines resulted in persisting cogongrass spots, while scalped center piles of rhizomes delayed suppression.

Loblolly pine was successfully established, even on the non-treated plots. Pine volume growth was increased by herbicide treatments, which hastened the shade and litter suppression of cogongrass by year 8. Volunteer understory shrubs contributed to suppression on most treatments.