

**Competitive Research Grant Program****Evaluating productivity and economic viability of southern agroforestry systems for fiber, biofuels, and wildlife habitat**

*Investigators: John D. Kushla, Robert Grala, Forestry; W. Daryl Jones, Jeannie Jones, Adam Tullos, Wildlife and Fisheries; Randy Saunders, Mark Shankle, Mississippi Agricultural and Forestry Experiment Station; Glover Triplett, Plant and Soil Science*

**Project Goal:**

To evaluate the benefits of growing crops and trees together in an integrated system, particularly in regard to enhancing producer markets and wildlife habitat.

**Project Objectives:**

1. Evaluate the growth potential of southern pine trees under sustainable agroforestry systems utilizing an organic fertilizer source and no-tillage crop production.
2. Investigate the suitability of corn, milo, soybeans, and switchgrass in an agroforestry system to produce fiber, biofuels, and enhance wildlife habitat.
3. Evaluate economic viability of selected alley cropping systems in terms of market alternatives for fiber, biofuels, and wildlife habitat.
4. Promote educational programming to a wide audience of landowners, farmers, ranchers, and foresters.

**Synopsis of research activities per objective:**

Objective 1. Loblolly pines and switchgrass were planted in a silvopasture system at the Pontotoc Ridge-Flatwoods Mississippi Agricultural and Forestry Experiment Station in 2007. This experiment is designed to test four rates of chicken litter,

replicated 4 times, in no-till crop production. The switchgrass did not yield the first year, and will be re-planted this spring.

Tree measurements will be made this winter.

Objective 2. Loblolly and shortleaf pines were planted in 2-row agroforestry systems at the North Branch Mississippi Agricultural and Forestry Experiment Station in 2005. Corn, milo, soybeans, and switchgrass were sown the spring of 2007. Crop yield was measured for corn and milo. The switchgrass did not produce a yield, and will be re-sown this coming spring. The soybeans did not yield due to herbivory by deer. The soybeans will be re-sown this spring, and a larger field will be planted to draw deer away from experimental plots. Tree measurements are being made at this time.

**Significant findings/results per objective to date:**

None to report at this time.

**Unrealized or unsuccessful endeavors of project:**

Scientists had difficulty with crop planting for soybeans and switchgrass. Deer herbivory precluded collecting sufficient soybeans for yield estimate last year. In 2008, an additional 10 acres in soybeans will be planted to draw deer away from the agroforestry study site. As for switchgrass, that crop usually takes a couple years to develop a good stand. The drought

this past year certainly did not help with establishment. The switchgrass will be resown this spring.

**Project success relative to original objectives:**

A graduate student has been hired to assist with this project.

**List post-docs and graduate students with title of thesis or dissertation, if completed, and estimated graduation date:**

Gordon, H. Expected graduation in 2009. Valuing productivity and economic viability of Mississippi agroforestry for crop yield and wildlife habitat. Thesis, Department of Forestry, Mississippi State University.

Fund Leveraging

Pennington Seed Company

In-Kind

