

Evaluation of Napiergrass (*Pennisetum purpureum* Schum.) for New Crop and Control Scenarios

Trey Cutts

Crop and Soil Sciences Seminar

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Room 2401, Miller Plant Sciences Building

Napiergrass (*Pennisetum purpureum* Schum.) is widely renowned as having the highest biomass productivity among herbaceous plants (Nagasuga, 2005). Studies at the USDA-ARS Coastal Plain Experiment Station in Tifton, Georgia show that the napiergrass variety Merkeron 534 is an optimum feedstock for biofuel production, in a large part for its maximized biomass yield (Burton, 1989). Greatest dry biomass yields can reach 45 Mg ha⁻¹ yr⁻¹ (Woodward and Sollenberger, 2008). The void in weed control for establishment of napiergrass lies in the period after emergence and before plants grow to out-compete weeds. The first objective of this research is to determine the most practical herbicide to use for this purpose. A broad spectrum of herbicides will be applied and evaluated for effectiveness of weed control, injury to napiergrass, and overall effect on biomass yield. A concern with napiergrass has been its weedy characteristics. These include rapid growth, large quantities of seed produced, vegetative reproduction, and invasiveness to other parts of the world. It is currently listed on the noxious weed list for the state of Florida (Rainbolt, 2005). Napiergrass does have latitudinal restrictions. In north Florida and southern Georgia, cooler temperatures restrict its invasiveness. Reservations exist though about putting napiergrass in commercial production with other crops. Thus, a study will be initiated to find the best method of control of napiergrass from ecological and crop rotational points of view. Napiergrass has been noted as being the fastest growing plant in the world (Karlsson and Vasil, 1985) and having extremely efficient photosynthetic rates. Therefore, photosynthetic rate be evaluated by measuring net CO₂ exchange on treated and non-treated plants to gain perspective into the physiology of napiergrass compared to other biofuel crops and noxious weeds of similar biology.

References

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- Nagasuga, K. 2005. Acclimation of biomass productivity to light intensity in napiergrass (*Pennisetum purpureum* Schumach.) plant. *Bull. Inst. Trop. Agr., Kyushu Univ.* 28:15-20.
- Rainbolt, C. 2005. Napiergrass: biology and control in sugar cane. Gainesville, FL: Institute of Food and Agricultural Sciences. The University of Florida. SS-AGR-242.
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