

Nitrogen management in Giant Miscanthus (GM) biomass production in Piedmont region of North Carolina

R. Ravella, M. Miller, M. R. Reddy and A. Shahbazi

Department of Natural Resources and Environmental Design, North Carolina A&T State University, Greensboro, NC 27411

Giant Miscanthus (GM) produces large quantities of biomass for long periods of time (15 – 20 years), hence it's a dependable source of feedstock for producing ethanol. GM as a bioenergy feedstock has gained importance only in the recent few years and comparatively less research work has been attempted and published on agronomic and nutrient management aspects. This study was conducted to establish the best management practices for GM biomass production in the Piedmont region of North Carolina (NC). Freedom ® variety of Giant Miscanthus from Reprave Renewables was planted in May, 2013 on a Mecklenberg Sandy Loam soil at NC A&T State University Research farm. Five fertilizer treatments [0 (T1), 60 (T2), 120 (T3), 180 (T4) and 240 (T5) Kg N ha⁻¹) in four replications were adopted for this study. Plots were randomized and miscanthus biomass was harvested at two times, early October, 2013 (fresh) and late January, 2014 (dry). For both fresh (22 t/ha) and dry (12.9 t/ha) biomass fertilizer treatment T3 has given significantly higher yields compared to all other treatments. Average moisture content was determined to be around 40 – 50% after drying the fresh biomass in an oven. This data is from the first growing season of giant miscanthus and the results need to be optimized over the next few growing seasons as miscanthus is a perennial grass which can grow and produce biomass for long period of time.