Soil respiration in switchgrass land managed for biomass production. (S03-doolittle135414-Poster)

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Abstract:

The objective of this study was to determine the effects of N, P, manure, and harvesting on soil respiration, potentially mineralizable C (PMC), and microbial biomass C (MBC) subsequent to converting CRP land to biomass production. An Egan silty clay loam (Fine-silty, mixed, mesic Udic Haplustolls) established in switchgrass for 25 years was treated with manure or N and P fertilizer in May 2001 and 2002. Each plot was harvested after anthesis either every year or every other year. The soil respiration rapidly increased with increasing soil temperature and reached the highest value on June 26, 2002. Respiration was greatest under the manure treatment (10.36 g CO2-C m-2 day^-1) than under the control (4.88) and chemical fertilizer treatments, but there were no significant differences among chemical fertilizer treatments (4.64). Soil temperatures were higher in the harvested plots than in the un-harvested plots until June 2002, but soil respiration was not significantly different. PMC and MBC levels were significantly

different between the manure treatment and the chemical fertilizer treatments. PMC (r^2= 0.791) had a better correlation with soil respiration than MBC (r^2=0.778).

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