

Switchgrass Agronomy Trial

Purpose

The purpose of the study was to evaluate the effects of nitrogen rate and harvest strategy on Switchgrass yields.

Materials and methods

Cave-in-rock Switchgrass was planted in the spring of 2008. No nitrogen was applied during establishment year. Atrazine and quinclorac were applied for weed control in 2008 and 2009. Nitrogen application rates of zero, 25, 50, 75, 100, 125, 150 and 175 pounds of nitrogen per acre were applied in May 2010. Liquid 28% was sprayed on the plots using a traditional crop sprayer. Each plot was split, using two different harvest strategies. H1 strategy was harvested one time 2 weeks after the first killing frost in the fall. H2 strategy was harvested twice; once in July and again in at the same time as H1 treatment. All other variables were held constant including establishment method, weed control and harvest strategy.

Results

In 2010, the second year of the study, nitrogen rate was not statistically significant. While there tended to be an effect of nitrogen, fixed effects showed p value of 0.07. In order to be significant the p value must be 0.05 or less. Harvest strategy was significant though. H1 and the July harvest of H2 yielded 3.6 and 3.3 tons dry matter (DM) per acre respectively. The second harvest of H2 yielded an additional 1.5 tons DM per acre.

Discussion

While the two harvest system achieved the highest yield in 2010, economics must be applied to evaluate if the additional yield was worth enough to pay for the extra harvest operation. Other studies are reporting variable results in two harvest systems – in some years two harvests yields more; in some years it yields less. Additional years of data are needed to draw a final conclusion as to whether harvesting in July would be warranted in most years.

Strategy	DM (tons per acre)	Percent Moisture
H1 (Fall)	3.6a	19.5%a
H2_1 (July)	3.3a	76.1%c
H2_2 (Fall)	1.5b	22.0%b

p<0.001

Annual Yield (H2_1 + H2_2)

Strategy	Total DM (tons per acre)
H1	3.6a
H2	4.6b

County: Kalamazoo
Cooperator: Kellogg Biological Station
Nearest town: Hickory Corners
Soil type: Kalamazoo sandy loam
Planting date: July 11, 2008
Variety: Cave-in-Rock
Fertilizer: 0, 25, 50, 75, 100, 125, 150, 175 # N per acre (28% liquid N)
Weed control: none

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