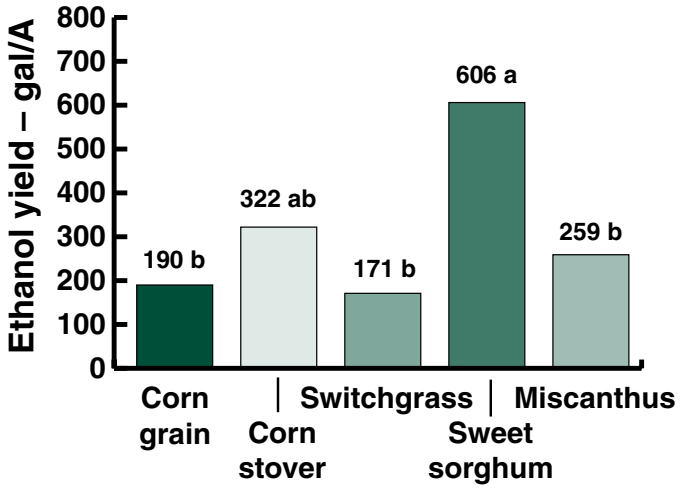
Biofuel productivity plots

MICHIGAN STATE UNIVERSITY | Extension maes research

Ottawa County

Cropping system
Other

County	**Ottawa**
Cooperator	**Charles Gould**
Nearest town	**Allendale**
Planting date	**05/19/10**
Weed control 06/01/10	**Switchgrass and mixed grass: .5 lbs. Quinclorac + .5 lbs. atrazine; miscanthus and sweet sorghum: 8 oz. 2,4-D + .5 lbs. atrazine; corn: 1 qt. glyphosate**
Fertilizer	**Miscanthus, switchgrass, mixed grass: 95 lbs. N (207 lbs. 46-0-0); sweet sorghum: 40 lbs. N, P, K (207 lbs. 19-19-19)**
Exp. design	**RCB, 4 replications**



Purpose

Evaluate biofuel crop productivity on various soils and microclimates across Michigan.

Materials and methods

All crops were established in May 2010. Miscanthus rhizomes were started in the greenhouse. Plants were transplanted into the field.

Whole sorghum plants were clipped off at 3-4 inches above ground and weighed for total biomass. Total biomass removed would be comparable to corn silage harvest. A walk behind sickle bar mower was used to cut a 28-inch swatch from miscanthus and switchgrass.

Biofuel crop	Biomass yield		Ethanol yield	
Corn grain	68.0	tons/A	190 b	gal/A[1]
Corn stover	3.6	tons/A	322 ab	gal/A[1]
Switchgrass	1.9	tons/A	171 b	gal/A[1]
Sweet sorghum	6.7	tons/A	606 a	gal/A[1]
Miscanthus	2.9	tons/A	259 b	gal/A[1]

[1]tons/A X 72 gal/ton = gal. of ethanol/A

Results

Sweet sorghum produced the most ethanol per acre although it was not statistically higher than corn stover. Corn grain yields were low due to deer feeding on ears. The majority of the harvested ears were bare—just a little bit of corn was left at the base of the cob where the deer couldn't get to. This site has a high water table and was very wet when planted. The switchgrass and miscanthus was very successfully established. At harvest, there was a noticeable difference walking in the miscanthus and switchgrass plots. The miscanthus used more water, so the ground was very firm and somewhat dry. The switchgrass plots were soft and wet.

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FIELD CROPS TEAM

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