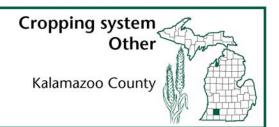
**Michigan State University** 

# **AgBioResearch**



# Biofuel productivity plots

## **Purpose**

Evaluate biofuel crop productivity on various soils and micro climates across Michigan.

#### Materials and methods

The crops planted in the plot vary from year to year. Switchgrass, miscanthus, indiangrass, big bluestem, indiangrass and reed canarygrass were established in May 2009. Canola, oriental mustard, energy, forage and sweet sorghum were planted May 2010. 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. The grasses were harvested with a Kemper head chopper mounted on the front of a tractor. The center four feet of each plot was harvested.

County	Kalamazoo			
Cooperator	W.K. Kellogg Biological Station			
Nearest town	Hickory Corners			
Soil type	Kalamazoo sandy loam			
Weed control Sprayed 06/03/10	All sorghums: 1.67 oz/A Dual II Magnum Canola and oriental mustard: 12 oz. Intensity One + 8 oz. Stinger			
Fertilizer	Sorghums: 186 lbs/A 46-0-0 + 173 lbs/A 19-19-19 (118-33-33 actual lbs. N-P-K) All grasses: 152 lbs/A 46-0-0 (70 lbs. actual N) Canola and oriental mustard: 153 lbs/A 46-0-0 + 224 lbs/A 19-19-19 + 58 lbs/A 0-0-60 (113-43-77 actual lbs. N-P-K)			
Exp. design	RCB, 4 replications			

Species	20	2009		2010		2011	
	Yield <sup>1</sup>	Ethanol <sup>2</sup>	Yield <sup>1</sup>	Ethanol <sup>2</sup>	Yield <sup>1</sup>	Ethanol <sup>2</sup>	
Canola (lbs/A)	_	-	122		467	1-3	
Oriental mustard (lbs/A)	_	-	-	_	179	(1-1)	
Sweet sorghum	13	1,137	8	651	7	622	
Energy sorghum (PS)	_	=	9	725	8	649	
Energy sorghum (non-PS)	_	_	11	924	8	642	
Switchgrass	_	-	4	376	5	451	
Miscanthus	_	-	4	373	8	663	
Indiangrass	_	-	4	301	5	391	
Big bluestem	_	-	3	222	3	213	
Little bluestem	_		<del>o</del> nu	===	2	126	
Reed canarygrass	_		2	163	3	215	
Forage sorghum	7	564	5	418	4	354	
Corn grain	108	303	-		_	-	
Corn stover	3	266		-	_		

### Results

In 2011, sweet and energy sorghums produced similar yields to miscanthus. Energy sorghum (PS) is a photoperiod sensitive crop that does flower until the day length is less than 12 hours and 20 minutes. This doesn't happen until late September. This was the tallest sorghum, but it didn't out produce the sister line that flowered and produced a seed head like the other sorghums. The grasses all tended to yield higher in this second year of establishment. Big bluestem yields would have been higher, but the machine could not pick up all the biomass because it was severely lodged. The other grasses had some lodging due to a wet snow event that occurred just prior to harvest.

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