

Sweet Sorghum and Forage Sorghum Variety Trial 2013

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Introduction

Forage sorghum and sweet sorghum (*Sorghum bicolor* L. Moench.) are an excellent source of supplemental forage in the summer and early-fall, especially in drought-stricken years or when many alfalfa pastures were winter-killed. Forage sorghum silage has about 88% of the feed value of corn silage, but it is much more drought tolerant than corn.

Also, forage sorghum is being looked at as a promising source of lignocellulosic feedstock for biofuels. Forage sorghum is the highest yielding annual feedstock for the second generation biofuel industry in the northern Great Plains.

Methodology

Two variety trails were conducted in 2013 at Fargo and Prosper, ND. The first experiment included 15 entries of sweet sorghum, millet, forage sorghum, and sorghum x sudangrass hybrids (Table 1). The second experiment had 19 entries of sweet sorghum, forage sorghum, sudangrass, and forage sorghum x sudangrass hybrids. (Table 2) The experimental design was an RCBD with 3 replicates at both locations. Sorghum was planted with a plot-drill on 28 and 24 May at Fargo and Prosper for Experiment 1 and, on June 12 and 7, respectively in Experiment 2. The experimental units had 6 rows spaced 12 inches apart, and 20 ft (about 6 m in length) in length. Plots were fertilized with 80 lbs N/acre and hand weeded. Plots were harvested only once at the end of the season on 18 and 20 September. The two-center rows of each plot were harvested manually at 4 inches from the ground, weighed, and samples taken for moisture. Samples were dried until constant moisture and weighed. Fresh and dry matter yield are reported for both experiments and soluble solids (Brix) for Experiment 1.

Table1. Fresh and dry matter forage yield and soluble solids in sweet sorghums in Fargo and Prosper, ND in 2013.

Variety	Type	Fargo			Prosper			Combined			
		Fresh yield	Dry matter yield	SS	Fresh yield	Dry matter yield	SS	Fresh yield	Dry matter yield	SS	
		-----Mg/ha-----			Brix	-----Mg/ha-----			Brix	-----Mg/ha-----	
Pampa Verde Pacas	SxS	82.7	16.5	7.77	82.9	17.0	8.6	82.8	16.7	8.2	
Pampa Verde BMR-6	SxS	70.3	13.6	7.57	71.1	13.1	9.2	70.7	13.3	8.4	
Pampa Triunfo XLT-BMR	SxS	60.5	14.3	11.7	62.0	16.1	13.3	61.3	15.2	12.5	
Pampa Centurion	FS	55.9	12.7	11.3	65.7	13.2	10.8	60.8	13.0	11.0	
Brachytic sorghum BMR-6	FS	63.8	13.7	12.3	59.6	12.0	10.1	61.7	12.9	11.2	
Pampa Mijo BMR-6	Millet	44.9	10.1	.	46.0	9.2	.	45.5	9.7	.	
Pampa Karamelo	FS	77.4	18.5	14.4	94.3	20.5	12.9	85.9	19.5	13.6	
Sweet sorghum 54126	Sweet	75.3	15.4	14.2	99.5	21.6	11.3	87.4	18.5	12.8	
Sweet sorghum 56111	Sweet	88.1	17.6	13.1	128.9	25.9	13.4	108.5	21.8	13.2	
Sweet sorghum 36111	Sweet	70.7	14.2	12.3	118.4	24.4	12.1	94.5	19.3	12.2	
Sweet sorghum 36126	Sweet	71.8	15.0	12.6	111.3	28.8	11.2	91.5	21.9	11.9	
Dale	Sweet	50.5	10.3	13.6	59.4	8.8	6.2	55.0	9.6	9.9	
M81-E	Sweet	61.1	12.6	10.6	68.6	14.7	5.6	64.8	13.6	8.1	
Theis	Sweet	88.3	19.8	12.2	62.3	15.5	6.9	72.7	17.3	9.0	
Top 76-6	Sweet	67.4	15.7	17.5	56.1	11.0	8.0	60.6	12.9	10.4	
LSD (0.05)		ns	ns	4	26.3	5.8	3.5	29.4	7.7	ns	
CV (%)		22	23.4	18.5	19.8	20.6	21.2	20.8	21.8	19.8	

Seeding date 12 June in Fargo, 7 June in Prosper. Harvest date 18-20 Sept. SxS= sorghumx sudan hibryds, SxS= sorghumx sudan hybrids, SG= sudangrass, FS= forage sorghum, Sweet= Sweet sorghum, SS= Soluble solids.

Table 2. Forage sorghum variety trial in Fargo and Prosper, ND 2013.

Variety	Type		Company	Fargo		Prosper		Combined	
				Fresh yield	Dry matter yield	Fresh yield	Dry matter yield	Fresh yield	Dry matter yield
				-----Mg/ha-----		-----Mg/ha-----		-----Mg/ha-----	
Piper	SG	-	Agassiz	42.4	13.1	39.8	11.4	41.1	12.3
Hayking	SG	BMR-12	Producer's choice	41.5	13.8	31.1	9.1	36.3	11.4
Sweething	SxS	-	Agassiz seeds	50.2	14.5	51.0	12.4	50.6	13.5
Forage King	SxS	BMR-12	Producer's choice	32.3	9.9	37.6	8.2	35.0	9.0
BMR Sweething	SxS	BMR-6	Agassiz seeds	72.3	17.0	64.6	12.9	68.4	15.0
S9-09	FS	-	Forage First™	63.8	14.3	54.3	11.5	59.0	12.9
Green Dynamo	SxS	BMR-6	Forage First™	48.4	12.0	44.8	9.4	46.6	10.7
BMR 90 Leafy	FS	BMR-6	Forage First™	59.1	16.0	53.2	13.1	56.2	14.5
BMR AL 53	SxS	BMR-6	Albert Lea Seeds	66.5	13.6	58.8	10.2	62.7	11.9
BMR 105 MS	FS	BMR-6	Forage First™	63.9	14.8	59.3	12.1	61.6	13.5
Greentreat Plus	SxS	BMR-6	Forage First™	62.2	12.0	69.3	12.4	65.7	12.2
SX-17	SxS	-	Forage First™	66.2	17.7	53.1	11.4	59.7	14.6
Greentreat 128	FS	BMR-12	Forage First™	58.8	10.7	61.0	9.4	59.9	10.1
FS-05	FS	-	Monsanto	57.0	14.3	71.0	16.2	64.0	15.2
CHR-SG1	SG	-	Chromatin Inc.	73.9	16.2	60.2	12.7	67.1	14.4
CHR-FS9	FS	-	Chromatin Inc.	72.1	14.5	53.3	9.8	62.7	12.2
CHR-SS2	SxS	-	Chromatin Inc.	53.2	13.0	55.7	12.3	54.4	12.6
CHR-FS4	FS	-	Chromatin Inc.	79.1	16.3	55.6	12.3	67.4	14.3
CHR-FS3	FS	-	Chromatin Inc.	53.6	13.4	53.8	11.5	53.7	12.5
LSD (0.05)				17.8	4.9	21	6.1	13.68	2.82
CV %				18.3	21.2	23.5	32.3	20.8	26.3

SxS= sorghumx sudan hybrids, SG= sudangrass, FS= forage sorghum, Sweet= Sweet sorghum, SS= Soluble solids.