

2012 Sorghum Silage Variety Trial at Maricopa

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Abstract

Nine varieties of silage sorghum and one pearl millet variety were tested at the Maricopa Agricultural Center in Maricopa, AZ. Information on silage sorghum yield and quality can be of use to the dairy industry and help growers choose the best varieties based on their needs. We found no significant differences among the varieties for ash, ADF, and NDF. We did find significant differences in yield with Silo 700 BMR having the highest yield with 31.62 tons/acre and GS125 having the lowest with 20.53 tons/acre. We also saw significant differences in crude protein with ExpGD having the highest (3.47%) and Silo 700 BMR (1.93%) being the lowest.

Introduction

Choosing the right variety is one of the most critical decisions a grower needs to make. Because of the number of varieties on the market, many farmers have expressed interest in variety trials done for their area. The University of Arizona Cooperative Extension works to provide an unbiased testing of varieties being released into the market. Sorghum silage acreages in Arizona have mostly been decreasing the past four years; 35,000 acres in 2009, 25,000 acres in 2010, and 22,000 acres in 2011. (USDA, 2012).

Materials and Methods

A randomized complete block design experiment with nine silage sorghum varieties plus a Navajo BMR variety and four replications was conducted at the Maricopa Agricultural Center, Maricopa, Arizona (Table 1). These varieties were provided by several local seed distributors. The silage sorghum was planted in single rows on 40-inch beds on June 25, 2012. Each plot was four rows, 25 feet long. The planting rate was 120,000 seed/acre for each variety with the exception of the pearl millet variety which was planted at 60,000 seed/acre.

Plant height was measured using a 8' graduated yardstick. Two, one meter rows were harvested on November 15, 2012. The silage was saved in a bulk to record plot yield. A sample from each replication was collected for quality analysis. Percent moisture, crude protein (Kjeldahl method), ADF, NDF, and ash from each sample were analyzed.

Results and Discussion

We tested ten different varieties (Table 2). The variety that yielded the most with 31.62 tons/acre was Silo 700 BMR and was significantly different from the other treatments with the exception of Big Kahuna BMR at 28.71 tons/acre. Three of the varieties (BMR Elite, Navajo BMR, and Big Kahuna BMR) experienced significant lodging while the rest showed none. There were no significant differences among the varieties for ash, acid detergent fraction, and neutral detergent fraction. ExpGD had the lowest ADF at 28.71% (lower, better) and Big Kahuna BMR had the highest at 37.67%. For NDF, ExpGD again had the lowest value at 47.63% (lower, better) and the Navajo BMR had the highest value at 56.90%. For crude protein values, GS125 (3.24%) and ExpGD (3.47%) was significantly different from Silo 700 BMR (1.93%). Plant height ranged between 1.83 meters to 3.66 m.

References

USDA-NASS. 2012. 2012 Arizona Agricultural Statistics.

Table 1. Sorghum silage variety trial test description.

<u>Location</u>		<u>Management Practices</u>			<u>Growing Conditions</u>				
County:	Maricopa					Irrigation	Avg Temp	Precip	Irrigation
Longitude:	111°58'18"N	Planting date:	21-Jun		Jun	Dates	F	in	in
Latitude:	30°04'07"N	Harvest date:	07-Aug		Jul	06-Jun	90	0	11.66
Elevation:	1184.4 ft					02-Jul			7.60
Soil name:	Casa Grande sandy loam					20-Jul			6.60
Soil depth:	>60"					Aug	91	1.66	
		<u>Production Inputs</u>							
		Fertilizer:	Rate	Date	Aug	07-Aug			5.50
		Urea	66 lbs per/acre	21-Jun					
		UAN	110 lbs per/acre	07-Aug	Sep		84	1.27	
						12-Sep			4.21
						24-Sep			5.00
		Herbicides:			Oct		73	0	
		None				04-Oct			7.20
						15-Oct			5.00
						Total			
		Insecticides:				Precip		4.91	
		None				Irrig		52.77	
<u>Test Design</u>									
Replications:	4								
Plot length:	25 ft								
Rows per plot:	4								
Row spacing:	40 in								
Harvested rows:	2 rows 1 meter long								
Seed rate:	120,000 seed/acre								
Alleys:	10 ft								

Table 2. Yield and quality of 9 silage sorghum and 1 pearl millet varieties.

Variety	Yield (tons/A)		Crude Protein		NDF (%)	ADF (%)	Ash (%)	Lodging		Plant Height (meter)			
	at 65% moisture		(%)					(%)	(%)				
Silo 700 BMR	31.62	a	1.93	b	50.47	a	35.48	a	7.82	a	0.00	b	2.04
Big Kahuna BMR	28.71	ab	2.86	ab	54.92	a	37.67	a	7.27	a	40.00	a	2.86
ExpWTDR	25.69	bc	2.51	ab	51.77	a	31.60	a	6.85	a	0.00	b	2.46
BMR110	25.54	bc	2.61	ab	50.90	a	33.92	a	7.14	a	0.00	b	2.14
ExpDR	23.82	bc	2.38	ab	54.11	a	36.89	a	7.70	a	0.00	b	1.89
Navajo BMR*	23.76	bc	2.32	ab	56.90	a	35.73	a	8.06	a	60.00	a	2.38
BMR Elite	22.83	bc	2.96	ab	49.63	a	32.96	a	6.64	a	63.75	a	2.99
ExpGD	22.15	c	3.47	a	47.63	a	28.71	a	6.88	a	0.00	b	2.07
Silo	21.60	c	2.31	ab	51.40	a	35.23	a	7.19	a	0.00	b	2.37
GS125	20.53	c	3.24	a	54.65	a	35.50	a	7.55	a	0.00	b	1.95

* Indicates the pearl millet variety