

## PRODUCTIVITY, NUTRITIONAL QUALITY AND PHENOTYPICAL STABILITY OF VARIETIES AND HYBRIDS OF SILAGE SORGHUM IN UBERLÂNDIA, MG - BRAZIL

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### Introduction

Sorghum (*Sorghum bicolor* (L.) Moench) is a good alternative to be used as silage, especially in places with water scarcity and high temperatures, due to their morphological and physiological characteristics. Proper management interferes both productivity and the quality of silage.

The cultivation potential of sorghum for silage in the low season (Uberlândia -MG- Brazil) is limited mainly by the low supply of cultivars insensitive to the

### Objectives

The objective of this work was to evaluate the nutritional quality, productivity and stability of varieties and hybrids of silage sorghum in the season and off-season crop in the county of Uberlândia, MG, Brazil.

### Research Methods

The experiment was performed at White Grass Experimental Farm of the Federal University of Uberlândia - UFU located in Uberlândia - MG. In the same experimental area were two sowing dates, off-season and season. In both sowing dates were evaluated varieties and hybrids. The design was a randomized block with 25 treatments and three replications. Data were subjected to analysis of variance and the means were grouped by the Scott-Knott test at 5% probability, using the computer program Genes and to estimate the stability opted for the Annicchiarico method.

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### Results

Table 1 - Summary of analysis of variance for flowering (Flower); plant height (PH); dry matter (DM); Acid detergent Fiber (NDA); Neutral Detergent Fiber (NDF); and Crude Protein (PB) from the experiment conducted in the harvest.

Source of Variation	GL	Medium Squares					
		Flower	PH	DM	NDA	NDF	CP
Blocks	2	45.50	0.06	2.70	30.46	40.33	7.11
Grow crops	49	329.10**	0.96**	60.70**	104.44**	151.17**	9.06**
Variety (V)	24	183.00**	1.20**	35.10**	64.59 <sup>NS</sup>	170.13 <sup>NS</sup>	8.16**
Hybrid (H)	24	40.90**	0.40**	42.50**	28.51 <sup>NS</sup>	32.06**	2.73**
V x H	1	10752.6**	8.81**	1114.20**	2883.18**	2555.31**	182.4**
Residue	98	5.47	0.10	9.80	45.74	35.65	1.36
Total	149						
Average Overall		58.76	2.31	10.93	40.08	73.41	7.95
Average Varieties		50.29	2.06	8.21	35.69	69.31	9.06
Average Hybrids		67.23	2.55	13.66	44.46	77.57	6.85
CV (%)		3.98	7.54	28.69	16.87	8.13	14.68

Not significant: NS  
Significant at 1 and 5% probability: \*\* and \*

Table 2 - Summary of analysis of variance for flowering (Flower); plant height (AP); dry matter (DM); Fiber in acid detergent (FDA); Neutral Detergent Fiber (NDF); and Crude Protein (CP) from the experiment conducted on the second crop.

Source of Variation	GL	Medium Squares					
		Flower	PH	DM	NDA	NDF	CP
Blocks	2	5.69	0.11	14.09	109.53	64.69	7.10
Grow crops	49	608.42**	1.92**	51.64**	131.03**	81.66**	9.69**
Variety (V)	24	253.05**	1.65**	49.81**	191.86**	70.82	8.24**
Hybrid (H)	24	5.27*	0.08**	5.68 <sup>NS</sup>	55.08 <sup>NS</sup>	57.54 <sup>NS</sup>	0.69 <sup>NS</sup>
V x H	1	23612.82**	52.74**	1198.45**	493.66**	921.22**	256.15**
Residue	98	2.76	0.02	4.54	50.25	38.10	
Total	149						
Average Overall		56.09	2.33	9.95	41.71	73.96	8.18
Average Varieties		68.64	2.92	12.77	43.52	71.48	6.87
Average Hybrids		43.54	1.73	7.12	39.89	76.44	9.48
CV (%)		2.96	6.15	21.41	16.99	8.35	11.67

Not significant: NS  
Significant at 1 and 5% probability: \*\* and \*

Table 3 - Estimation of the phenotypic stability parameter by means of the Annicchiarico method (1992) - confidence index (II) of 50 cultivars of silage sorghum cultivated in crop and second crop.

Growing	Genetic Basis	II (%)		
		Flower	PH	DM
946013	Hybrid	79.20	69.32	45.68
944013	Hybrid	79.97	66.72	50.75
945013	Hybrid	81.02	69.49	53.40
BRS 655	Hybrid	76.58	67.95	54.70
944043	Hybrid	76.38	66.65	60.75
944034	Hybrid	75.61	73.66	60.98
946007	Hybrid	75.65	68.22	63.67
945042	Hybrid	78.75	67.01	64.31
944007	Hybrid	79.34	73.82	65.82
944040	Hybrid	79.80	81.32	66.69
945022	Hybrid	76.46	68.31	67.54
944042	Hybrid	80.99	75.25	70.83
945015	Hybrid	80.55	73.66	70.84
944029	Hybrid	75.71	75.48	73.59
946042	Hybrid	76.99	74.18	73.77
945041	Hybrid	79.82	79.69	82.14
945040	Hybrid	81.73	80.86	82.23
945019	Hybrid	78.06	84.05	83.23
946015	Hybrid	75.67	80.96	85.13
945020	Hybrid	79.33	72.65	85.57
946016	Hybrid	74.89	79.23	87.13
944033	Hybrid	75.58	73.79	88.34
BRS 610	Hybrid	78.89	88.91	90.78
Volumax	Hybrid	80.72	77.15	91.64
946043	Hybrid	83.91	94.49	95.92
FEPAGRO 19	Variety	78.30	92.67	37.07
9929026	Variety	74.11	55.57	37.14
9929036	Variety	73.19	72.07	42.08
9929030	Variety	73.63	57.16	44.53
FEPAGRO 18	Variety	73.62	88.02	46.03
947252	Variety	84.61	65.77	46.71
947030	Variety	75.92	67.37	48.22
FEPAGRO 11	Variety	74.27	87.96	56.64
12F042066	Variety	82.56	75.72	61.68
947254	Variety	82.25	81.63	62.15
9929012	Variety	73.15	74.30	63.36
12F042226	Variety	80.71	73.96	66.19
947216	Variety	77.15	71.64	67.45
BRS 506	Variety	93.38	100.21	72.76
12F042224	Variety	87.41	78.20	77.10
1141562	Variety	83.56	98.43	80.08
947072	Variety	78.71	72.89	83.63
BRS Ponta Negra	Variety	91.11	71.32	90.05
12F042150	Variety	93.88	93.25	95.40
SF 25	Variety	106.11	150.75	101.39
1141572	Variety	90.36	95.39	108.77
1141570	Variety	90.32	96.95	113.71
PROG 134 IPA	Variety	111.13	120.71	116.90
SF 15	Variety	113.89	149.11	138.32
SF 11	Variety	115.17	146.37	145.42

### Conclusions

The cultivars flowering, dry matter yield, plant height, Acid Detergent Fiber (ADF) and Neutral Detergent Fiber (NDF) are affected by the environment and the sorghum. From the 25 hybrids analyzed for productivity and stability of dry matter performance, seven were highlighted, regardless of the rated environment: Volumax commercial hybrid and experiments 12F39006, 12F39007, 12F37014, 12F39014, 12F38009 and 12F02006.