

Texas Panhandle Sorghum Hay Trial – 2008

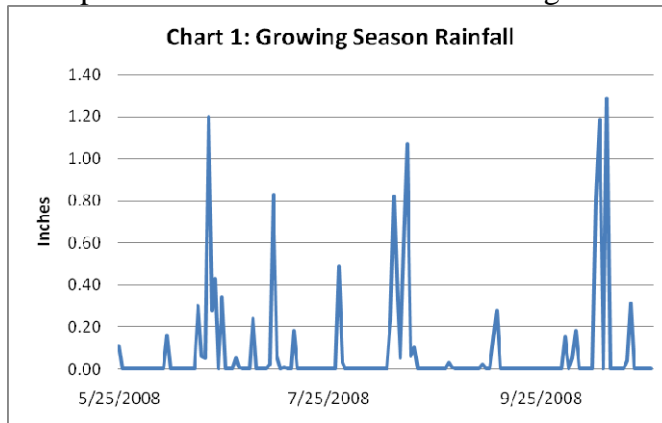
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Introduction

This was the second year for conducting a forage sorghum hay trial. The trial consisted of 29 entries of sorghum/sudangrass, sudangrass, forage sorghum, and millet. Entries also included hybrids with the brown midrib (BMR) and photoperiod sensitive (PS) traits. The trial was irrigated once just prior to planting, and again immediately after the first cutting. A total of two cuttings were made, with the first cutting occurring 64 days after planting. We planned to make the second cutting when each hybrid was 50% headed, however, several of the hybrids never headed as a result of late season drought and a lack of heat units. Samples from each harvest were tested for nutrient and mineral composition.

Methods and Materials

The trial was made up of 29 hybrids provided by seed companies on a per fee basis. The hybrids were planted in a randomized block design in two 25-ft row plots, on 30-inch raised beds. In



order to obtain a uniform stand, planting was achieved with John Deere Max-Emerge II 30-inch row spaced planter. Irrigation was applied by furrow and the three replications (blocks) were stacked with the first replication being closest to the gated pipe, followed by the second and third replications. Plots were irrigated prior to planting with 4.4 inches of water and again immediately after the first cutting with 3.5 inches. Rainfall totaled 12.6 inches during the growing season

(May 27 – Oct. 20) (Chart 1). However, there was a dry period from August 18 to Oct 10 that stressed the sorghum preventing several hybrids from heading. All hybrids were harvested with a sickle mower on July 30th, 64 days after planting. A subsample was collected from each yield sample, air dried, and sent to Dairy One Laboratory, Ithaca, NY for analyses. A second subsample was weighed, oven dried, and weighed again to determine moisture percent at harvest. In order to maximize tonnage, the second cutting was made when each hybrid was approximately 50% headed. Harvest dates ranged from Sep 9th to Oct 20th. PS hybrids as well as those hybrids that did not head due to moisture stress and lack of heat units were harvested on Oct 20th. The second cutting was achieved by hand harvesting 10-ft of one row of each plot. A

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subsample of 4 whole plants were collected, chopped, weighed and dried to determine moisture percent at harvest. A second sample was collected for nutrient analysis as described earlier.

Other cultural practices and study information are listed below:

Trial Location:	Bush farm located one mile north of Bushland, TX
Cooperator:	Texas AgriLife Research
Previous Crop:	Fallow
Soil Type:	Pullman Clay Loam, pH = 7.4
Plot Size:	Two, 30 inch rows by 25 ft
Replications:	3
Study Design:	Randomized complete block
Planting Date:	May 27, 2008
Planting Rate:	120,000 seed/acre
Seed Method:	John Deere Max-Emerge Planter
Fertilizer:	Applied 85 lb/acre N and 45 lb/acre P ₂ O ₅ based on soil test results.
Herbicide:	One lb/acre atrazine applied three days after planting
Irrigation:	Pre-irrigation – 4.4 inches. After first cutting on July 31 st – 3.5 inches

Nutrient analyses:

Crude Protein:	6.25 * % total nitrogen
TDN:	Estimate of total digestible nutrients
NDF:	Neutral Detergent Fiber; cell wall fraction of the forage
ADF:	Acid Detergent Fiber; constituent of the cell wall includes cellulose and lignin; inversely related to energy availability
NEl:	Estimate of Net Energy for lactation
NEm:	Estimate of Net Energy for maintenance
NEg:	Estimate of Net Energy for gain
IVTD:	In Vitro True Digestibility; positively related to energy availability
NDFD:	Neutral Detergent Fiber Digestibility, digestible NDF, %: This is a measure of fiber digestibility that is determined from the IVTD analysis.
RFV:	Relative Feed Value is an index for comparing forages based on digestibility and intake potential. RFV is calculated from ADF and NDF. An RFV of 100 is considered the average score and represents alfalfa hay containing 41% ADF and 53% NDF on a dry matter digestibility.
RFQ:	Relative Forage Quality is an index for comparing forages. RFQ is calculated from CP, ADF, NDF, fat, ash and NDF digestibility measured at 48 hours. It should be more reflective of the feeding value of the forage. RFQ is based on the same scoring system as RFV with an average score of 100. The higher the RFQ, the better the quality.
Milk lbs/ton:	A projection of potential milk yield per ton of forage dry matter.

Results and Discussion

A summary of yield and nutrient composition for the first cutting are reported in Table 1. Entries were grouped by BMR and PS type. The first cutting was made on July 30th, 64 days after planting. At the time of harvest, average moisture content was 71.6%. BMR and nonBMR hybrids all averaged approximately 4.4 (dry) ton/acre. The BMR-PS hybrids averaged 4.2 ton/acre and the two millets in the trial averaged 4.0 ton/acre. Yield ranged from a low of 2.9 to a high of 7.9 ton/acre. Although the millets were the lowest yielding hybrids they had the highest % crude protein. Digestibility as measured by % IVTD was similar with all sorghum types.

Harvest dates for the second cutting ranged from Sep 9th to Oct 20th (Table 2). The goal was to harvest the forage when each hybrid was 50% headed. However, due to a late season drought and relatively mild temperatures after the first cutting, which resulted in delay in sorghum maturity, many of the entries never reached the 50% headed stage. Difference between sorghum types was more pronounced in the second cutting. The nonBMR types had the highest average yield at 8.9 ton/acre. In contrast, the BMR types averaged 7.1 ton/acre. The nonBMR-PS hybrids averaged 6.6 ton/acre and the BMR-PS hybrids 5.7 ton/acre. The two millet entries averaged 5.8 ton/acre, and, like the first cutting, had the highest % crude protein and also the highest digestibility (% IVTD).

Total yield for the both cuttings ranged from 7.7 to 15.5 ton/acre (Chart 2). Four hybrids that yielded over 15 ton/acre were Sweeter N Honey BMR, Sordan 79, Grazex BMR x 801 BMR and Trudan 8.

Table 1. Forage sorghum hay trial, 1st cutting 64 days after emergence.

Hybrid	Company	Sorghum Type	Maturity	Brown MidRib	Male Sterile	Plants/ Ac	% Moisture	DM Yield, Ton/Ac	% Crude Protein	% ADF	% NDF	% TDN	% Lignin
849F	Pioneer Hi-Bred Int.	Forage Sorghum	M	N	N	64,469	71.6 ab	4.5 bcd	19.2 bc	33.6	56.5 a	48.3	1.3
979	Pioneer Hi-Bred Int.	Sorghum/Sudan	M	N	Y	74,342	70.7 ab	3.2 d	16.5 bcd	34.5	57.1 a	53.7	1.4
Sweeter 'N Honey II	Richardson Seeds.	Sorghum/Sudan	ML	N	N	66,792	72.2 ab	4.6 bcd	15.0 cd	34.2	57.7 a	57.0	2.3
Sordan 79	Sorghum Partners	Sorghum/Sudan	M	N	N	68,534	73.5 ab	4.6 bcd	14.5 cd	33.6	56.5 a	61.7	2.4
Trudan 8	Sorghum Partners	Sudan	E	N	N	70,277	68.3 b	5.9 bc	14.8 cd	33.1	58.8 a	59.7	2.7
NonBMR AVG						68,883	71.3	4.5	16.0	33.8	57.3	56.1	2.0
23431	Advanta US	Sorghum/Sudan	L	Y	N	79,570	71.7 ab	3.6 bcd	16.3 bcd	33.5	55.8 a	55.0	2.3
22050	Advanta US	Sorghum/Sudan	L	Y	N	77,827	67.8 b	7.9 a	17.9 bcd	31.7	55.0 a	59.0	1.6
Exp 2017x	Coffey Forage Seeds	Sorghum/Sudan	ML	Y	N	87,701	72.5 ab	3.6 bcd	15.6 bcd	35.1	56.8 a	55.0	1.6
Exp 2017DWx	Coffey Forage Seeds	Sorghum/Sudan	ML	Y	N	82,764	67.6 b	4.5 bcd	15.4 bcd	34.1	58.2 a	58.0	1.6
Exp 3017x	Coffey Forage Seeds	Sorghum/Sudan	ML	Y	N	83,635	73.9 ab	3.9 bcd	15.0 cd	32.0	56.5 a	61.0	2.4
Sweeter 'N Honey BMR	Richardson Seeds	Sorghum/Sudan	M	Y	N	68,534	73.1 ab	6.1 b	17.1 bcd	34.4	56.6 a	54.3	1.6
Sweeter 'N Honey II BMR	Richardson Seeds	Sorghum/Sudan	ML	Y	N	52,853	74.9 ab	3.1 d	17.0 bcd	33.2	57.8 a	56.3	1.9
BMR Gold II	Scott Seed	Sorghum/Sudan	M	Y	N	88,282	69.7 ab	5.0 bcd	16.6 bcd	33.4	57.8 a	55.3	1.1
Grazex BMR 718	Sharp Bros Seed	Sorghum/Sudan	ME	Y	N	81,893	69.6 ab	3.6 bcd	18.7 bcd	30.7	56.7 a	58.7	1.6
Grazex BMR x801	Sharp Bros Seed	Sorghum/Sudan	ME	Y	N	60,403	71.2 ab	5.0 bcd	15.3 bcd	33.6	55.8 a	57.7	1.3
Red Top Plus	Production Plus	Forage Sorghum	ML	Y	N	98,155	75.3 ab	3.2 d	16.6 bcd	32.3	56.1 a	59.3	1.4
Nutri Plus	Production Plus	Sorghum/Sudan	ML	Y	N	77,827	70.5 ab	4.8 bcd	15.2 cd	34.9	56.8 a	60.0	1.5
GW Exp 8051	Gayland Ward	Sorghum/Sudan	ML	Y	N	77,246	76.1 ab	2.9 d	17.4 bcd	32.0	56.0 a	57.0	1.3
GW Exp 8071	Gayland Ward	Sorghum/Sudan	M	Y	N	69,696	67.9 b	3.9 bcd	13.8 d	34.7	57.2 a	53.0	1.8
BMR AVG						77,599	71.6	4.4	16.3	33.3	56.6	57.1	1.6
811F	Pioneer Hi-Bred Int.	Forage Sorghum	PS	N		76,085	69.9 ab	4.3 bcd	15.6 bcd	32.3	58.5 a	54.3	1.3
Sugar Graze Ultra	Coffey Forage Seeds	Sorghum/Sudan	PS	N	Y	94,090	68.7 b	4.5 bcd	15.6 bcd	33.3	55.7 a	59.3	2.0
Premium Stock LS	Scott Seed	Sorghum/Sudan	PS	N	N	81,893	71.6 ab	5.1 bcd	16.4 bcd	32.3	57.6 a	59.0	1.9
Sordan Headless	Sorghum Partners	Sorghum/Sudan	PS	N	N	79,570	66.9 b	3.6 cd	17.5 bcd	31.0	56.2 a	60.0	2.1
Trudan Headless	Sorghum Partners	Sudan	PS	N	N	65,050	71.1 ab	5.0 bcd	17.0 bcd	32.9	59.0 a	57.3	1.9
NonBMR-PS AVG						79,337	69.6	4.5	16.4	32.3	57.4	58.0	1.8
Bonus-R-BMR	Drussel Seed & Supply	Sorghum/Sudan	PS	Y	N	88,282	70.2 ab	3.9 bcd	18.5 abc	31.4	57.9 a	58.0	1.6
Sordan BMR	Sorghum Partners	Sorghum/Sudan	PS	Y	N	70,858	72.2 ab	3.8 bcd	16.3 abc	32.4	58.3 a	58.3	2.0
Trudan BMR	Sorghum Partners	Sudan	PS	Y	N	92,347	72.1 ab	4.8 bcd	17.0 abc	32.2	55.6 a	57.7	2.0
BMR-PS AVG						83,829	71.5	4.2	17.3	32.0	57.3	58.0	1.8
MMR PM 508/13	MMR Genetics	Millet	ME	Y	Y	80,731	73.7 ab	4.1 bcd	20.2 b	32.1	56.8 a	49.7	2.0
MMR PM 508/5	MMR Genetics	Millet	L	Y	N	61,565	79.5 a	4.0 bcd	26.4 a	31.9	49.8 b	48.0	3.4
BMR Millet AVG						71,148	76.6	4.0	23.2	32.0	53.3	48.9	2.7
Test AVG						76,614	71.7	4.4	16.8	33.2	56.9	57.2	1.8
LSD (P=.05)						NS	5.32791	1.3344	2.65	NS	3.20	NS	NS
CV						20.40	4.56	18.68	9.62	6.62	3.45	10.40	45.22
Treatment Prob(F)						0.1231	0.0049	0.0001	0.0001	0.616	0.0055	0.4	0.3731

Table 1. Forage sorghum hay trial, 1st cutting 64 days after emergence.

Hybrid	Company	Sorghum Type	Maturity	Brown MidRib	Male Sterile	% IVTD NIR	% NDFD	NEL Mcal/lb	NEM Mcal/lb	NEG Mcal/lb	% Ca	% P
849F	Pioneer Hi-Bred Int.	Forage Sorghum	M	N	N	76.0	57.3	0.5	0.4	0.1	0.4	0.3 ab
979	Pioneer Hi-Bred Int.	Sorghum/Sudan	M	N	Y	78.0	61.7	0.5	0.5	0.2	0.4	0.2 b
Sweeter 'N Honey II	Richardson Seeds.	Sorghum/Sudan	ML	N	N	79.7	64.7	0.5	0.5	0.3	0.5	0.2 ab
Sordan 79	Sorghum Partners	Sorghum/Sudan	M	N	N	81.0	65.3	0.6	0.6	0.3	0.4	0.3 ab
Trudan 8	Sorghum Partners	Sudan	E	N	N	79.3	65.0	0.5	0.5	0.3	0.4	0.2 ab
NonBMR AVG						78.8	62.8	0.5	0.5	0.2	0.4	0.2
23431	Advanta US	Sorghum/Sudan	L	Y	N	82.3	68.7	0.5	0.5	0.2	0.4	0.3 ab
22050	Advanta US	Sorghum/Sudan	L	Y	N	79.3	62.3	0.6	0.5	0.3	0.4	0.3 ab
Exp 2017x	Coffey Forage Seeds	Sorghum/Sudan	ML	Y	N	78.7	62.7	0.5	0.5	0.2	0.4	0.2 ab
Exp 2017DWx	Coffey Forage Seeds	Sorghum/Sudan	ML	Y	N	78.5	63.5	0.5	0.5	0.3	0.3	0.2 ab
Exp 3017x	Coffey Forage Seeds	Sorghum/Sudan	ML	Y	N	81.0	66.0	0.6	0.6	0.3	0.4	0.3 ab
Sweeter 'N Honey BMR	Richardson Seeds	Sorghum/Sudan	M	Y	N	78.3	61.3	0.5	0.5	0.2	0.5	0.2 ab
Sweeter 'N Honey II BMR	Richardson Seeds	Sorghum/Sudan	ML	Y	N	79.7	65.7	0.5	0.5	0.2	0.4	0.2 b
BMR Gold II	Scott Seed	Sorghum/Sudan	M	Y	N	79.0	63.0	0.5	0.5	0.2	0.3	0.2 ab
Grazex BMR 718	Sharp Bros Seed	Sorghum/Sudan	ME	Y	N	81.3	66.7	0.5	0.5	0.3	0.5	0.3 ab
Grazex BMR x801	Sharp Bros Seed	Sorghum/Sudan	ME	Y	N	77.7	60.3	0.5	0.5	0.3	0.3	0.3 ab
Red Top Plus	Production Plus	Forage Sorghum	ML	Y	N	80.0	64.0	0.6	0.6	0.3	0.4	0.3 ab
Nutri Plus	Production Plus	Sorghum/Sudan	ML	Y	N	81.3	66.7	0.6	0.6	0.3	0.3	0.3 ab
GW Exp 8051	Gayland Ward	Sorghum/Sudan	ML	Y	N	80.7	66.0	0.5	0.5	0.3	0.5	0.2 ab
GW Exp 8071	Gayland Ward	Sorghum/Sudan	M	Y	N	75.3	56.7	0.5	0.5	0.2	0.3	0.2 ab
BMR AVG						79.5	63.8	0.5	0.5	0.3	0.4	0.2
811F	Pioneer Hi-Bred Int.	Forage Sorghum	PS	N		77.7	61.7	0.5	0.5	0.2	0.5	0.3 ab
Sugar Graze Ultra	Coffey Forage Seeds	Sorghum/Sudan	PS	N	Y	79.3	62.3	0.6	0.6	0.3	0.4	0.3 ab
Premium Stock LS	Scott Seed	Sorghum/Sudan	PS	N	N	82.0	68.3	0.6	0.5	0.3	0.4	0.2 ab
Sordan Headless	Sorghum Partners	Sorghum/Sudan	PS	N	N	80.0	64.7	0.6	0.6	0.3	0.4	0.3 ab
Trudan Headless	Sorghum Partners	Sudan	PS	N	N	79.3	64.0	0.5	0.5	0.3	0.4	0.3 ab
NonBMR-PS AVG						79.7	64.2	0.5	0.5	0.3	0.4	0.3
Bonus-R-BMR	Drussel Seed & Supply	Sorghum/Sudan	PS	Y	N	78.7	63.3	0.5	0.5	0.3	0.4	0.3 ab
Sordan BMR	Sorghum Partners	Sorghum/Sudan	PS	Y	N	79.0	64.0	0.5	0.5	0.3	0.5	0.3 ab
Trudan BMR	Sorghum Partners	Sudan	PS	Y	N	79.0	62.0	0.5	0.5	0.3	0.4	0.3 ab
BMR-PS AVG						78.9	63.1	0.5	0.5	0.3	0.4	0.3
MMR PM 508/13	MMR Genetics	Millet	ME	Y	Y	78.7	63.3	0.5	0.4	0.1	0.5	0.3 ab
MMR PM 508/5	MMR Genetics	Millet	L	Y	N	78.3	56.0	0.5	0.4	0.1	0.5	0.3 a
BMR Millet AVG						78.5	59.7	0.5	0.4	0.1	0.5	0.3
Test AVG						79.5	63.8	0.5	0.5	0.3	0.4	0.3
LSD (P=.05)						NS	NS	NS	NS	NS	NS	0.06
CV						4.46	10.53	10.74	18.34	33.59	22	13.59
Treatment Prob(F)						0.9217	0.9023	0.5215	0.3928	0.4546	0.24	0.0432

Table 1. Forage sorghum hay trial, 1st cutting 64 days after emergence.

Hybrid	Company	Sorghum Type	Maturity	Brown MidRib	Male Sterile	% Mg	% K	% S	% CI	Relative Feed Value	Relative Feed Quality	Milk lbs/Ton
849F	Pioneer Hi-Bred Int.	Forage Sorghum	M	N	N	0.3 abc	2.6 bcd	0.2	0.3 b	104 b	91.3	1,190
979	Pioneer Hi-Bred Int.	Sorghum/Sudan	M	N	Y	0.3 abc	2.4 cd	0.2	0.4 b	101 b	93.3	1,596
Sweeter 'N Honey II	Richardson Seeds.	Sorghum/Sudan	ML	N	N	0.4 abc	2.5 bcd	0.2	0.5 b	101 b	99.0	1,844
Sordan 79	Sorghum Partners	Sorghum/Sudan	M	N	N	0.3 abc	2.4 cd	0.2	0.5 b	103 b	119.7	2,229
Trudan 8	Sorghum Partners	Sudan	E	N	N	0.3 abc	2.2 d	0.2	0.3 b	100 b	111.0	2,035
NonBMR AVG						0.3	2.4	0.2	0.4	101.7	102.9	1,779
23431	Advanta US	Sorghum/Sudan	L	Y	N	0.3 abc	2.8 bcd	0.2	0.5 b	105 b	103.3	1,731
22050	Advanta US	Sorghum/Sudan	L	Y	N	0.4 abc	2.8 bcd	0.2	0.6 b	109 b	120.7	1,980
Exp 2017x	Coffey Forage Seeds	Sorghum/Sudan	ML	Y	N	0.3 abc	2.5 bcd	0.2	0.4 b	101 b	88.3	1,665
Exp 2017DWx	Coffey Forage Seeds	Sorghum/Sudan	ML	Y	N	0.3 abc	2.5 bcd	0.2	0.4 b	100 b	100.0	1,886
Exp 3017x	Coffey Forage Seeds	Sorghum/Sudan	ML	Y	N	0.4 abc	2.7 bcd	0.2	0.6 b	106 b	116.0	2,146
Sweeter 'N Honey BMR	Richardson Seeds	Sorghum/Sudan	M	Y	N	0.3 abc	2.7 bcd	0.2	0.8 b	103 b	93.7	1,598
Sweeter 'N Honey II BMR	Richardson Seeds	Sorghum/Sudan	ML	Y	N	0.4 abc	2.5 bcd	0.2	0.5 b	101 b	106.7	1,728
BMR Gold II	Scott Seed	Sorghum/Sudan	M	Y	N	0.3 bc	2.3 cd	0.2	0.4 b	101 b	94.7	1,674
Grazex BMR 718	Sharp Bros Seed	Sorghum/Sudan	ME	Y	N	0.3 abc	2.7 bcd	0.2	0.5 b	107 b	124.3	1,992
Grazex BMR x801	Sharp Bros Seed	Sorghum/Sudan	ME	Y	N	0.3 abc	2.6 bcd	0.2	0.6 b	105 b	105.7	1,924
Red Top Plus	Production Plus	Forage Sorghum	ML	Y	N	0.3 abc	2.8 bcd	0.3	0.6 b	106 b	117.3	2,034
Nutri Plus	Production Plus	Sorghum/Sudan	ML	Y	N	0.3 abc	2.7 bcd	0.2	0.5 b	101 b	103.3	1,997
GW Exp 8051	Gayland Ward	Sorghum/Sudan	ML	Y	N	0.4 abc	2.6 bcd	0.2	0.3 b	107 b	114.3	1,878
GW Exp 8071	Gayland Ward	Sorghum/Sudan	M	Y	N	0.3 abc	2.2 cd	0.2	0.5 b	101 b	92.7	1,686
BMR AVG						0.3	2.6	0.2	0.5	104	105.8	1,851
811F	Pioneer Hi-Bred Int.	Forage Sorghum	PS	N		0.4 ab	2.5 bcd	0.2	0.5 b	101 b	96.7	1,629
Sugar Graze Ultra	Coffey Forage Seeds	Sorghum/Sudan	PS	N	Y	0.4 abc	2.5 bcd	0.2	0.5 b	106 b	107.7	2,037
Premium Stock LS	Scott Seed	Sorghum/Sudan	PS	N	N	0.3 abc	2.5 bcd	0.2	0.5 b	103 b	120.7	2,053
Sordan Headless	Sorghum Partners	Sorghum/Sudan	PS	N	N	0.4 abc	2.8 bcd	0.2	0.4 b	108 b	121.3	2,077
Trudan Headless	Sorghum Partners	Sudan	PS	N	N	0.3 abc	2.6 bcd	0.2	0.5 b	100 b	108.7	1,843
NonBMR-PS AVG						0.4	2.6	0.2	0.5	104	111.0	1,928
Bonus-R-BMR	Drussel Seed & Supply	Sorghum/Sudan	PS	Y	N	0.3 c	2.9 bc	0.2	0.7 b	104 b	107.0	1,835
Sordan BMR	Sorghum Partners	Sorghum/Sudan	PS	Y	N	0.4 abc	2.7 bcd	0.2	0.6 b	102 b	108.3	1,942
Trudan BMR	Sorghum Partners	Sudan	PS	Y	N	0.4 abc	2.7 bcd	0.2	0.6 b	107 b	113.3	1,931
BMR-PS AVG						0.3	2.8	0.2	0.6	104	109.5	1,903
MMR PM 508/13	MMR Genetics	Millet	ME	Y	Y	0.4 abc	3.1 b	0.2	1.2 a	105 b	98.7	1,246
MMR PM 508/5	MMR Genetics	Millet	L	Y	N	0.4 a	3.7 a	0.3	0.7 b	120 a	93.0	1,019
BMR Millet AVG						0.4	3.4	0.3	1.0	113	95.9	1,132
Test AVG						0.3	2.6	0.2	0.5	103.3	106.7	1,862
LSD (P=.05)						0.06	0.38	NS	0.33	8.00	NS	NS
CV						11.17	8.84	17.7	37.66	4.72	20.75	25.73
Treatment Prob(F)						0.0186	0.0001	0.16	0.0038	0.0121	0.8504	0.3595

Table 2. Forage sorghum hay trial, 2nd cutting.

Hybrid	Company	Sorghum Type	Maturity	Brown MidRib	Male Sterile	% Lignin	% IVTD NIR	% NDFD	NEL Mcal/lb	NEM Mcal/lb	NEG Mcal/lb	% Ca	% P	% Mg
849F	Pioneer Hi-Bred Int.	Forage Sorghum	M	N	N	3.1 a-e	80.7 d-h	62.3 def	0.7 c-g	0.7 b-f	0.4 b-g	0.4 abc	0.2 bc	0.2 b
979	Pioneer Hi-Bred Int.	Sorghum/Sudan	M	N	Y	2.4 c-g	83.7 b-f	67.7 b-e	0.7 b-e	0.7 a-d	0.4 a-d	0.5 abc	0.2 bc	0.2 b
Sweeter 'N Honey II	Richardson Seeds	Sorghum/Sudan	ML	N	N	3.4 abc	80.0 e-h	62.0 def	0.6 fg	0.6 ef	0.4 efg	0.5 abc	0.2 bc	0.2 b
Sordan 79	Sorghum Partners	Sorghum/Sudan	M	N	N	2.8 b-g	80.7 d-h	61.7 ef	0.7 b-g	0.7 c-f	0.4 c-g	0.4 abc	0.2 bc	0.2 b
Trudan 8	Sorghum Partners	Sudangrass	E	N	N	2.7 b-g	83.0 b-f	64.3 c-f	0.7 b-e	0.7 b-e	0.4 b-f	0.5 abc	0.2 c	0.2 b
NonBMR AVG						2.9	81.6	63.6	0.7	0.7	0.4	0.5	0.2	0.2
23431	Advanta US	Sorghum/Sudan	L	Y	N	2.2 efg	83.7 b-f	67.3 b-e	0.7 a-e	0.7 abc	0.5 a-d	0.4 c	0.2 bc	0.2 b
22050	Advanta US	Sorghum/Sudan	L	Y	N	2.4 c-g	82.0 b-h	65.3 cde	0.7 c-g	0.7 c-f	0.4 c-g	0.5 abc	0.2 bc	0.2 b
Exp 2017x	Coffey Forage Seeds	Sorghum/Sudan	ML	Y	N	2.1 efg	84.3 b-e	68.7 bcd	0.7 abc	0.7 abc	0.5 abc	0.4 bc	0.3 b	0.2 b
Exp 2017DWx	Coffey Forage Seeds	Sorghum/Sudan	ML	Y	N	2.0 fg	85.5 abc	70.5 bc	0.7 abc	0.8 ab	0.5 ab	0.5 abc	0.3 b	0.2 b
Exp 3017x	Coffey Forage Seeds	Sorghum/Sudan	ML	Y	N	2.0 fg	84.3 b-e	69.7 bc	0.7 a-e	0.7 a-d	0.5 abc	0.4 abc	0.2 bc	0.2 b
Sweeter 'N Honey BMR	Richardson Seeds	Sorghum/Sudan	M	Y	N	2.3 d-g	85.7 abc	69.3 bc	0.7 ab	0.7 ab	0.5 ab	0.5 abc	0.2 bc	0.2 b
Sweeter 'N Honey II BMR	Richardson Seed	Sorghum/Sudan	ML	Y	N	2.4 c-g	82.7 b-g	66.0 cde	0.7 b-g	0.7 b-f	0.4 b-f	0.5 abc	0.2 bc	0.2 b
BMR Gold II	Scott Seed	Sorghum/Sudan	M	Y	N	2.6 b-g	82.0 b-h	64.3 c-f	0.7 b-f	0.7 b-f	0.4 b-g	0.4 abc	0.2 bc	0.2 b
Grazex BMR 718	Sharp Bros Seed	Sorghum/Sudan	ME	Y	N	2.6 b-g	85.0 a-d	67.7 b-e	0.7 abc	0.7 a-d	0.5 a-d	0.6 ab	0.2 bc	0.2 b
Grazex BMR x801	Sharp Bros Seed	Sorghum/Sudan	ME	Y	N	2.3 d-g	83.7 b-f	65.7 cde	0.7 a-d	0.7 a-d	0.4 a-d	0.5 abc	0.2 bc	0.2 b
Red Top Plus	Production Plus	Forage Sorghum	ML	Y	N	1.8 g	84.3 b-e	66.3 cde	0.7 abc	0.7 abc	0.5 abc	0.5 abc	0.2 bc	0.2 b
Nutri Plus	Production Plus	Sorghum/Sudan	ML	Y	N	1.9 g	86.3 ab	68.7 bcd	0.8 a	0.8 a	0.5 a	0.5 abc	0.2 bc	0.2 b
GW Exp 8051	Gayland Ward	Sorghum/Sudan	ML	Y	N	2.1 efg	84.0 b-e	66.7 cde	0.7 a-d	0.7 a-d	0.5 a-d	0.4 abc	0.2 bc	0.2 b
GW Exp 8071	Gayland Ward	Sorghum/Sudan	M	Y	N	4.0 a	78.0 h	58.7 f	0.6 fg	0.6 ef	0.4 fg	0.3 c	0.2 c	0.2 b
BMR AVG						2.3	83.7	66.8	0.7	0.7	0.4	0.5	0.2	0.2
811F	Pioneer Hi-Bred Int.	Forage Sorghum	PS	N		3.1 a-f	80.7 d-h	64.0 c-f	0.7 c-g	0.7 c-f	0.4 c-g	0.5 abc	0.2 bc	0.2 b
Sugar Graze Ultra	Coffey Forage Seeds	Sorghum/Sudan	PS	N	Y	3.2 a-e	81.0 d-h	64.3 c-f	0.6 efg	0.7 ef	0.4 efg	0.5 abc	0.2 bc	0.3 b
Premium Stock LS	Scott Seed	Sorghum/Sudan	PS	N	N	3.4 abc	78.7 gh	61.0 ef	0.6 g	0.6 f	0.4 g	0.4 abc	0.2 bc	0.2 b
Sordan Headless	Sorghum Partners	Sorghum/Sudan	PS	N	N	3.5 ab	79.3 fgh	61.7 ef	0.6 fg	0.7 ef	0.4 efg	0.4 abc	0.2 bc	0.2 b
Trudan Headless	Sorghum Partners	Sudangrass	PS	N	N	3.2 a-d	79.3 fgh	61.7 ef	0.6 fg	0.6 ef	0.4 efg	0.4 abc	0.2 bc	0.2 b
NonBMR-PS AVG						3.3	79.8	62.5	0.6	0.7	0.4	0.4	0.2	0.2
Bonus-R-BMR	Drussel Seed & Supply	Sorghum/Sudan	PS	Y	N	2.1 efg	83.3 b-f	67.7 b-e	0.7 b-f	0.7 b-e	0.4 b-e	0.4 abc	0.3 bc	0.2 b
Sordan BMR	Sorghum Partners	Sorghum/Sudan	PS	Y	N	2.8 b-g	82.0 b-h	65.0 c-f	0.7 c-g	0.7 c-f	0.4 c-g	0.5 abc	0.3 b	0.2 b
Trudan BMR	Sorghum Partners	Sudangrass	PS	Y	N	2.6 b-g	81.7 c-h	65.0 c-f	0.7 d-g	0.7 def	0.4 d-g	0.4 abc	0.2 bc	0.2 b
BMR PS AVG						2.5	82.3	65.9	0.7	0.7	0.4	0.4	0.2	0.2
MMR PM 508/13	MMR Genetics	Millet	ME	Y	Y	2.3 d-g	88.3 a	76.7 a	0.7 a-e	0.7 a-d	0.4 a-d	0.6 a	0.3 a	0.3 b
MMR PM 508/5	MMR Genetics	Millet	L	Y	N	2.5 b-g	85.7 abc	73.0 ab	0.6 fg	0.7 ef	0.4 efg	0.4 abc	0.3 a	0.3 a
BMR Millet AVG						2.4	87.0	74.9	0.7	0.7	0.4	0.5	0.3	0.3
Test AVG						2.6	82.7	66.0	0.7	0.7	0.4	0.5	0.2	0.2
LSD (P=.05)						0.582	2.43	3.68	0.0325	0.0345	0.0308	0.117	0.0352	0.0645
CV						13.61	1.8	3.42	2.93	3.03	4.43	15.63	9.05	18.03
Treatment Prob(F)						0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0041	0.0001	0.0022

Table 2. Forage sorghum hay trial, 2nd cutting.

Hybrid	Company	Sorghum Type	Maturity	Brown MidRib	Male Sterile	% K	% S	% CI	Relative Feed Value	Relative Feed Quality	Milk lbs/T
849F	Pioneer Hi-Bred Int.	Forage Sorghum	M	N	N	bcd	0.1 c-f	0.5 b	116 c-f	157 b-f	2,818 b-j
979	Pioneer Hi-Bred Int.	Sorghum/Sudan	M	N	Y	bcd	0.1 c-f	0.7 b	121 b-f	162 a-f	2,890 b-i
Sweeter 'N Honey II	Richardson Seeds	Sorghum/Sudan	ML	N	N	bcd	0.2 c-f	0.7 b	110 ef	140 def	2,639 ijk
Sordan 79	Sorghum Partners	Sorghum/Sudan	M	N	N	bcd	0.1 f	0.5 b	120 b-f	148 c-f	2,805 b-k
Trudan 8	Sorghum Partners	Sudangrass	E	N	N	cd	0.1 f	0.5 b	130 bcd	153 b-f	2,891 b-i
NonBMR AVG							0.1	0.6	119	152	2,808
23431	Advanta US	Sorghum/Sudan	L	Y	N	bcd	0.1 c-f	0.6 b	121 b-f	163 a-f	2,913 b-h
22050	Advanta US	Sorghum/Sudan	L	Y	N	bcd	0.2 c-f	0.6 b	114 def	146 c-f	2,696 e-k
Exp 2017x	Coffey Forage Seeds	Sorghum/Sudan	ML	Y	N	bcd	0.2 c-f	0.6 b	123 b-f	166 a-e	2,947 b-f
Exp 2017DWx	Coffey Forage Seeds	Sorghum/Sudan	ML	Y	N	bc	0.2 c-f	0.7 b	120 b-f	168 a-d	2,959 b-e
Exp 3017x	Coffey Forage Seeds	Sorghum/Sudan	ML	Y	N	bcd	0.1 c-f	0.6 b	119 b-f	164 a-f	2,925 b-g
Sweeter 'N Honey BMR	Richardson Seeds	Sorghum/Sudan	M	Y	N	bcd	0.1 c-f	0.6 b	133 abc	170 abc	3,050 ab
Sweeter 'N Honey II BMR	Richardson Seed	Sorghum/Sudan	ML	Y	N	bcd	0.2 c-f	0.6 b	117 b-f	152 b-f	2,767 c-k
BMR Gold II	Scott Seed	Sorghum/Sudan	M	Y	N	bcd	0.1 def	0.5 b	119 b-f	150 b-f	2,827 b-j
Grazex BMR 718	Sharp Bros Seed	Sorghum/Sudan	ME	Y	N	bcd	0.1 ef	0.5 b	135 ab	167 a-e	2,982 bcd
Grazex BMR x801	Sharp Bros Seed	Sorghum/Sudan	ME	Y	N	bcd	0.1 ef	0.4 b	130 bcd	158 a-f	2,948 b-f
Red Top Plus	Production Plus	Forage Sorghum	ML	Y	N	bcd	0.2 c-f	0.6 b	133 abc	165 a-e	2,945 b-f
Nutri Plus	Production Plus	Sorghum/Sudan	ML	Y	N	bcd	0.1 def	0.6 b	146 a	184 a	3,185 a
GW Exp 8051	Gayland Ward	Sorghum/Sudan	ML	Y	N	bcd	0.2 c-f	0.5 b	128 b-e	162 a-f	2,945 b-f
GW Exp 8071	Gayland Ward	Sorghum/Sudan	M	Y	N	d	0.1 f	0.6 b	110 ef	139 def	2,677 g-k
BMR AVG							0.1	0.6	125	161	2,912
811F	Pioneer Hi-Bred Int.	Forage Sorghum	PS	N		bcd	0.2 c-f	0.7 b	111 def	151 b-f	2,725 d-k
Sugar Graze Ultra	Coffey Forage Seeds	Sorghum/Sudan	PS	N	Y	bcd	0.2 c-f	0.7 b	111 def	144 c-f	2,630 ijk
Premium Stock LS	Scott Seed	Sorghum/Sudan	PS	N	N	bcd	0.2 c-f	0.5 b	106 f	135 f	2,557 k
Sordan Headless	Sorghum Partners	Sorghum/Sudan	PS	N	N	bcd	0.2 c-f	0.7 b	108 f	141 c-f	2,606 jk
Trudan Headless	Sorghum Partners	Sudangrass	PS	N	N	bcd	0.2 c-f	0.6 b	109 f	139 ef	2,610 jk
NonBMR-PS AVG							0.2	0.6	109	142	2,626
Bonus-R-BMR	Drussel Seed & Supply	Sorghum/Sudan	PS	Y	N	bcd	0.2 abc	0.7 b	117 b-f	156 b-f	2,799 b-k
Sordan BMR	Sorghum Partners	Sorghum/Sudan	PS	Y	N	b	0.2 a-d	0.7 b	116 b-f	148 c-f	2,689 f-k
Trudan BMR	Sorghum Partners	Sudangrass	PS	Y	N	bcd	0.2 b-e	0.6 b	111 ef	145 c-f	2,662 h-k
BMR PS AVG							0.2	0.7	115	150	2,717
MMR PM 508/13	MMR Genetics	Millet	ME	Y	Y	a	0.3 a	1.1 a	122 b-f	177 ab	3,030 abc
MMR PM 508/5	MMR Genetics	Millet	L	Y	N	a	0.3 ab	1.2 a	108 f	152 b-f	2,674 g-k
BMR Millet AVG							0.3	1.1	115	164	2,852
Test AVG							0.2	0.6	119	155	2,820
LSD (P=.05)						0.3	0.0577	0.214	10.21	15.6	146.96
CV						10	21.16	20.93	5.23	6.16	3.19
Treatment Prob(F)						0	0.0001	0.0001	0.0001	0.0001	0.0001

Chart 2. Yield contribution of each cutting to total ton/Ac.

