

Texas Panhandle Sorghum Hay Trial – 2009

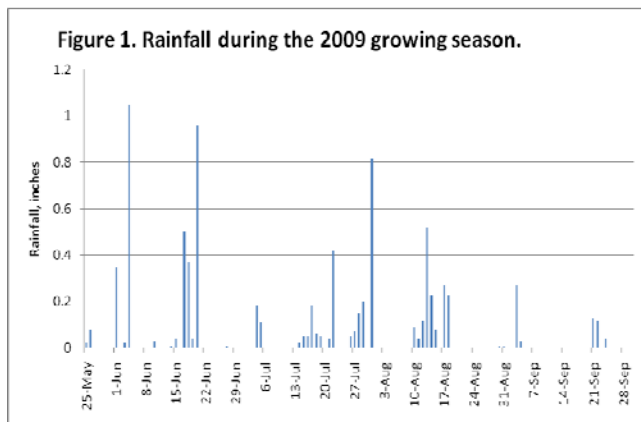
Brent Bean¹, Bob Villarreal², Jürg Blumenthal³, Jake Robinson²,
Rex Brandon², Rex VanMeter², and Dennis Pietsch⁴

Introduction

The trial consisted of 32 entries of sorghum/sudangrass, 2 sudangrasses and 1 millet. Entries also included hybrids with the brown midrib (BMR) and photoperiod sensitive (PS) traits. The trial was furrow irrigated once just prior to planting, and again immediately after the first cutting. Two cuttings were made, with the first cutting occurring 61 days after planting. The second cut was planned for when each hybrid reached 50% heading. However, due to moisture stress, most hybrids did not reach the 50% heading stage. The objective of this study was to compare variety yields after both the first and second cuttings, as well as the total yield from both cuttings. In addition, nutrient analysis of varieties was compared after each cutting.

Methods and Materials

All varieties were planted with a John Deere Max-Emerge II planter equipped with seed cones. Plots consisted of two 25-ft long, 30-inch wide raised beds. Each variety was planted three times in a randomized block design. 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 5.3 inches of water and



again immediately after the first cutting with 2.2 inches. Rainfall totaled 8.1 inches during the growing season (May 28 – Oct.1) Figure 1. However, there was very little rainfall after August 1st resulting in severe drought stress which prevented many of the varieties from heading after the first cutting. The first harvest was made July 28th, with a Carter Harvester, 61 days after planting. In order to maximize tonnage, the second cutting was planned for when each variety reached 50% heading. Three varieties were

harvested on September 3rd at the 50% heading stage. The decision was made to harvest all other varieties on October 1st, when it became clear that none of the remaining varieties were going to reach 50% heading due to severe moisture stress. Immediately following each harvest a fresh weight was obtained. A subsample of 6 whole plants was collected, chopped, weighed and dried to determine percent moisture at harvest. A second subsample was collected from each yield sample and immediately frozen prior to sending to Dairy One Laboratory, Ithaca, NY for nutrient analyses.

¹ Extension Agronomist, Texas A&M AgriLife Research & Extension Center, Amarillo, phone: 806-677-5600, Email: b-bean@tamu.edu.

² Extension or Research Assistants or Associates. Texas AgriLife Research and Extension Center, Amarillo.

³ State Sorghum Cropping Systems Specialist, Texas AgriLife Extension, College Station.

⁴ Director of Crop Testing, Texas AgriLife Research, College Station.

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 28th, 2009
Planting Rate: 100,000 seed/acre
Seed Method: John Deere Max-Emerge II planter with seed cones.
Fertilizer: Applied 225 lb/acre N and 40 lb/acre P₂O₅ based on soil test results.
Herbicide: One lb/acre atrazine applied three days after planting
Irrigation: Pre-irrigation -5.3 inches. After first cutting on July 28th - 2.2 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
NEI: 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 is reported in Table 1. Entries were grouped by BMR and PS type. One millet variety MMR PM 508/13, was also reported. The first cutting was made on July 28th, 61 days after planting. At the time of harvest, average plant moisture was 69.6%. Most varieties were in the boot stage of development. Little difference was observed in yield between varieties. Dry matter (DM) yield ranged from a low of 0.65 ton/ac with 608x, to high of 1.24 ton/ac with GWX9417G. These were the only two varieties with yields that were significantly different from each other. Yield of most of the other varieties were close to the test mean of approximately 1.0 ton/ac. It should be noted that the low yield observed with 608x was likely due to poor seed germination. Plant population in this variety was 38,914/ac compared to the test mean of 82,368/ac. There was no significant difference between varieties in predicted milk lbs/ton of forage or relative feed quality.

When comparing variety types, the nonBMR, BMR, and nonBMR PS varieties averaged the same at 1.0 ton/ac, while the four BMR PS varieties averaged less at 0.8 ton/ac. The single millet variety yielded only 0.67 ton/ac but was of good quality. Forage digestibility appeared to be less with the nonBMR PS varieties compared to the others based on % IVTD and % NDFD.

The second harvest of most varieties was made on October 1st when it became clear that growth had ceased due to drought stress (Table 2). Two varieties, X 38400 and Grazex BMR 301, along with the millet, were harvested on September 3rd when they had reached the 50% heading stage. Although there was a considerable amount of overlap in yield between variety types, the nonBMR varieties averaged 0.2 ton/ac higher yield than the BMR varieties (Table 2). Differences were more pronounced in those varieties with the PS trait; with the nonBMR PS varieties averaged 0.5 ton/ac more than those with the BMR trait. Highest yield from the second cutting was clearly Black Hawk 12 (BMR) with a yield of 3.2 ton/ac.

Quality differences between types were small, however, the PS types did average higher crude protein, especially the BMR PS varieties at 12.6% (Table 2). There was little difference in forage digestibility between types, although differences were present within types. For example, in the BMR varieties percent IVTD was highest with 609-X and Grazex BMR x801 at 87.7% and lowest with Hawk 12 and Black Hawk 12 at 82.3%.

Yield of the second cutting greatly influenced total yield for the season for all varieties (Figure 2). Black Hawk 12 was easily the highest yielding variety at 4.3 ton/ac. Other varieties yielding at least 3.5 ton/ac were Grazex BMR 718, Sordan Headless, GW9417G, Exp 301x, Trudan Headless, Hawk 12, Trudan 8, GW7191GBMR, and Sweeter N Honey II.

Table 1. 2009 Sorghum hay trial, 1st cutting, 61 days after planting.

Hybrid	Company	Type	Maturity	Brown MidRib	Male Sterile	Plants/Ac	% Moisture	DM Yield Tons/Ac	% Crude Protein	% ADF	% NDF	% TDN	% Lignin	% IVTD NIR	% NDFD
GW9410G	Crosbyton Seed Co.	SS	ML	N	N	88,863 b-e	67.6 b	1.05 ab	14.7 b	30.2	51.6 a-d	67.7 a	2.1 abc	88.3 abc	78.0 abc
GWX9417G	Crosbyton Seed Co.	SS	ML	N	Y	88,282 f-k	70.2 ab	1.24 a	13.8 b	31.0	50.2 a-d	69.0 a	1.2 abc	89.7 abc	79.0 abc
GW9110G	Crosbyton Seed Co.	SS	L	N	N	77,827 h-k	67.1 b	0.94 ab	14.8 b	30.4	50.1 a-d	68.0 a	2.1 abc	88.3 abc	77.0 abc
Sweeter 'N Honey II	Richardson Seeds, Ltd.	SS	L	N	N	83,635 a-j	66.9 b	1.08 ab	14.4 b	31.3	51.1 a-d	66.3 a	2.2 abc	88.0 bc	76.7 bc
Grazex II	Sharp Bros.	SS	M	N	Y	101,059 a-d	67.2 b	0.98 ab	14.4 b	30.7	51.4 a-d	68.0 a	2.0 abc	88.7 abc	77.3 abc
Grazex III	Sharp Bros.	SS	M	N	Y	79,569 d-l	69.0 ab	0.99 ab	14.8 b	31.5	53.0 abc	66.0 a	2.5 abc	88.7 abc	79.0 abc
Sordan 79	Sorghum Partners, Inc.	SS	M	N	N	102,802 ab	70.2 ab	1.03 ab	14.8 b	31.1	51.5 a-d	68.0 a	1.6 abc	88.3 abc	76.7 bc
Trudan 8	Sorghum Partners, Inc.	SU	E	N	N	74,343 f-m	69.6 ab	0.87 ab	14.1 b	30.0	49.2 bcd	68.3 a	2.4 abc	88.0 bc	75.3 c
NonBMR AVG						87,047	68.5	1.02	14.5	30.8	51.0	67.7	2.0	88.5	77.4
Hawk 12	Blue River Hybrids	SS	M	Y	N	91,186 jk	70.1 ab	0.90 ab	15.8 b	28.9	50.8 a-d	69.0 a	1.9 abc	88.0 bc	76.3 bc
Black Hawk 12	Blue River Hybrids	SS	M	Y	N	77,827 ijk	68.6 b	1.17 ab	16.4 b	29.7	52.6 a-d	68.0 a	1.9 abc	88.0 bc	77.0 abc
Exp 2017x	Coffey Forage Seeds Inc.	SS	ML	Y	N	96,993 b-j	67.8 b	0.92 ab	15.8 b	30.3	51.2 a-d	68.7 a	1.8 abc	88.3 abc	77.0 abc
Exp 3017x	Coffey Forage Seeds Inc.	SS	M	Y	N	85,958 a-d	69.1 ab	1.05 ab	14.3 b	28.5	48.5 d	69.3 a	2.6 abc	87.7 bc	74.3 c
GW7191Gbm	Crosbyton Seed Co.	SS	M	Y	Y	80,731 e-k	70.3 ab	1.14 ab	15.1 b	29.4	50.6 a-d	67.3 a	1.7 abc	89.7 abc	78.7 abc
GWX9917Gbm	Crosbyton Seed Co.	SS	ML	Y	Y	90,024 a-g	69.4 ab	1.05 ab	16.3 b	30.1	50.9 a-d	66.7 a	1.8 abc	90.0 abc	79.7 abc
Sweeter 'N Honey II BMR	Richardson Seeds, Ltd.	SS	L	Y	N	81,312 b-k	69.1 ab	0.96 ab	16.7 b	31.3	53.3 ab	66.7 a	1.2 abc	87.7 bc	76.3 bc
Sweeter 'N Honey BMR	Richardson Seeds, Ltd.	SS	M	Y	N	66,792 j-m	70.0 ab	1.16 ab	13.6 b	35.3	54.5 a	64.7 a	0.6 c	91.7 ab	84.7 ab
X 38400	Richardson Seeds, Ltd.	SS	M	Y	N	101,363 abc	72.4 ab	0.96 ab	15.2 b	30.3	52.9 a-d	67.7 a	1.6 abc	89.3 abc	80.0 abc
X 82400	Richardson Seeds, Ltd.	SS	L	Y	N	73,762 g-m	70.8 ab	1.09 ab	16.2 b	31.4	52.8 a-d	64.7 a	1.6 abc	89.3 abc	80.0 abc
BMR Gold II	Scott Seed Co.	SS	M	Y	N	77,827 a-g	70.2 ab	0.87 ab	14.9 b	29.1	48.5 cd	69.4 a	1.7 abc	89.3 abc	78.1 abc
Grazex BMR 718	Sharp Bros.	SS	ME	Y	N	89,443 b-e	71.0 ab	1.22 ab	15.5 b	29.0	50.4 a-d	69.0 a	2.0 abc	88.3 abc	76.3 bc
Grazex BMR x801	Sharp Bros.	SS	M	Y	Y	105,000 a	68.6 b	1.03 ab	14.7 b	30.2	50.9 a-d	67.0 a	2.5 abc	87.7 bc	76.3 bc
Grazex BMR x802	Sharp Bros.	SS	M	Y	Y	90,605 a-i	70.2 ab	1.12 ab	14.9 b	29.5	51.0 a-d	67.0 a	2.1 abc	89.7 abc	80.0 abc
Grazex BMR 301	Sharp Bros.	SS	M	Y	Y	95,832 a-f	67.6 b	0.84 ab	15.9 b	29.7	52.2 a-d	68.7 a	1.4 abc	90.3 abc	81.0 abc
Greentreat A Plus	Forage First	SS	L	Y	N	95,251 a-g	69.3 ab	0.97 ab	16.6 b	29.0	50.2 a-d	65.3 a	2.0 abc	90.0 abc	80.0 abc
608-X	Gayland Ward	SS	M	Y	N	38,914 n	72.4 ab	0.65 b	16.1 b	31.2	53.6 ab	66.3 a	1.4 abc	87.0 c	76.0 bc
609-X	Gayland Ward	SS	M	Y	N	70,277 h-m	71.4 ab	0.86 ab	15.1 b	30.7	50.9 a-d	66.7 a	2.0 abc	90.3 abc	81.0 abc
BMR AVG						83,839	69.9	1.00	15.5	30.2	51.4	67.3	1.8	89.0	78.5
GW9491G	Crosbyton Seed Co.	SS	PS	N	Y	85,959 a-j	68.9 b	0.95 ab	14.5 b	30.6	51.7 a-d	67.3 a	2.2 abc	87.0 c	75.0 c
Premium Stock LS	Scott Seed Co.	SS	PS	N	N	58,661 c-k	70.1 ab	0.80 ab	15.9 b	29.9	51.2 a-d	66.3 a	2.5 abc	87.3 bc	75.0 c
Sordan Headless	Sorghum Partners, Inc.	SS	PS	N	N	89,443 a-i	67.6 b	1.18 ab	15.1 b	31.1	52.4 a-d	67.0 a	2.1 abc	86.7 c	74.7 c
Trudan Headless	Sorghum Partners, Inc.	SU	PS	N	N	59,823 k-n	67.8 b	0.91 ab	15.3 b	30.0	52.2 a-d	66.3 a	2.8 ab	86.3 c	74.0 c
NonBMR-PS AVG						73,471	68.6	1.0	15.2	30.4	51.9	66.7	2.4	86.8	74.7
Bonus-R-BMR	Drussel Seed & Sup. Inc.	SS	PS	Y	N	88,862 a-i	69.7 ab	0.98 ab	14.0 b	31.6	51.7 a-d	68.0 a	1.1 bc	90.3 abc	81.0 abc
Sordan BMR	Sorghum Partners, Inc.	SS	PS	Y	N	85,377 a-j	70.1 ab	0.73 ab	15.2 b	29.5	50.5 a-d	67.0 a	2.4 abc	88.0 bc	76.7 bc
Trudan BMR	Sorghum Partners, Inc.	SU	PS	Y	N	55,176 mn	70.7 ab	0.72 ab	15.7 b	30.2	50.4 a-d	67.3 a	2.3 abc	88.3 abc	77.0 abc
Greentreat 128	Forage First	SS	PS	Y	N	87,120 a-j	70.4 ab	0.72 ab	15.1 b	31.8	53.6 ab	66.0 a	1.3 abc	89.3 abc	80.3 abc
BMR PS AVG						79,134	70.2	0.8	15.0	30.8	51.6	67.1	1.8	89.0	78.8
MMR PM 508/13	MMR Genetics Ltd	M	ME	Y	Y	69,115 i-m	74.8 a	0.67 ab	22.3 a	29.3	53.2 ab	56.0 b	3.2 a	92.7 a	86.0 a
Mean						82,429	69.6	0.97	15.4	30.4	51.4	67.0	1.9	88.7	78.0
CV						16.0	2.8	19.7	7.0	6.0	2.9	3.6	35.4	1.7	3.9
Treatment Prob(F)						0.0001	0.0028	0.0079	0.0001	0.1582	0.0003	0.0002	0.0229	0.0009	0.0014

Note: Means followed by same letter do not significantly differ (p=0.05).

Table 1. 2009 Sorghum hay trial, 1st cutting, 61 days after planting.

Hybrid	Company	Type	Maturity	Brown MidRib	Male Sterile	NEL Mcal/lb	NEM Mcal/lb	NEG Mcal/lb	% Ca	% P	% Mg	% K	% S	% Cl	Rel. Feed Value	Rel. Forage Qual.	Milk lbs/Ton
GW9410G	Crosbyton Seed Co.	SS	ML	N	N	0.66 a	0.68 a	0.41 a	0.31	0.30	0.33 b	2.3 b	0.22	0.52 b	118 abc	157	2,819
GWX9417G	Crosbyton Seed Co.	SS	ML	N	Y	0.68 a	0.70 a	0.42 a	0.24	0.23	0.33 b	2.2 b	0.24	0.50 b	120 abc	155	2,803
GW9110G	Crosbyton Seed Co.	SS	L	N	N	0.67 a	0.68 a	0.42 a	0.33	0.30	0.32 bc	2.6 b	0.22	0.64 b	121 ab	158	2,850
Sweeter 'N Honey II	Richardson Seeds, Ltd.	SS	L	N	N	0.65 a	0.66 a	0.39 a	0.21	0.28	0.28 bc	2.4 b	0.23	0.66 b	117 abc	148	2,703
Grazex II	Sharp Bros.	SS	M	N	Y	0.67 a	0.68 a	0.41 a	0.22	0.28	0.28 bc	2.6 b	0.23	0.48 b	118 abc	156	2,803
Grazex III	Sharp Bros.	SS	M	N	Y	0.64 a	0.66 a	0.39 a	0.24	0.29	0.30 bc	2.4 b	0.25	0.66 b	113 abc	156	2,805
Sordan 79	Sorghum Partners, Inc.	SS	M	N	N	0.67 a	0.68 a	0.41 a	0.26	0.30	0.30 bc	2.4 b	0.23	0.50 b	117 abc	150	2,733
Trudan 8	Sorghum Partners, Inc.	SU	E	N	N	0.68 a	0.69 a	0.42 a	0.28	0.30	0.33 b	2.3 b	0.24	0.58 b	124 ab	162	2,889
NonBMR AVG						0.67	0.68	0.41	0.26	0.29	0.31	2.4	0.23	0.57	119	155	2,801
Hawk 12	Blue River Hybrids	SS	M	Y	N	0.68 a	0.70 a	0.43 a	0.34	0.32	0.30 bc	2.8 b	0.23	0.66 b	122 ab	160	2,852
Black Hawk 12	Blue River Hybrids	SS	M	Y	N	0.66 a	0.68 a	0.41 a	0.37	0.30	0.31 bc	2.8 b	0.25	0.67 b	116 abc	169	2,898
Exp 2017x	Coffey Forage Seeds Inc.	SS	ML	Y	N	0.68 a	0.69 a	0.42 a	0.25	0.32	0.28 bc	2.7 b	0.23	0.58 b	119 abc	155	2,808
Exp 3017x	Coffey Forage Seeds Inc.	SS	M	Y	N	0.69 a	0.70 a	0.43 a	0.31	0.29	0.35 b	2.5 b	0.20	0.55 b	128 a	166	2,938
GW7191Gbmr	Crosbyton Seed Co.	SS	M	Y	Y	0.66 a	0.67 a	0.41 a	0.21	0.26	0.32 bc	2.4 b	0.24	0.51 b	122 ab	154	2,770
GWX9917Gbmr	Crosbyton Seed Co.	SS	ML	Y	Y	0.65 a	0.66 a	0.40 a	0.20	0.23	0.24 c	2.7 b	0.24	0.67 b	120 abc	163	2,792
Sweeter 'N Honey II BMR	Richardson Seeds, Ltd.	SS	L	Y	N	0.65 a	0.66 a	0.39 a	0.34	0.32	0.34 b	2.8 b	0.22	0.52 b	113 abc	133	2,508
Sweeter 'N Honey BMR	Richardson Seeds, Ltd.	SS	M	Y	N	0.62 a	0.63 a	0.37 a	0.29	0.24	0.31 bc	2.4 b	0.26	0.72 b	105 c	132	2,466
X 38400	Richardson Seeds, Ltd.	SS	M	Y	N	0.65 a	0.67 a	0.40 a	0.25	0.30	0.34 b	2.6 b	0.24	0.78 b	115 abc	153	2,759
X 82400	Richardson Seeds, Ltd.	SS	L	Y	N	0.63 a	0.63 a	0.37 a	0.32	0.28	0.33 b	2.6 b	0.24	0.60 b	114 abc	137	2,553
BMR Gold II	Scott Seed Co.	SS	M	Y	N	0.69 a	0.70 a	0.43 a	0.27	0.33	0.34 b	2.8 b	0.25	0.73 b	127 ab	164	2,914
Grazex BMR 718	Sharp Bros.	SS	ME	Y	N	0.68 a	0.70 a	0.42 a	0.30	0.30	0.31 bc	2.7 b	0.23	0.59 b	122 ab	158	2,832
Grazex BMR x801	Sharp Bros.	SS	M	Y	Y	0.66 a	0.67 a	0.40 a	0.35	0.31	0.32 bc	2.6 b	0.23	0.82 b	120 abc	155	2,792
Grazex BMR x802	Sharp Bros.	SS	M	Y	Y	0.66 a	0.67 a	0.40 a	0.34	0.29	0.30 bc	2.5 b	0.21	0.63 b	120 abc	158	2,809
Grazex BMR 301	Sharp Bros.	SS	M	Y	Y	0.67 a	0.69 a	0.42 a	0.23	0.33	0.30 bc	2.8 b	0.24	0.67 b	117 abc	156	2,810
Greentreat A Plus	Forage First	SS	L	Y	N	0.65 a	0.65 a	0.38 a	0.38	0.30	0.34 b	2.6 b	0.24	0.63 b	123 ab	158	2,752
608-X	Gayland Ward	SS	M	Y	N	0.64 a	0.65 a	0.38 a	0.24	0.30	0.28 bc	2.5 b	0.27	0.56 b	112 bc	146	2,593
609-X	Gayland Ward	SS	M	Y	N	0.66 a	0.67 a	0.40 a	0.28	0.30	0.32 bc	2.5 b	0.24	0.69 b	119 abc	156	2,820
BMR AVG						0.66	0.67	0.40	0.29	0.29	0.31	2.6	0.24	0.64	119	154	2,759
GW9491G	Crosbyton Seed Co.	SS	PS	N	Y	0.66 a	0.67 a	0.40 a	0.28	0.31	0.32 bc	2.5 b	0.21	0.52 b	117 abc	152	2,745
Premium Stock LS	Scott Seed Co.	SS	PS	N	N	0.65 a	0.66 a	0.39 a	0.32	0.29	0.32 bc	2.6 b	0.23	0.53 b	119 abc	150	2,729
Sordan Headless	Sorghum Partners, Inc.	SS	PS	N	N	0.65 a	0.66 a	0.40 a	0.29	0.31	0.31 bc	2.6 b	0.22	0.62 b	115 abc	148	2,703
Trudan Headless	Sorghum Partners, Inc.	SU	PS	N	N	0.64 a	0.66 a	0.39 a	0.32	0.28	0.32 bc	2.5 b	0.22	0.58 b	117 abc	150	2,712
NonBMR-PS AVG						0.65	0.66	0.40	0.30	0.30	0.32	2.5	0.22	0.56	117	150	2,722
Bonus-R-BMR	Drussel Seed & Sup. Inc.	SS	PS	Y	N	0.67 a	0.68 a	0.42 a	0.23	0.27	0.31 bc	2.5 b	0.24	0.66 b	116 abc	154	2,772
Sordan BMR	Sorghum Partners, Inc.	SS	PS	Y	N	0.66 a	0.67 a	0.40 a	0.29	0.32	0.34 b	2.6 b	0.26	0.70 b	122 ab	154	2,789
Trudan BMR	Sorghum Partners, Inc.	SU	PS	Y	N	0.67 a	0.68 a	0.41 a	0.31	0.33	0.34 b	2.7 b	0.25	0.64 b	121 abc	155	2,812
Greentreat 128	Forage First	SS	PS	Y	N	0.64 a	0.65 a	0.39 a	0.29	0.31	0.33 b	2.7 b	0.21	0.68 b	111 bc	142	2,601
BMR PS AVG						0.66	0.67	0.40	0.28	0.31	0.33	2.6	0.24	0.67	117	151	2,744
MMR PM 508/13	MMR Genetics Ltd	M	ME	Y	Y	0.54 b	0.50 b	0.25 b	0.38	0.34	0.45 a	3.4 a	0.32	1.32 a	116 abc	178	2,573
Mean						0.66	0.67	0.40	0.29	0.29	0.32	2.58	0.24	0.64	118	154	2,757
CV						4.2	5.3	8.0	32.0	16.0	8.8	8.2	13.3	24.8	4.5	8.7	6
Treatment Prob(F)						0.0001	0.0001	0.0001	0.682	0.616	0.0001	0.0002	0.111	0.0007	0.003	0.1185	0.1314

Note: Means followed by same letter do not significantly differ (p=0.05).

Table 2. 2009 Sorghum hay trial, 2nd cutting.

Hybrid	Company	Type	Mat.	Brown MidRib	Male Sterile	Harv. Date	% Headed	% Moist.	DM Yield Tons/ac	% Crude Protein	% ADF	% NDF	% TDN	% Lignin	% IVTD NIR	% NDFD	NEL Mcal/lb
GW9410G	Crosbyton Seed Co.	SS	ML	N	N	1-Oct	37	55.0 b	2.3 b-h	9.8 d-g	39.6 ab	56.8 a	59.0 d	2.2	83.3 ab	70.3 ab	0.55 b
GWX9417G	Crosbyton Seed Co.	SS	ML	N	Y	1-Oct	23	56.1 b	2.6 a-f	10.5 b-g	35.9 a-e	52.5 ab	62.3 a-d	2.5	84.0 ab	69.7 ab	0.60 ab
GW9110G	Crosbyton Seed Co.	SS	L	N	N	1-Oct	25	54.6 b	2.4 b-h	10.7 b-g	37.2 a-e	54.8 ab	60.0 bcd	2.5	83.0 b	69.0 ab	0.57 ab
Sweeter 'N Honey II	Richardson Seeds, Ltd.	SS	L	N	N	1-Oct	0	58.4 b	2.4 b-f	11.1 b-g	34.9 b-e	52.2 ab	63.7 a-d	2.4	85.3 ab	71.3 ab	0.62 ab
Grazex II	Sharp Bros.	SS	M	N	Y	1-Oct	27	49.8 b	2.4 b-g	10.3 b-g	41.1 a	57.1 a	57.3 d	2.2	83.3 ab	70.7 ab	0.53 b
Grazex III	Sharp Bros.	SS	M	N	Y	1-Oct	18	54.1 b	2.4 b-f	10.0 c-g	38.2 a-d	55.3 ab	61.0 a-d	2.1	83.3 ab	69.3 ab	0.58 ab
Sordan 79	Sorghum Partners, Inc.	SS	M	N	N	1-Oct	14	57.8 b	2.4 a-d	10.3 b-g	33.5 cde	49.1 b	64.7 a-d	2.3	86.3 ab	72.3 ab	0.64 ab
Trudan 8	Sorghum Partners, Inc.	SU	E	N	N	1-Oct	22	50.8 b	2.8 abc	9.4 efg	36.5 a-e	54.0 ab	63.7 a-d	2.4	84.0 ab	71.0 ab	0.61 ab
NonBMR AVG								54.6	2.5	10.3	37.1	54.0	61.5	2.3	84.1	70.5	0.59
Hawk 12	Blue River Hybrids	SS	M	Y	N	1-Oct	30	56.1 b	2.8 a-d	9.8 d-g	36.6 a-e	55.0 ab	62.3 a-d	2.2	82.3 b	68.3 b	0.59 ab
Black Hawk 12	Blue River Hybrids	SS	M	Y	N	1-Oct	8	50.6 b	3.2 a	10.0 d-g	39.7 ab	56.7 a	58.3 d	2.0	82.3 b	68.7 ab	0.55 b
Exp 2017x	Coffey Forage Seeds Inc.	SS	ML	Y	N	1-Oct	33	56.1 b	2.4 b-g	11.5 b-g	35.7 a-e	53.6 ab	62.7 a-d	2.4	85.0 ab	72.3 ab	0.60 ab
Exp 3017x	Coffey Forage Seeds Inc.	SS	M	Y	N	1-Oct	52	55.6 b	2.7 a-d	10.7 b-g	35.6 a-e	51.6 ab	64.7 a-d	1.5	86.7 ab	74.7 ab	0.63 ab
GW7191Gbm	Crosbyton Seed Co.	SS	M	Y	Y	1-Oct	23	49.0 b	2.4 b-f	8.8 g	36.5 a-e	53.6 ab	60.0 bcd	2.0	84.0 ab	70.0 ab	0.58 ab
GWX9917Gbm	Crosbyton Seed Co.	SS	ML	Y	Y	1-Oct	20	52.4 b	2.3 b-i	9.9 d-g	39.2 abc	55.2 ab	58.0 d	1.8	85.3 ab	73.7 ab	0.54 b
Sweeter 'N Honey II BMR	Richardson Seeds, Ltd.	SS	L	Y	N	1-Oct	0	55.4 b	2.0 f-j	12.6 bcd	36.3 a-e	53.5 ab	60.0 bcd	2.3	85.0 ab	72.0 ab	0.58 ab
Sweeter 'N Honey BMR	Richardson Seeds, Ltd.	SS	M	Y	N	1-Oct	18	54.8 b	1.7 ijk	12.0 b-f	36.8 a-e	54.1 ab	60.7 a-d	2.1	86.0 ab	74.7 ab	0.58 ab
X 38400	Richardson Seeds, Ltd.	SS	M	Y	N	3-Sep	53	75.9 a	1.7 g-k	12.2 b-f	32.9 de	52.5 ab	69.0 ab	2.3	84.7 ab	70.0 ab	0.66 a
X 82400	Richardson Seeds, Ltd.	SS	L	Y	N	1-Oct	0	57.7 b	2.4 b-h	12.5 b-e	36.0 a-e	52.0 ab	59.7 bcd	2.1	86.7 ab	74.3 ab	0.58 ab
BMR Gold II	Scott Seed Co.	SS	M	Y	N	1-Oct	12	57.9 b	2.0 e-j	11.8 b-g	34.9 b-e	50.7 ab	65.3 a-d	1.7	86.3 ab	73.7 ab	0.64 ab
Grazex BMR 718	Sharp Bros.	SS	ME	Y	N	1-Oct	18	57.2 b	2.7 a-e	10.3 b-g	37.2 a-e	53.7 ab	59.3 cd	2.4	85.0 ab	72.0 ab	0.57 ab
Grazex BMR x801	Sharp Bros.	SS	M	Y	Y	1-Oct	28	59.4 b	2.5 b-f	10.8 b-g	35.7 a-e	50.7 ab	62.0 a-d	2.7	87.7 a	75.7 ab	0.61 ab
Grazex BMR x802	Sharp Bros.	SS	M	Y	Y	1-Oct	13	61.1 b	2.1 d-j	10.7 b-g	36.4 a-e	53.8 ab	62.3 a-d	2.1	84.3 ab	71.0 ab	0.60 ab
Grazex BMR 301	Sharp Bros.	SS	M	Y	Y	3-Sep	50	73.5 a	1.7 h-k	13.1 b	31.5 e	52.2 ab	69.7 a	1.9	85.3 ab	72.0 ab	0.68 a
Greentreat A Plus	Forage First	SS	L	Y	N	1-Oct	3	58.2 b	2.2 c-j	11.9 b-g	37.9 a-d	51.2 ab	60.3 a-d	1.3	86.3 ab	73.7 ab	0.59 ab
608-X	Gayland Ward	SS	M	Y	N	1-Oct	17	61.8 b	1.6 jk	9.2 fg	33.0 de	51.5 ab	64.0 a-d	2.0	83.7 ab	68.7 ab	0.62 ab
609-X	Gayland Ward	SS	M	Y	N	1-Oct	23	58.8 b	2.2 b-j	11.2 b-g	35.5 a-e	49.1 b	61.3 a-d	2.0	87.7 a	75.0 ab	0.61 ab
BMR AVG								58.4	2.3	11.0	36.0	52.8	62.2	2.0	85.2	72.3	0.60
GW9491G	Crosbyton Seed Co.	SS	PS	N	Y	1-Oct	0	49.2 b	2.0 f-k	12.0 b-f	36.5 a-e	54.8 ab	61.7 a-d	2.8	82.7 b	67.7 b	0.59 ab
Premium Stock LS	Scott Seed Co.	SS	PS	N	N	1-Oct	0	57.7 b	2.7 a-e	11.3 b-g	36.0 a-e	53.1 ab	62.7 a-d	2.6	84.3 ab	71.0 ab	0.61 ab
Sordan Headless	Sorghum Partners, Inc.	SS	PS	N	N	1-Oct	0	53.1 b	2.7 a-d	11.5 b-g	35.2 b-e	53.8 ab	62.0 a-d	2.4	82.7 b	68.0 b	0.59 ab
Trudan Headless	Sorghum Partners, Inc.	SU	PS	N	N	1-Oct	0	54.6 b	2.8 ab	11.6 b-g	36.3 a-e	50.5 ab	60.7 a-d	2.2	87.7 a	75.7 ab	0.59 ab
NonBMR-PS AVG								53.7	2.6	11.6	36.0	53.1	61.8	2.5	84.4	70.6	0.60
Bonus-R-BMR	Drussel Seed & Sup. Inc.	SS	PS	Y	N	1-Oct	0	58.6 b	2.0 f-k	12.1 b-f	36.4 a-e	52.3 ab	60.7 a-d	1.6	86.0 ab	73.0 ab	0.59 ab
Sordan BMR	Sorghum Partners, Inc.	SS	PS	Y	N	1-Oct	0	60.0 b	2.4 b-h	12.2 b-f	36.2 a-e	52.6 ab	61.7 a-d	2.4	86.3 ab	74.0 ab	0.59 ab
Trudan BMR	Sorghum Partners, Inc.	SU	PS	Y	N	1-Oct	0	58.4 b	2.4 b-h	11.8 b-g	36.0 a-e	52.9 ab	60.7 a-d	2.1	86.0 ab	73.3 ab	0.59 ab
Greentreat 128	Forage First	SS	PS	Y	N	1-Oct	0	58.6 b	1.6 jk	13.1 bc	37.0 a-e	52.0 ab	62.3 a-d	1.6	86.3 ab	73.3 ab	0.61 ab
BMR PS AVG								58.9	2.1	12.3	36.4	52.5	61.4	1.9	86.2	73.4	0.59
MMR PM 508/13	MMR Genetics Ltd	M	ME	Y	Y	3-Sep	53	77.6 a	1.4 k	18.5 a	32.6 de	50.2 ab	68.7 abc	1.7	87.8 a	76.6 a	0.67 a
Mean								57.6	2.3	11.3	36.2	53.0	62.1	2.1	85.0	71.9	0.60
CV								7.9	17.9	9.1	5.3	4.7	5.2	25.9	1.8	3.7	6.3
Treatment Prob(F)								0.0001	0.0001	0.0001	0.0001	0.0098	0.0008	0.274	0.0001	0.0007	0.0009

Note: Means followed by same letter do not significantly differ (p=.05).

Table 2. 2009 Sorghum hay trial, 2nd cutting.

Hybrid	Company	Type	Mat.	Brown MidRib	Male Sterile	NEM Mcal/lb	NEG Mcal/lb	% Ca	% P	% Mg	% K	% S	% Cl	Rel. Feed Value	Rel. Forage Quality	Milk lbs/Ton
GW9410G	Crosbyton Seed Co.	SS	ML	N	N	0.53 c	0.28 cd	0.30 bcd	0.26	0.28 ab	1.9 b-f	0.21 bcd	0.75 bcd	95 bc	113 a	2,046 ab
GWX9417G	Crosbyton Seed Co.	SS	ML	N	Y	0.59 abc	0.33 a-d	0.34 a-d	0.26	0.30 ab	1.9 b-f	0.22 bcd	0.77 bcd	108 abc	119 a	2,319 ab
GW9110G	Crosbyton Seed Co.	SS	L	N	N	0.55 bc	0.30 a-d	0.35 a-d	0.26	0.29 ab	2.0 b-f	0.23 bcd	0.92 bc	102 abc	110 a	2,153 ab
Sweeter 'N Honey II	Richardson Seeds, Ltd.	SS	L	N	N	0.61 abc	0.35 a-d	0.32 a-d	0.25	0.27 ab	2.1 b-f	0.21 bcd	0.87 bcd	110 abc	128 a	2,463 ab
Grazex II	Sharp Bros.	SS	M	N	Y	0.51 c	0.26 d	0.32 a-d	0.22	0.30 ab	1.9 b-f	0.20 bcd	0.85 bcd	93 c	109 a	1,953 b
Grazex III	Sharp Bros.	SS	M	N	Y	0.57 abc	0.31 a-d	0.33 a-d	0.26	0.25 ab	2.1 b-f	0.20 bcd	0.85 bcd	100 abc	121 a	2,197 ab
Sordan 79	Sorghum Partners, Inc.	SS	M	N	N	0.63 abc	0.37 a-d	0.30 bcd	0.23	0.25 ab	2.0 b-f	0.19 bcd	0.63 cd	119 a	149 a	2,637 ab
Trudan 8	Sorghum Partners, Inc.	SU	E	N	N	0.62 abc	0.35 a-d	0.32 a-d	0.22	0.27 ab	1.7 ef	0.16 cd	0.67 cd	104 abc	126 a	2,491 ab
NonBMR AVG						0.58	0.32	0.32	0.24	0.28	2.0	0.20	0.79	104	122	2,282
Hawk 12	Blue River Hybrids	SS	M	Y	N	0.59 abc	0.33 a-d	0.32 a-d	0.23	0.31 ab	2.0 b-f	0.21 bcd	0.84 bcd	102 abc	115 a	2,255 ab
Black Hawk 12	Blue River Hybrids	SS	M	Y	N	0.53 c	0.28 d	0.31 bcd	0.25	0.30 ab	2.1 b-f	0.20 bcd	0.90 bcd	95 bc	111 a	1,988 b
Exp 2017x	Coffey Forage Seeds Inc.	SS	ML	Y	N	0.60 abc	0.34 a-d	0.32 a-d	0.24	0.24 ab	2.1 b-f	0.23 bcd	0.79 bcd	106 abc	125 a	2,396 ab
Exp 3017x	Coffey Forage Seeds Inc.	SS	M	Y	N	0.62 abc	0.36 a-d	0.24 d	0.26	0.26 ab	1.8 def	0.20 bcd	0.69 cd	110 abc	140 a	2,522 ab
GW7191Gbm	Crosbyton Seed Co.	SS	M	Y	Y	0.56 abc	0.30 a-d	0.29 cd	0.22	0.30 ab	1.8 c-f	0.19 bcd	0.84 bcd	105 abc	123 a	2,171 ab
GWX9917Gbm	Crosbyton Seed Co.	SS	ML	Y	Y	0.52 c	0.27 d	0.30 bcd	0.25	0.34 ab	2.1 b-f	0.20 bcd	0.84 bcd	99 abc	125 a	2,045 ab
Sweeter 'N Honey II BMR	Richardson Seeds, Ltd.	SS	L	Y	N	0.56 abc	0.30 a-d	0.37 a-d	0.27	0.32 ab	2.4 bcd	0.23 bcd	0.83 bcd	105 abc	126 a	2,242 ab
Sweeter 'N Honey BMR	Richardson Seeds, Ltd.	SS	M	Y	N	0.57 abc	0.31 a-d	0.33 a-d	0.26	0.32 ab	2.3 b-f	0.22 bcd	0.91 bcd	103 abc	117 a	2,267 ab
X 38400	Richardson Seeds, Ltd.	SS	M	Y	N	0.69 ab	0.42 abc	0.49 abc	0.25	0.23 b	2.3 b-e	0.23 bcd	0.75 bcd	112 abc	148 a	2,723 ab
X 82400	Richardson Seeds, Ltd.	SS	L	Y	N	0.55 bc	0.29 bcd	0.39 a-d	0.26	0.31 ab	2.4 bcd	0.21 bcd	0.86 bcd	109 abc	141 a	2,266 ab
BMR Gold II	Scott Seed Co.	SS	M	Y	N	0.64 abc	0.37 a-d	0.37 a-d	0.23	0.29 ab	2.0 b-f	0.23 bcd	0.91 bcd	114 abc	157 a	2,591 ab
Grazex BMR 718	Sharp Bros.	SS	ME	Y	N	0.55 bc	0.29 bcd	0.33 a-d	0.21	0.31 ab	2.0 b-f	0.20 bcd	0.85 bcd	105 abc	125 a	2,204 ab
Grazex BMR x801	Sharp Bros.	SS	M	Y	Y	0.59 abc	0.33 a-d	0.38 a-d	0.23	0.26 ab	2.1 b-f	0.24 b	0.98 bc	112 abc	156 a	2,581 ab
Grazex BMR x802	Sharp Bros.	SS	M	Y	Y	0.60 abc	0.33 a-d	0.32 a-d	0.24	0.27 ab	2.1 b-f	0.22 bcd	0.74 bcd	105 abc	133 a	2,394 ab
Grazex BMR 301	Sharp Bros.	SS	M	Y	Y	0.70 a	0.43 a	0.51 ab	0.27	0.23 b	2.4 bcd	0.24 b	0.79 bcd	115 ab	155 a	2,774 a
Greentreat A Plus	Forage First	SS	L	Y	N	0.57 abc	0.31 a-d	0.39 a-d	0.23	0.30 ab	2.2 b-f	0.24 b	1.09 b	108 abc	151 a	2,246 ab
608-X	Gayland Ward	SS	M	Y	N	0.62 abc	0.36 a-d	0.38 a-d	0.22	0.33 ab	1.7 f	0.16 d	0.55 d	115 ab	133 a	2,451 ab
609-X	Gayland Ward	SS	M	Y	N	0.58 abc	0.32 a-d	0.30 bcd	0.25	0.28 ab	2.1 b-f	0.20 bcd	0.85 bcd	116 ab	166 a	2,488 ab
BMR AVG						0.59	0.33	0.35	0.24	0.29	2.1	0.21	0.83	108	136	2,367
GW9491G	Crosbyton Seed Co.	SS	PS	N	Y	0.59 abc	0.33 a-d	0.38 a-d	0.27	0.32 ab	2.2 b-f	0.23 bcd	0.91 bcd	103 abc	118 a	2,271 ab
Premium Stock LS	Scott Seed Co.	SS	PS	N	N	0.60 abc	0.34 a-d	0.28 d	0.26	0.29 ab	2.2 b-f	0.20 bcd	0.73 bcd	107 abc	124 a	2,395 ab
Sordan Headless	Sorghum Partners, Inc.	SS	PS	N	N	0.59 abc	0.33 a-d	0.38 a-d	0.26	0.31 ab	2.3 b-f	0.21 bcd	0.66 cd	106 abc	119 a	2,278 ab
Trudan Headless	Sorghum Partners, Inc.	SU	PS	N	N	0.57 abc	0.31 a-d	0.39 a-d	0.22	0.29 ab	2.0 b-f	0.18 bcd	0.80 bcd	112 abc	154 a	2,425 ab
NonBMR-PS AVG						0.59	0.33	0.36	0.25	0.30	2.2	0.21	0.77	107	129	2,342
Bonus-R-BMR	Drussel Seed & Sup. Inc.	SS	PS	Y	N	0.57 abc	0.31 a-d	0.39 a-d	0.29	0.33 ab	2.4 bc	0.25 b	0.91 bcd	108 abc	138 a	2,236 ab
Sordan BMR	Sorghum Partners, Inc.	SS	PS	Y	N	0.58 abc	0.32 a-d	0.34 a-d	0.25	0.30 ab	2.3 b-f	0.22 bcd	0.81 bcd	108 abc	136 a	2,419 ab
Trudan BMR	Sorghum Partners, Inc.	SU	PS	Y	N	0.57 abc	0.31 a-d	0.33 a-d	0.24	0.30 ab	2.2 b-f	0.23 bcd	0.90 bcd	107 abc	131 a	2,272 ab
Greentreat 128	Forage First	SS	PS	Y	N	0.60 abc	0.34 a-d	0.41 a-d	0.25	0.31 ab	2.5 b	0.24 bc	0.82 bcd	108 abc	147 a	2,395 ab
BMR PS AVG						0.58	0.32	0.37	0.26	0.31	2.4	0.23	0.86	108	138	2331
MMR PM 508/13	MMR Genetics Ltd	M	ME	Y	Y	0.69 ab	0.42 ab	0.52 a	0.31	0.35 a	3.2 a	0.30 a	1.49 a	118 a	158 a	2,816 a
Mean						0.59	0.33	0.35	0.25	0.29	2.14	0.22	0.84	107	133	2,353
CV						8.3	13.8	19.4	13.7	13.0	10.0	11.9	14.6	6.7	16.0	10.9
Treatment Prob(F)						0.0008	0.0015	0.0012	0.297	0.0111	0.0001	0.0001	0.0001	0.0021	0.0309	0.0068

Note: Means followed by same letter do not significantly differ (p=.05).

Figure 2. Yield contribution of each cutting to total tons/acre.

