Texas Panhandle Sorghum Hay Trial – 2010

Brent Bean[1], Jake Becker[2], Jürg Blumenthal[3], Jake Robinson[2], Rex Brandon[2], Rex VanMeter[2], and Dennis Pietsch[4]

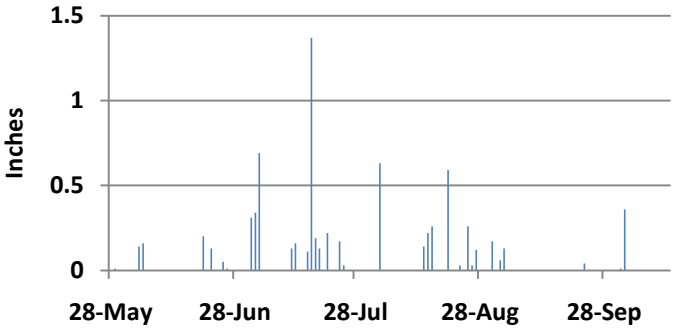
Introduction

The trial consisted of 31 entries of sorghum/sudangrass, 2 forage sorghums, 1 millet, and 1 corn hybrid. Entries also included hybrids with the brown midrib (BMR) and photoperiod sensitive (PS) traits. Two harvests were made, with the first cutting occurring 67 days after planting. The trial was irrigated immediately after the first cutting. The second harvest was planned for when each hybrid reached 50% heading. However, due to moisture stress, most hybrids did not reach the 50% heading stage. Percent heading for each hybrid is reported just prior to harvest. The objective of this study was to compare hybrid yields after both the first and second cuttings, as well as the total yield from both cuttings. In addition, nutrient analyses of varieties were compared after each harvest.

Methods and Materials

All varieties were planted with a John Deere Max-Emerge 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 immediately after the first cutting with 3.0 inches of water. Rainfall totaled 8.1 inches during the growing season (May 28 – Oct 10) (Figure 1). Most of the significant rainfall amounts fell before the first cutting. The first harvest was made August 3rd and 4th, with a Carter Harvester, 67 days after planting. In order to maximize tonnage, the second cutting was planned for when each variety reached 50% heading. However, the decision was made to harvest all of the varieties on October 11th due to moisture stress. Immediately following each harvest a fresh weight was obtained. A subsample of the chopped plants was collected to determine percent moisture at harvest. On the first harvest, a second subsample was collected from each sample and immediately frozen prior to sending for nutrient analysis. On the second harvest, the dried sample collected for moisture analysis was saved, and then sent to Dairy One Laboratory, Ithaca, NY.

Figure 1. 2010 Rainfall Data - Bushland, TX



Other cultural practices and study information are listed below:

[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.

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, 2010
Planting Rate:	100,000 seed/acre
Seed Method:	John Deere Max-Emerge planter with seed cones.
Fertilizer:	Applied 225 lb/acre N and 40 lb/acre P_2O_5 based on soil test results.
Herbicide:	One lb/acre atrazine applied five days after planting
Irrigation:	After first cutting on August 5th – 3.0 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 is reported in Table 1. Entries were grouped by BMR and PS type. One millet and one corn hybrid are also reported. Although good deep soil moisture was present, moisture in the seed zone was marginal at planting. Evaluation of % plant emergence was made 55 days after planting. Although emergence was generally good, a few varieties had plant emergence of less than 70%. This should be noted when comparing yields. The first cutting was made on August 3rd and 4th, 67 days after planting. At the time of harvest, average plant moisture was 78%. Most non-PS varieties were just beginning to bloom. Dry matter yield ranged from a low of 2.1 tons/acre with Red Top Plus BMR to a high of 4.0 tons/acre with Grazex II. Fifteen entries averaged over 3.0 tons/acre.

When comparing variety types, the nonBMR varieties averaged 3.5 tons/acre, while the BMR entries averaged 2.9 tons/acre, or 17.1% less. The millet variety's yield was about average, at 2.6 tons/acre, but feed quality was one of the highest based on % IVTD and % NDFD. The corn hybrid's yield was also average, and so was its quality. Lignin averaged 0.5 percentage points less in BMR varieties when compared to nonBMRs. Average digestibility was slightly less with the nonBMR varieties compared to BMRs based on % IVTD and % NDFD.

Plots were irrigated with 3.0 inches of water following the first cutting. However, significant rainfall was lacking, with only one early rain of 0.6 inch occurring after the first harvest. The millet and corn varieties were not harvested a second time, due to a lack of regrowth. Possibly the regrowth of the millet would have been better if the cutting height of the first harvest would have been raised. Approximately 3 inches of stalk was left after the first harvest. One variety, GWX9116G, averaged over 4 tons/acre on the 2nd cutting (Table 2). Little differences could be observed after that, with 24 varieties yielding over 1.76 tons/acre. Although there was a considerable amount of overlap in yield between variety types, the nonBMR varieties averaged 0.4 ton/acre higher yield than the BMR varieties. The nonBMR PS varieties were the lowest yielding with an average of 1.8 tons/acre, compared to the test average of 2.1 tons/acre. Quality differences between types were small, however, BMR types averaged higher % IVTD and % NDFD (Table 2). Interestingly, average % lignin showed no difference between the BMR and nonBMR varieties.

Yield of the second cutting greatly influenced total yield for the season for all varieties (Figure 2). Total yield was highest in the nonBMR varieties, averaging 5.8 tons/acre, a ton more than the average of the BMR varieties. GWX9116G, which provided more yield on the second cutting than the first, was easily the highest yielding at 7.8 ton/acre. Two other varieties, Grazex II and Exp 3017, yielded approximately 6.5 ton/acre and were not significantly different from GWX9116G.

Table 1. 2010 Sorghum Hay Trial, 1st Cutting, 67 days after planting.*

Hybrid	Company	Type	Mat.	BMR	Male Sterile	% Emerg.	% Heading	% Moisture	DM Yield Tons/Ac	% CP	% ADF	% NDF	% TDN	% Lignin	% IVTD NIR	% NDFD
GW9417G	Advanta U.S.	SS	ML	N	Y	98.7	96 ab	75.7 h-k	3.74 abc	12.6 b-g	36.9 a	58.0 a	61.3	3.8 a	81.7 f-i	69.0 c-i
GWX9116G	Advanta U.S.	SS	ML	N	N	80.0	97 ab	78.0 d-j	3.50 a-f	11.3 efg	35.7 a-g	56.9 a-d	65.3	3.4 abc	81.3 ghi	66.7 hi
Sweeter 'N Honey II	Richardson Seeds, Ltd	SS	L	N	N	95.0	0 f	78.2 c-j	3.63 a-d	10.7 g	35.5 a-g	55.0 b-j	65.7	3.2 a-d	80.7 i	65.3 i
Grazex II	Sharp Bros. Seed Co.	SS	M	N	Y	93.0	93 ab	69.4 l	4.00 a	12.4 b-g	36.8 ab	56.8 a-d	64.0	3.5 ab	81.0 hi	67.0 ghi
SU-2-LM	Walter Moss Seed Co.	SS	L	N	N	85.0	0 f	78.6 b-j	3.24 a-g	14.9 b	34.5 a-h	55.4 a-j	66.3	3.4 abc	83.3 b-i	69.3 b-i
Early Sumac	Scott Seed Co.	SS	ML	N	N	70.0	100 a	78.9 b-h	2.95 b-i	11.7 c-g	33.6 e-h	54.8 b-j	67.3	3.0 b-f	84.3 a-f	70.7 b-h
Hegari	Scott Seed Co.	SS	ML	N	N	98.3	47 d	74.9 ijk	3.34 a-g	11.0 fg	32.7 h	53.5 g-j	68.0	2.7 d-h	84.3 a-f	70.7 b-h
NonBMR Average						**88.6**	**62**	**76.2**	**3.49**	**12.1**	**35.1**	**55.8**	**65.4**	**3.3**	**82.4**	**68.4**
GW9917G bmr	Advanta U.S.	SS	ML	Y	Y	83.3	90 ab	79.9 a-f	3.08 a-h	11.7 b-g	34.0 c-h	56.4 a-f	67.0	2.9 b-g	81.7 f-i	67.3 f-i
GW7191G bmr	Advanta U.S.	SS	M	Y	Y	93.3	93 ab	79.6 a-g	2.47 ghi	11.9 b-g	34.7 a-h	56.0 a-g	65.3	3.0 b-f	83.0 c-i	69.3 b-i
AS453	AR-B Seeds, Inc.	SS	M	Y	N	96.7	3 f	78.8 b-h	3.06 a-h	12.7 b-g	34.5 a-h	55.0 b-j	66.3	2.7 d-h	84.7 a-e	73.0 abc
Sweet King BMR	AR-B Seeds, Inc.	SS	ME	Y	N	93.3	92 ab	78.0 d-j	3.00 b-i	12.2 b-g	33.6 e-h	53.1 ij	69.3	2.4 e-h	83.7 b-h	69.7 b-i
Blackhawk 12	Blue River Hybrids	SS	M	Y	N	96.7	60 c	76.1 f-k	3.17 a-h	12.4 b-g	35.0 a-h	56.6 a-e	65.3	2.8 c-h	82.0 e-i	69.0 c-i
Exp 2017	Coffey Forage Seeds	SS	ML	Y	N	100.0	55 cd	78.1 c-j	2.56 f-i	12.2 b-g	34.2 b-h	53.0 j	67.3	2.2 h	85.0 a-d	71.3 b-g
Exp 3017	Coffey Forage Seeds	SS	M	Y	N	91.7	100 a	73.2 kl	3.86 ab	12.5 b-g	35.8 a-g	54.4 d-j	64.7	3.2 a-d	85.0 a-d	72.7 a-d
DSS Bonus BMRD	Drussel Seed & Supply	SS	L	Y	N	81.7	0 f	81.6 a-d	2.46 ghi	14.9 bc	34.8 a-h	53.9 f-j	66.3	2.4 e-h	85.7 abc	73.3 abc
G.W. 400BMR	Gayland Ward Seed Co.	FS	M	Y	Y	97.3	100 a	77.5 e-j	3.42 a-f	12.8 b-g	33.4 fgh	54.4 d-j	68.3	2.9 b-g	83.0 c-i	68.3 d-i
G.W. 300BMR	Gayland Ward Seed Co.	SS	ML	Y	Y	66.7	100 a	78.8 b-h	3.14 a-h	12.0 b-g	35.7 a-g	54.6 c-j	63.7	3.2 a-d	82.7 d-i	68.0 e-i
106400X	MMR Genetics, Ltd	SS	L	Y	N	95.0	97 ab	78.6 b-j	2.97 b-i	11.8 b-g	35.4 a-g	57.3 ab	66.0	3.0 b-f	81.7 f-i	68.3 d-i
NutriPlus bmr	Production Plus	SS	ML	Y	N	93.3	97 ab	75.9 g-k	3.59 a-e	12.9 b-g	33.4 fgh	53.2 hij	66.3	3.0 b-f	84.3 a-f	70.0 b-h
Red Top Plus bmr	Production Plus	FS	ML	Y	Y	53.3	87 b	81.1 a-e	2.10 i	14.1 b-f	33.8 d-h	53.8 g-j	68.0	2.6 d-h	84.0 b-g	70.3 b-h
Sweeter 'N Honey II BMR	Richardson Seeds, Ltd	SS	L	Y	N	89.0	9 ef	78.5 b-j	2.95 b-i	14.1 b-f	36.1 a-f	55.7 a-i	64.0	3.1 b-e	83.0 c-i	69.3 b-i
Sweeter 'N Honey BMR	Richardson Seeds, Ltd	SS	M	Y	N	86.7	100 a	79.2 a-h	2.87 c-i	13.4 b-g	34.3 a-h	55.3 b-j	66.0	2.4 fgh	85.0 a-d	72.7 a-d
X38400	Richardson Seeds, Ltd	SS	M	Y	N	91.7	65 c	78.9 b-h	2.64 f-i	13.4 b-g	33.7 e-h	54.2 e-j	67.0	2.7 d-h	84.7 a-e	72.0 b-e
X82400	Richardson Seeds, Ltd	SS	L	Y	N	70.0	2 f	82.2 ab	2.40 ghi	14.6 bcd	34.6 a-h	54.1 e-j	66.0	2.5 e-h	84.0 b-g	70.0 b-h
BMR Gold II	Scott Seed Co.	SS	M	Y	N	69.0	93 ab	80.0 a-e	2.28 hi	14.0 b-f	34.8 a-h	53.6 g-j	66.7	2.2 gh	86.0 ab	73.7 ab
Grazex BMR718	Sharp Bros. Seed Co.	SS	M	Y	N	99.0	97 ab	78.0 d-j	2.43 ghi	12.6 b-g	35.8 a-g	55.7 a-i	64.0	2.7 d-h	84.0 b-g	71.0 b-h
Grazex BMR301	Sharp Bros. Seed Co.	SS	M	Y	N	86.7	97 ab	74.8 jk	2.77 d-i	12.8 b-g	33.3 gh	55.5 a-j	67.7	2.8 c-h	83.7 b-h	70.3 b-h
Grazex BMR801	Sharp Bros. Seed Co.	SS	M	Y	Y	90.0	20 e	77.5 e-j	3.22 a-h	11.5 d-g	34.0 c-h	54.5 d-j	67.7	2.7 d-h	83.3 b-i	69.0 c-i
38 Special	Walter Moss Seed Co.	SS	ML	Y	N	100.0	98 a	78.7 b-i	2.68 e-i	12.2 b-g	36.5 abc	55.1 b-j	65.3	2.5 e-h	84.7 a-e	72.3 b-e
Century BMR	Walter Moss Seed Co.	SS	ML	Y	N	81.7	92 ab	77.6 e-j	2.61 f-i	12.9 b-g	33.8 d-h	52.9 j	67.3	2.6 d-h	85.0 a-d	71.7 b-f
BMR Average						**87.2**	**72**	**78.4**	**2.86**	**12.8**	**34.6**	**54.7**	**66.3**	**2.7**	**83.9**	**70.5**
GW9491G	Advanta U.S.	SS	PS	N	Y	86.7	0 f	82.9 a	2.64 f-i	12.2 b-g	36.4 a-d	57.2 abc	64.7	2.8 c-h	82.0 e-i	69.3 b-i
Premium Stock LS	Scott Seed Co.	SS	PS	N	N	96.7	0 f	78.8 b-h	3.14 a-h	12.3 b-g	36.1 a-e	56.9 a-d	65.0	2.7 d-h	81.3 ghi	67.3 f-i
NonBMR-PS Average						**91.7**	**0**	**80.9**	**2.89**	**12.2**	**36.3**	**57.1**	**64.9**	**2.8**	**81.7**	**68.3**
Greentreat Plus	Forage First	SS	PS	Y	Y	74.0	0 f	79.7 a-g	2.41 ghi	13.2 b-g	34.8 a-h	54.0 e-j	66.7	2.4 e-h	85.7 abc	73.7 ab
MMR PM508/13	MMR Genetics, Ltd	M	ME	Y	Y	98.3	93 ab	82.0 abc	2.55 f-i	19.5 a	32.6 h	55.8 a-h	63.7	2.8 c-h	87.0 a	77.0 a
Corn Grazer Brand (VNS)	Dick Crill	NA	M	N	N	94.7	100 a	80.9 a-e	2.77 d-i	14.4 b-e	35.1 a-h	55.8 a-h	65.7	3.1 b-e	83.3 b-i	70.3 b-h
Mean						88.0	63	78.3	2.97	12.9	34.8	55.2	65.9	2.8	83.5	70.2
CV						25.9	10.9	3.0	19.6	15.2	4.7	2.9	3.4	14.6	2.1	4.0
Treatment Prob(F)						0.8251	0.001	0.0001	0.0071	0.0122	0.079	0.0038	0.066	0.001	0.0011	0.0026

* Means followed by same letter or no letter do not significantly differ using LSD (P=.05).

Table 1. 2010 Sorghum Hay Trial, 1st Cutting, 67 days after planting.*

Hybrid	Company	Type	Mat.	BMR	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
GW9417G	Advanta U.S.	SS	ML	N	Y	0.56 f	0.57 g	0.32	0.27	0.30	0.31 f	2.2 b-f	0.20 gh	0.75 c-f	96	130 ef	2402 i
GWX9116G	Advanta U.S.	SS	ML	N	N	0.61 cde	0.63 b-f	0.37	0.31	0.23	0.34 b-f	1.8 def	0.24 b-h	0.93 b-e	100	137 c-f	2559 b-i
Sweeter 'N Honey II	Richardson Seeds, Ltd	SS	L	N	N	0.62 b-e	0.643 a-f	0.38	0.32	0.23	0.35 b-f	1.8 ef	0.24 b-h	0.88 b-f	104	136 c-f	2569 a-i
Grazex II	Sharp Bros. Seed Co.	SS	M	N	Y	0.60 ef	0.61 efg	0.35	0.40	0.24	0.33 c-f	1.8 def	0.24 b-h	0.85 b-f	99	129 ef	2473 e-i
SU-2-LM	Walter Moss Seed Co.	SS	L	N	N	0.63 a-e	0.657 a-f	0.39	0.43	0.30	0.36 b-f	2.3 b-e	0.25 b-f	0.67 f	104	144 b-f	2682 a-g
Early Sumac	Scott Seed Co.	SS	ML	N	N	0.64 a-d	0.657 a-f	0.39	0.34	0.27	0.33 c-f	2.1 b-f	0.21 d-h	0.71 ef	107	147 a-f	2716 abc
Hegari	Scott Seed Co.	SS	ML	N	N	0.65 ab	0.677 abc	0.41	0.39	0.22	0.38 b	1.7 f	0.19 h	0.73 def	111	150 a-d	2759 ab
NonBMR Average						**0.62**	**0.63**	**0.37**	**0.35**	**0.26**	**0.34**	**2.0**	**0.23**	**0.79**	**103**	**139**	**2594**
GW9917G bmr	Advanta U.S.	SS	ML	Y	Y	0.63 b-e	0.66 a-e	0.39	0.41	0.28	0.37 b-e	2.1 b-f	0.23 b-h	0.76 c-f	103	143 b-f	2635 a-h
GW7191G bmr	Advanta U.S.	SS	M	Y	Y	0.62 b-e	0.63 b-f	0.37	0.34	0.27	0.35 b-f	2.1 b-f	0.21 e-h	0.91 b-e	103	139 c-f	2575 a-i
AS453	AR-B Seeds, Inc.	SS	M	Y	N	0.63 b-e	0.65 a-f	0.39	0.33	0.28	0.33 c-f	2.1 b-f	0.26 abc	0.98 bc	105	144 b-f	2692 a-e
Sweet King BMR	AR-B Seeds, Inc.	SS	ME	Y	N	0.67 a	0.70 a	0.43	0.37	0.26	0.34 b-f	1.9 def	0.24 b-h	0.72 ef	110	153 abc	2786 a
Blackhawk 12	Blue River Hybrids	SS	M	Y	N	0.61 cde	0.63 b-f	0.37	0.29	0.27	0.31 f	2.2 b-f	0.23 b-h	0.74 c-f	101	134 def	2507 c-i
Exp 2017	Coffey Forage Seeds	SS	ML	Y	N	0.65 ab	0.66 a-e	0.40	0.34	0.29	0.33 c-f	2.2 b-f	0.24 b-h	0.86 b-f	109	143 b-f	2653 a-h
Exp 3017	Coffey Forage Seeds	SS	M	Y	N	0.62 b-e	0.62 c-g	0.36	0.34	0.28	0.32 def	2.1 b-f	0.23 b-h	0.85 b-f	104	141 b-f	2630 a-h
DSS Bonus BMRD	Drussel Seed & Supply	SS	L	Y	N	0.64 a-d	0.65 a-f	0.39	0.38	0.33	0.35 b-f	2.5 bc	0.26 a-e	0.80 b-f	107	142 b-f	2674 a-h
G.W. 400BMR	Gayland Ward Seed Co.	FS	M	Y	Y	0.65 ab	0.68 ab	0.41	0.43	0.29	0.38 bc	2.0 b-f	0.25 b-f	0.76 c-f	108	150 a-d	2725 abc
G.W. 300BMR	Gayland Ward Seed Co.	SS	ML	Y	Y	0.61 cde	0.61 d-g	0.35	0.39	0.28	0.35 b-f	2.2 b-f	0.26 a-d	0.96 bcd	104	129 f	2458 hi
106400X	MMR Genetics, Ltd	SS	L	Y	N	0.61 cde	0.64 b-f	0.38	0.35	0.23	0.34 b-f	1.8 ef	0.22 c-h	0.77 c-f	100	138 c-f	2570 a-i
NutriPlus bmr	Production Plus	SS	ML	Y	N	0.64 a-d	0.66 a-f	0.39	0.39	0.28	0.34 b-f	2.1 b-f	0.22 c-h	0.72 ef	110	146 a-f	2682 a-g
Red Top Plus bmr	Production Plus	FS	ML	Y	Y	0.65 ab	0.68 abc	0.41	0.38	0.29	0.35 b-f	2.2 b-f	0.24 b-h	0.70 ef	108	147 a-f	2723 abc
Sweeter 'N Honey II BMR	Richardson Seeds, Ltd	SS	L	Y	N	0.61 cde	0.62 d-g	0.36	0.38	0.29	0.33 c-f	2.4 bcd	0.25 b-g	0.96 bcd	101	130 ef	2488 d-i
Sweeter 'N Honey BMR	Richardson Seeds, Ltd	SS	M	Y	N	0.62 b-e	0.65 a-f	0.38	0.30	0.33	0.37 bcd	2.5 bc	0.26 a-e	0.94 b-e	105	147 a-f	2649 a-h
X38400	Richardson Seeds, Ltd	SS	M	Y	N	0.64 abc	0.66 a-e	0.40	0.42	0.27	0.37 bcd	2.0 c-f	0.20 fgh	0.93 b-e	107	147 a-f	2708 a-d
X82400	Richardson Seeds, Ltd	SS	L	Y	N	0.63 b-e	0.64 a-f	0.38	0.41	0.31	0.35 b-f	2.6 b	0.27 ab	0.81 b-f	107	146 a-f	2608 a-i
BMR Gold II	Scott Seed Co.	SS	M	Y	N	0.64 a-d	0.66 a-e	0.39	0.37	0.28	0.33 c-f	2.2 b-f	0.27 abc	0.85 b-f	107	141 b-f	2689 a-f
Grazex BMR718	Sharp Bros. Seed Co.	SS	M	Y	N	0.61 cde	0.61 d-g	0.35	0.34	0.25	0.32 ef	2.2 b-f	0.21 fgh	0.81 b-f	102	131 ef	2465 ghi
Grazex BMR301	Sharp Bros. Seed Co.	SS	M	Y	N	0.64 a-d	0.67 a-d	0.40	0.41	0.27	0.33 c-f	2.1 b-f	0.21 e-h	0.80 b-f	106	148 a-e	2700 a-d
Grazex BMR801	Sharp Bros. Seed Co.	SS	M	Y	Y	0.64 abc	0.67 a-d	0.40	0.34	0.24	0.38 bc	2.1 b-f	0.23 b-h	0.97 bc	107	146 a-f	2686 a-g
38 Special	Walter Moss Seed Co.	SS	ML	Y	N	0.62 b-e	0.64 b-f	0.37	0.42	0.25	0.31 f	2.2 b-f	0.23 b-h	1.01 b	102	134 def	2566 a-i
Century BMR	Walter Moss Seed Co.	SS	ML	Y	N	0.64 abc	0.66 a-e	0.40	0.29	0.26	0.37 bcd	2.3 b-e	0.23 b-h	0.84 b-f	110	158 ab	2747 ab
BMR Average						**0.63**	**0.65**	**0.39**	**0.37**	**0.28**	**0.34**	**2.2**	**0.24**	**0.85**	**105**	**142**	**2635**
GW9491G	Advanta U.S.	SS	PS	N	Y	0.60 de	0.627 b-f	0.36	0.33	0.28	0.33 b-f	2.1 b-f	0.2 b-h	0.907 b-e	99	132 def	2486 d-i
Premium Stock LS	Scott Seed Co.	SS	PS	N	N	0.61 cde	0.633 b-f	0.37	0.40	0.28	0.34 b-f	2.2 b-f	0.3 abc	0.877 b-f	99	130 ef	2466 f-i
NonBMR-PS Average						**0.61**	**0.63**	**0.37**	**0.37**	**0.28**	**0.34**	**2.2**	**0.247**	**0.89**	**99**	**131**	**2476**
Greentreat Plus	Forage First	SS	PS	Y	Y	0.64 a-d	0.65 a-f	0.383	0.37	0.29	0.35 b-f	2.1 b-f	0.25 b-g	0.767 c-f	106	144 a-f	2671 a-h
MMR PM508/13	MMR Genetics, Ltd	M	ME	Y	Y	0.60 ef	0.60 fg	0.343	0.35	0.34	0.50 a	3.2 a	0.30 a	1.45 a	106	163 a	2667 a-h
Corn Grazer Brand (VNS)	Dick Crill	NA	M	N	N	0.62 b-e	0.637 b-f	0.373	0.39	0.31	0.33 b-f	2.3 b-e	0.26 a-d	0.873 b-f	103	145 a-f	2636 a-h
Mean						0.63	0.64	0.38	0.36	0.28	0.35	2.2	0.24	0.85	104	141	2616
CV						3.9	5.2	8.2	17.6	15.2	9.4	15.5	12.5	16.9	4.2	8.1	5.2
Treatment Prob(F)						0.0018	0.0286	0.0571	0.16	0.13	0.0001	0.0112	0.0165	0.0002	0.0048	0.0559	0.0449

* 'Means followed by same letter or no letter do not significantly differ using LSD (P=.05).

Table 2. 2010 Sorghum Hay Trial, 2nd cutting.*

Hybrid	Company	Type	Mat.	BMR	Male Sterile	% Heading	% Moisture	DM Yield Tons/Ac	% CP	% ADF	% NDF	% TDN	% Lignin	% IVTD NIR	% NDFD	NEL Mcal/lb
GW9417G	Advanta U.S.	SS	ML	N	Y	23 c-g	67.8	2.02 b-e	11.4 e-k	32.3	57.5 a-e	65.0	2.8 cde	81.7 b-f	67.7 b-i	0.61
GWX9116G	Advanta U.S.	SS	ML	N	N	35 a-e	61.9	4.30 a	10.1 k	33.6	55.3 b-g	65.0	3.2 b-e	81.7 b-f	66.7 d-i	0.61
Sweeter 'N Honey II	Richardson Seeds, Ltd	SS	L	N	N	0 g	66.8	2.59 b	12.0 a-j	33.1	57.9 a-d	64.7	3.5 a-d	80.7 e-h	66.0 f-i	0.59
Grazex II	Sharp Bros. Seed Co.	SS	M	N	Y	32 b-f	62.2	2.49 bcd	11.2 g-k	33.4	56.9 a-f	65.3	3.1 b-e	81.3 c-g	66.7 d-i	0.61
SU-2-LM	Walter Moss Seed Co.	SS	L	N	N	0 g	66.7	1.79 b-f	12.7 a-e	33.7	57.3 a-e	63.7	3.2 a-e	80.7 e-h	66.7 d-i	0.59
Early Sumac	Scott Seed Co.	SS	ML	N	N	12 d-g	64.9	1.49 ef	11.9 a-j	31.9	55.2 c-g	64.0	3.1 b-e	81.0 d-g	65.7 ghi	0.60
Hegari	Scott Seed Co.	SS	ML	N	N	0 g	62.5	1.79 b-f	11.4 e-k	31.8	52.2 g	66.3	3.1 b-e	82.7 a-e	67.0 c-i	0.64
NonBMR Average						**15**	**64.7**	**2.35**	**11.5**	**32.8**	**56.0**	**64.9**	**3.1**	**81.4**	**66.6**	**0.61**
GW9917G bmr	Advanta U.S.	SS	ML	Y	Y	20 c-g	64.7	1.68 def	11.1 h-k	33.4	56.5 b-f	64.0	3.0 cde	83.3 abc	70.0 a-d	0.60
GW7191G bmr	Advanta U.S.	SS	M	Y	Y	8 efg	65.3	2.24 b-e	10.8 ijk	34.4	59.7 a	64.0	3.5 abc	78.7 hi	64.7 hij	0.58
AS453	AR-B Seeds, Inc.	SS	M	Y	N	0 g	64.5	2.36 bcd	12.9 abc	32.9	56.9 a-f	64.3	3.1 b-e	82.7 a-e	69.7 a-e	0.60
Sweet King BMR	AR-B Seeds, Inc.	SS	ME	Y	N	28 b-f	63.8	2.42 bcd	11.4 e-k	33.9	54.1 fg	64.7	3.1 b-e	83.7 ab	69.7 a-e	0.62
Blackhawk 12	Blue River Hybrids	SS	M	Y	N	23 c-g	66.3	2.23 b-e	10.9 ijk	34.3	56.7 a-f	65.3	3.0 cde	82.0 b-f	69.0 a-g	0.61
Exp 2017	Coffey Forage Seeds	SS	ML	Y	N	13 d-g	65.8	2.01 b-e	12.4 a-h	31.6	56.0 b-f	66.7	2.5 e	82.7 a-e	69.7 a-e	0.63
Exp 3017	Coffey Forage Seeds	SS	M	Y	N	53 ab	65.3	2.58 bc	10.7 jk	32.8	54.6 efg	65.7	3.1 b-e	83.3 abc	69.3 a-f	0.63
DSS Bonus BMRD	Drussel Seed & Supply	SS	L	Y	N	10 d-g	64.3	2.32 b-e	12.9 abc	32.0	56.5 b-f	66.0	2.6 e	83.3 abc	70.7 ab	0.62
G.W. 400BMR	Gayland Ward Seed Co.	FS	M	Y	Y	60 ab	65.7	2.35 bcd	11.0 h-k	32.4	57.3 a-e	65.0	3.1 b-e	79.3 ghi	64.3 ij	0.60
G.W. 300BMR	Gayland Ward Seed Co.	SS	ML	Y	Y	47 abc	63.3	1.66 def	11.5 d-j	34.0	58.3 ab	64.0	2.9 cde	80.7 e-h	66.7 d-i	0.59
106400X	MMR Genetics, Ltd	SS	L	Y	N	0 g	63.1	1.79 b-f	13.2 a	32.9	58.2 abc	63.0	2.7 cde	82.7 a-e	69.7 a-e	0.58
NutriPlus bmr	Production Plus	SS	ML	Y	N	12 d-g	65.1	2.19 b-e	12.0 a-i	33.9	55.0 d-g	62.0	3.9 ab	82.3 a-f	67.7 b-i	0.59
Red Top Plus bmr	Production Plus	FS	ML	Y	Y	22 c-g	65.8	1.76 b-f	13.0 ab	31.6	55.4 b-f	63.7	3.1 b-e	82.7 a-e	69.3 a-f	0.60
Sweeter 'N Honey II BMR	Richardson Seeds, Ltd	SS	L	Y	N	13 d-g	66.6	1.15 f	13.2 a	33.7	58.1 a-d	61.7	4.1 a	81.0 d-g	67.3 b-i	0.57
Sweeter 'N Honey BMR	Richardson Seeds, Ltd	SS	M	Y	N	18 d-g	63.7	1.70 def	12.8 a-d	33.4	57.0 a-f	62.3	3.4 a-e	83.3 abc	70.7 ab	0.58
X38400	Richardson Seeds, Ltd	SS	M	Y	N	17 d-g	67.1	1.71 def	11.7 b-j	33.7	55.9 b-f	65.0	3.0 cde	83.0 a-d	69.7 a-e	0.61
X82400	Richardson Seeds, Ltd	SS	L	Y	N	0 g	64.5	1.75 c-f	13.0 ab	32.8	58.0 a-d	63.3	2.9 cde	81.0 d-g	67.0 c-i	0.58
BMR Gold II	Scott Seed Co.	SS	M	Y	N	37 a-d	66.5	1.72 def	11.3 f-k	33.7	57.2 a-e	64.3	2.9 cde	81.7 b-f	68.0 b-h	0.60
Grazex BMR718	Sharp Bros. Seed Co.	SS	M	Y	N	22 c-g	66.1	2.49 bcd	10.9 ijk	32.7	56.1 b-f	65.7	3.1 b-e	81.3 c-g	66.3 e-i	0.62
Grazex BMR301	Sharp Bros. Seed Co.	SS	M	Y	N	13 d-g	64.6	1.79 b-f	12.6 a-f	34.3	57.9 a-d	64.7	2.6 de	84.3 a	72.3 a	0.60
Grazex BMR801	Sharp Bros. Seed Co.	SS	M	Y	Y	22 c-g	64.0	2.03 b-e	11.6 c-j	32.7	55.5 b-f	66.3	2.9 cde	83.3 abc	70.3 abc	0.62
38 Special	Walter Moss Seed Co.	SS	ML	Y	N	10 d-g	63.8	1.98 b-f	11.9 a-j	33.6	57.9 a-d	64.0	3.4 a-e	81.3 c-g	67.3 b-i	0.59
Century BMR	Walter Moss Seed Co.	SS	ML	Y	N	7 fg	67.6	2.26 b-e	12.4 a-g	32.7	55.9 b-f	66.0	2.9 cde	83.0 a-d	69.3 a-f	0.62
BMR Average						**20**	**65.1**	**2.01**	**12.0**	**33.2**	**56.7**	**64.4**	**3.1**	**82.2**	**68.6**	**0.60**
GW9491G	Advanta U.S.	SS	PS	N	Y	0 g	60.6	2.49 bcd	11.8 b-j	32.7	57.7 a-d	64.3	3.4 a-e	80.3 f-i	66.3 e-i	0.60
Premium Stock LS	Scott Seed Co.	SS	PS	N	N	0 g	63.5	1.86 b-f	11.3 f-k	33.2	57.6 a-e	63.3	2.9 cde	78.3 i	62.0 j	0.58
NonBMR-PS Average						**0**	**62.0**	**2.17**	**11.6**	**33.0**	**57.7**	**63.8**	**3.1**	**79.3**	**64.2**	**0.59**
Greentreat Plus	Forage First	SS	PS	Y	Y	0 g	66.2	2.24 b-e	12.7 a-e	32.7	56.2 b-f	64.0	2.8 cde	83.0 a-d	70.0 a-d	0.60
Mean						16	64.8	2.10	11.9	33.1	56.6	64.5	3.1	81.8	67.9	0.60
CV						97.0	5.4	24.4	7.0	3.2	3.4	2.6	17.2	1.6	3.2	3.8
Treatment Prob(F)						0.0003	0.8339	0.0001	0.0001	0.054	0.0218	0.066	0.2092	0.0001	0.0001	0.0697

* Means followed by same letter or no letter do not significantly differ using LSD (P=.05).

Table 2. 2010 Sorghum Hay Trial, 2nd cutting. *

Hybrid	Company	Type	Mat.	BMR	Male Sterile	NEM Mcal/lb	NEG Mcal/lb	% Ca	% P	% Mg	% K	% S	% Cl	Rel. Feed Value	Rel. Forage Qual.	Milk lbs/Ton	Total DM Yield Tons/Ac
GW9417G	Advanta U.S.	SS	ML	N	Y	0.63	0.37	0.41	0.23 b-h	0.28	2.0 f-i	0.17 b-g	0.67	103 b-e	137	2522.7	5.76 b-e
GWX9116G	Advanta U.S.	SS	ML	N	N	0.63	0.37	0.39	0.19 i	0.31	1.9 hi	0.14 g	0.49	106 bcd	133	2523.7	7.80 a
Sweeter 'N Honey II	Richardson Seeds, Ltd	SS	L	N	N	0.62	0.35	0.41	0.26 abc	0.30	2.3 a-f	0.19 a-f	0.63	101 b-e	133	2440.7	6.22 bcd
Grazex II	Sharp Bros. Seed Co.	SS	M	N	Y	0.63	0.37	0.41	0.21 f-i	0.29	2.1 c-i	0.15 efg	0.49	103 b-e	136	2527.3	6.49 ab
SU-2-LM	Walter Moss Seed Co.	SS	L	N	N	0.61	0.35	0.51	0.25 a-e	0.27	2.2 a-g	0.21 abc	0.69	101 b-e	130	2401	5.03 b-g
Early Sumac	Scott Seed Co.	SS	ML	N	N	0.61	0.35	0.49	0.20 hi	0.32	2.1 c-i	0.17 c-g	0.40	108 ab	133	2458	4.44 efg
Hegari	Scott Seed Co.	SS	ML	N	N	0.65	0.39	0.53	0.24 a-h	0.35	2.1 d-i	0.15 fg	0.44	114 a	139	2596.7	5.13 b-g
NonBMR Average						**0.63**	**0.36**	**0.45**	**0.23**	**0.30**	**2.1**	**0.17**	**0.54**	**105**	**134**	**2496**	**5.84**
GW9917G bmr	Advanta U.S.	SS	ML	Y	Y	0.62	0.35	0.50	0.23 b-h	0.34	2.2 a-g	0.16 d-g	0.53	104 b-e	133	2497	4.76 d-g
GW7191G bmr	Advanta U.S.	SS	M	Y	Y	0.61	0.35	0.42	0.24 b-h	0.32	1.9 ghi	0.18 b-g	0.68	97 e	130	2424	4.70 efg
AS453	AR-B Seeds, Inc.	SS	M	Y	N	0.62	0.36	0.44	0.27 ab	0.30	2.5 ab	0.20 a-e	0.56	103 b-e	135	2478.3	5.43 b-f
Sweet King BMR	AR-B Seeds, Inc.	SS	ME	Y	N	0.63	0.36	0.46	0.23 b-h	0.32	1.8 i	0.19 a-f	0.51	107 abc	138	2563	5.41 b-f
Blackhawk 12	Blue River Hybrids	SS	M	Y	N	0.64	0.37	0.37	0.22 d-i	0.30	2.0 d-i	0.18 b-g	0.62	102 b-e	136	2544.3	5.40 b-f
Exp 2017	Coffey Forage Seeds	SS	ML	Y	N	0.65	0.39	0.43	0.25 a-f	0.28	2.2 a-g	0.18 a-g	0.57	107 bcd	143	2587	4.57 efg
Exp 3017	Coffey Forage Seeds	SS	M	Y	N	0.65	0.38	0.35	0.21 ghi	0.30	2.1 d-i	0.15 fg	0.57	108 ab	141	2631	6.44 abc
DSS Bonus BMRD	Drussel Seed & Supply	SS	L	Y	N	0.64	0.37	0.47	0.25 a-e	0.28	2.5 a	0.19 a-f	0.57	105 bcd	140	2549.3	4.77 d-g
G.W. 400BMR	Gayland Ward Seed Co.	FS	M	Y	Y	0.63	0.36	0.41	0.23 c-h	0.33	2.0 e-i	0.16 c-g	0.62	104 b-e	132	2455.3	5.77 b-e
G.W. 300BMR	Gayland Ward Seed Co.	SS	ML	Y	Y	0.61	0.35	0.44	0.24 a-h	0.28	2.2 a-g	0.18 b-g	0.54	100 de	128	2372.3	4.80 d-g
106400X	MMR Genetics, Ltd	SS	L	Y	N	0.60	0.34	0.64	0.28 a	0.32	2.4 a-d	0.23 a	0.58	101 b-e	128	2339.7	4.75 efg
NutriPlus bmr	Production Plus	SS	ML	Y	N	0.59	0.33	0.58	0.22 d-i	0.29	2.3 a-f	0.19 a-f	0.64	106 bcd	131	2438.3	5.78 b-e
Red Top Plus bmr	Production Plus	FS	ML	Y	Y	0.61	0.35	0.60	0.21 e-i	0.32	2.3 a-e	0.18 a-g	0.52	108 ab	133	2443	3.86 ghi
Sweeter 'N Honey II BMR	Richardson Seeds, Ltd	SS	L	Y	N	0.58	0.32	0.54	0.24 a-h	0.30	2.3 a-e	0.23 a	0.58	100 cde	128	2374	4.10 fgh
Sweeter 'N Honey BMR	Richardson Seeds, Ltd	SS	M	Y	N	0.59	0.33	0.49	0.26 a-d	0.33	2.3 a-f	0.23 a	0.54	103 b-e	131	2417.7	4.57 efg
X38400	Richardson Seeds, Ltd	SS	M	Y	N	0.63	0.37	0.51	0.23 b-h	0.33	2.2 a-h	0.18 b-g	0.63	104 bcd	137	2532	4.34 efg
X82400	Richardson Seeds, Ltd	SS	L	Y	N	0.60	0.34	0.60	0.24 a-h	0.29	2.4 abc	0.20 a-e	0.57	102 b-e	127	2328.7	4.15 fgh
BMR Gold II	Scott Seed Co.	SS	M	Y	N	0.62	0.36	0.53	0.25 a-e	0.31	2.2 a-h	0.16 c-g	0.56	102 b-e	130	2428.3	4.00 f-i
Grazex BMR718	Sharp Bros. Seed Co.	SS	M	Y	N	0.64	0.38	0.37	0.22 d-i	0.31	2.1 c-i	0.18 b-g	0.57	105 bcd	136	2526.3	4.92 d-g
Grazex BMR301	Sharp Bros. Seed Co.	SS	M	Y	N	0.62	0.36	0.46	0.23 b-h	0.26	2.2 a-g	0.18 b-g	0.59	100 de	137	2518	4.56 efg
Grazex BMR801	Sharp Bros. Seed Co.	SS	M	Y	Y	0.64	0.38	0.43	0.23 b-h	0.31	2.1 b-i	0.18 b-g	0.68	106 bcd	141	2593	5.25 b-g
38 Special	Walter Moss Seed Co.	SS	ML	Y	N	0.61	0.35	0.49	0.25 a-d	0.31	2.3 a-f	0.22 ab	0.63	101 cde	131	2429	4.65 efg
Century BMR	Walter Moss Seed Co.	SS	ML	Y	N	0.64	0.38	0.37	0.23 c-i	0.36	2.3 a-f	0.18 b-g	0.66	105 bcd	141	2586	4.88 d-g
BMR Average						**0.62**	**0.36**	**0.47**	**0.24**	**0.31**	**2.2**	**0.19**	**0.59**	**104**	**134**	**2481**	**4.86**
GW9491G	Advanta U.S.	SS	PS	N	Y	0.62	0.35	0.54	0.25 a-e	0.32	2.2 a-g	0.20 a-f	0.47	102 b-e	133	2442.7	4.48 efg
Premium Stock LS	Scott Seed Co.	SS	PS	N	N	0.60	0.34	0.47	0.25 a-e	0.31	2.1 b-i	0.18 b-g	0.56	102 b-e	127	2368.3	5.00 c-g
NonBMR-PS Average						**0.61**	**0.35**	**0.51**	**0.25**	**0.32**	**2.2**	**0.19**	**0.52**	**102**	**130**	**2406**	**4.74**
Greentreat Plus	Forage First	SS	PS	Y	Y	0.61	0.35	0.43	0.24 a-g	0.29	2.3 a-f	0.20 a-d	0.64	105 bcd	131	2428.3	3.90 ghi
Mean						0.62	0.36	0.47	0.24	0.31	2.2	0.18	0.57	104	134	2476	5.04
CV						4.1	6.52	21.7	9.8	13.0	9.9	15.9	24.8	4.3	4.8	4.4	18.3
Treatment Prob(F)						0.0611	0.088	0.061	0.009	0.508	0.026	0.0169	0.825	0.0401	0.0935	0.053	0.0001

*'Means followed by same letter or no letter do not significantly differ using LSD (P=.05).

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