

**Final Report**  
**Field Demonstrations of Sorghum Forages for the California Dairy Industry**  
**USCP Funded Project R0020-11**

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**Introduction**

The San Joaquin Valley of California is home to a multi-million dollar dairy industry. The industry, like many in agriculture, is dealing with several issues that impact their bottom line. The demand for water in California is encouraging a renewed look at crops and cropping systems that conserve water and maintain both yield and quality. Yield and quality trials were initiated at the Texas AgriLife Research & Extension Center in Bushland, Texas in 1999 to evaluate commercial forages in the Panhandle of Texas. This long-term study has generated valuable information on forage sorghums and has highlighted both the potential water savings and nutritional attributes of sorghum forages. Research has shown that sorghum forages can routinely utilize ½ to ⅓ the water of corn forage and still maintain excellent nutritional quality for animals. Forage sorghum has shown promise in the San Joaquin, but little information is available to farmers that showcase the potential of sorghum forages to meet the demands of this industry. Consequently, sorghum forage trials were planted at the Kearney Agricultural Research and Extension Center and the Westside Research and Extension Center to evaluate eighty commercially available sorghum forages.

**Methods and Materials**

Funding was secured from the United Sorghum Checkoff Program to conduct these trials. Fourteen seed companies provided a total of 80 hybrids, which included traditional forage sorghums, Photoperiod (PS) forage sorghums, and brown mid-rib (BMR) derivatives of both traditional and PS sorghums. Hybrids were planted in a randomized block design in four row plots planted on 30-inch raised beds and were analyzed as a split-plot design. Irrigation was applied using furrow irrigation, a common irrigation practice here in the valley. Fertility applications followed similar recommendation for forage sorghums for the region. Because of above normal winter/spring rains, the sorghum trials at Kearney were rarely under any water stress and the plots were watered every two weeks for a total of 12.01 inches of applied irrigation. Rainfall totals from January through June 2011 prior to planting at KARE were 8.91 inches, while rainfall totaled less than 2.5 inches during the growing season with only one significant rain event of approximately 1.5 inches occurring on June 5-6.

Rainfall totals from January through early July prior to planting at Westside were 6.99 inches. Rainfall during the growing season consisted of only two significant storms that brought a total of 1.18 inches of rain to the West Side REC site. At the West Side REC site, pre-plant irrigation

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with sprinklers totaled 1.6 inches, with an additional 3.6 inches of water applied by sprinkler post-planting for early irrigation and stand establishment. Furrow irrigations (three) in August and September totaled an additional 13.9 inches, for a total irrigation application of 19.0 inches for the full growing season plus pre-plant sprinkling.

Each hybrid was harvested for forage yield when grain reached soft dough stage or in the case of the PS sorghum, with the last harvest of late forage sorghum producing some grain.

Other cultural practices and study information are listed below:

Trail Location: Kearney Agricultural Research & Extension Center, Parlier  
Cooperator: UC-ANR  
Previous Crop: Winter forage (Oats)  
Soil Type: Hanford sandy loam  
Plot Size: Four, 30 inch rows by 20 ft  
Replications: 3  
Study Design: Split-Plot  
Planting Date: June 16, 2011  
Planting Rate: 100,000 seed acre<sup>-1</sup>  
Seed Method: John Deere Max-emerge Planter  
Fertilizer: NPK 15x15x15 at 500 lbs acre<sup>-1</sup> applied on 6-14-11  
Herbicide: None  
Irrigation: See narrative above  
Silage Harvest Date: Plots were checked weekly and harvested when grain was in the soft dough stage. Harvest dates ranged from September 13 through September 28<sup>th</sup>, 2011

Trial Location: Westside Research and Extension Center, Five Points  
Cooperator: UC-ANR Extension  
Previous Crop: Cotton (2009), silage wheat (2010)  
Soil Type: Panoche clay loam  
Plot Size: Four, 30 inch rows by 20 ft  
Replications: 3  
Study Design: Split-Plot  
Planting Date: July 11, 2011  
Planting Rate: 100,000 seed acre<sup>-1</sup>  
Seed Method: John Deere Max-emerge Planter  
Fertilizer: NPK 15-15-15 at 300 lbs/acre applied July 7, 2011; 0-46-0 at 125 lbs/ac applied 7/26/2011  
Herbicide: None  
Irrigation: Sprinklers for pre-irrigation and stand establishment, gated pipe furrow irrigation subsequent irrigations  
Silage Harvest Date: Plots were checked weekly and harvested when grain was in the soft dough stage. Harvest dates were October 20–21 and November 2–3

**Data Collected:**

1. Plant stands
2. Plant height (ft) at silage harvest
3. Lodging at silage harvest. Percent of fallen or significantly leaning plants per plot.
4. Moisture Content at Harvest.
5. Forage (silage) yield. Collected at or near the soft dough stage from 10 feet of row and plants subsampled for weight measurements. Yield will be reported at 65% moisture in tons/acre.
6. Nutrient analysis: Whole plant sub-samples were collected and ground using a Troy-Bilt chipper shredder, Model 410 weighed and then placed in forced air Gruenberg oven (Model T35HV216, Williamsport, PA) at 60° C until dried. These sub-samples were sent to Dairyland Laboratory, Inc, Arcadia, WI for analysis.
7. Key Nutrient Analysis Definitions
  - a. Crude Protein: 6.25 times % total nitrogen
  - b. TDN: Estimate of Total Digestible Nutrients
  - c. NDF: Neutral Detergent Fiber; cell wall fraction of the forage
  - d. ADF: % Acid Detergent Fiber; constituent of the cell wall includes cellulose and lignin; inversely related to energy availability
  - e. NEL: Estimate of Net Energy for lactation
  - f. NEm: Estimate of Net Energy for maintenance
  - g. NEg: Estimate of Net Energy for gain
  - h. IVTD: % In Vitro True Digestibility; positively related to energy availability
  - i. 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.
  - j. 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 score the better the quality.
  - k. Milk lbs/ton: A projection of potential milk yield per ton for forage dry matter.

Data was analyzed using the SAS statistical package.

## Results

A summary of yield, agronomic traits and nutritional analyses are reported by types of forage sorghums grown in the two locations, Kearney and Westside in Table 1. See Tables 2 and 3 for a comparison of the different hybrids agronomic, yield, and nutritional characteristics.

Table 1. Summary of key forage characteristics by type of forage grown at two locations, Kearney and Westside.

Sorghum Type <sup>1</sup>	% Lodging @ Harvest	Tons/ac @65% Moist.	% Crude Protein	% ADF	% NDF	% Lignin	% Starch	% NDFD	% IVTD	Milk lbs/ton DM	Relative Forage Quality (RFQ)
NonBMR (24)	43.19	27.45	8.23	40.04	57.06	5.56	10.23	37.12	63.95	1785.2	75.37
BMR (44)	42.42	23.37	9.08	39.29	56.52	4.53	8.09	44.18	68.31	2026.9	87.91
PS NonBMR (6)	24.44	31.42	6.88	45.74	64.95	6.67	1.99	32.24	55.93	1370.1	48.37
PS BMR (6)	42.36	25.68	7.66	43.76	64.78	4.73	2.01	43.74	63.48	1915.5	68.78
<b>Trial Avg.</b>	43.30	25.37	8.56	40.33	57.93	5.01	7.82	41.14	65.71	1,896.5	79.73

<sup>1</sup>Number in parenthesis is the number of hybrids in each forage type. BMR = brown midrib, PS = Photoperiod sensitive.

Forage yields for the two locations ranged from a high of 50.1 to 13.4 tons acre<sup>-1</sup> with an average of 25.4 tons acre<sup>-1</sup> (see table 2). These yields were slightly higher than yields for the same hybrids that were grown in Bushland, TX in 2011 (see <http://amarillo.tamu.edu/amarillo-center-programs/agronomy/forage-sorghum/>). Forage yields were adjusted to 65% moisture. The non-BMR Photoperiod forages were on average 4.1 tons acre<sup>-1</sup> more productive than their BMR counterparts. Planting at Kearney produced on average 7.8 tons acre<sup>-1</sup> greater yield than those planted at Westside. This was due in some part to different planting dates, where Kearney was planted a month earlier than Westside. This was also reflected in the height difference between the two locations, where hybrids grown at Kearney averaged 18 cm higher than Westside.

Lodging was a major issue in both trials. Lodging ranged from 0.0 to 85.8% (table 2). The Photoperiod non-BMR sorghums lodged the least of the different forage types, but even some of these forages had lodging issues. Lodging may have been an issue of planting dates in the two studies. The trial at Kearney was planted on June 16<sup>th</sup>, while the Westside trial was planted on July 13<sup>th</sup>. In observations of the trials, both germinated and grew quite rapidly in what could be described as ideal growing conditions, hot dry conditions with excellent water availability. The plants grew so rapidly that there may have not been a chance to adequately lay down the necessary lignin and other structural compounds needed to ensure adequate stem strength. Little stem breakage was observed in the plots, rather the plants tended to bend over from the base of the stem. Cutting open the stems revealed healthy tissue at the base and in some of the BMR sorghums there tended to be an accumulation of the brown coloring of the pith that is associated with this trait. Westside plantings tended to lodge less than those at Kearney.

Digestibility as measured by ADF, NDF, IVTD, NDFD and overall forage quality as measured by lbs of milk per dry ton and relative forage quality was highest in the BMR sorghums (Table 1), though there were some excellent non-BMR forages as well (table 3). Relative forage quality and milk per dry ton were greater amongst hybrids grown at Kearney than those grown at Westside.

The top 25% hybrids were ranked in this study by taking those hybrids with the highest % IVTD and eliminating those hybrids with lodging scores of greater than 25% (table 4). Of these hybrids, yield ranged from a low of 17.9 tons acre<sup>-1</sup> with GreatScott BMR to a high of 29.1 tons acre<sup>-1</sup> with NK300, a non BMR forage.

For many producers, yield is the greatest factor in their selection of sorghum forages. Table 5 highlights the top yielding hybrids that produced more than 25 tons acre<sup>-1</sup> of yield. The highest yielding forage sorghum was Grazex BMR718 from Sharp Brothers Seed Company at over 50 tons acre<sup>-1</sup>. Of these high yielding sorghums, however, over 60% of them had 25% or greater lodging.

### **Discussion**

This was the first year that a wide range of forage sorghum, over 80 commercially available sorghum forages, was evaluated for both yield and quality parameters in large replicated trials in two locations in California. These test results indicate that sorghum forages do have the yield and the quality to meet the needs of dairy farms in the San Joaquin valley. It is also quite clear that additional research is needed to identify the proper planting dates, densities, fertilization, and water that will optimize sorghum forage yields and quality without lodging issues. Given the limited amount of irrigation used in these studies, low inputs and high yields, the potential does exist in sorghum forages to save both water and fertilizer, both costly inputs in the production of forages in the State. Forage selection should be a combination of factors that optimize quality, yield and standability and further research should be able to identify those forages that will benefit the farmers of California.

Table 2. 2011 comparisons of sorghum forage hybrids and locations for agronomic characteristics and yield at Westside Research and Extension and Kearney Agriculture Research and Extension Centers by seed company.

Hybrid Information <sup>1</sup>					Lodging, Height and Forage Yield <sup>2</sup>		
Hybrid	Company	Type	Maturity	BMR	% Lodging	Height (cm)	Ton ac <sup>-1</sup> 65% Moist.
AF7301	Advanta	FS	ML	Y	83.3 ab	250.6 z-ee	24.4 h-q
AF7401	Advanta-Alta Seed	FS	L	Y	0.0 y	190.0 jj	24.4 h-q
AS6402	Advanta-Alta Seed	FS	ME	Y	3.3 xy	285.8 k-x	22.1 i-s
Sweet Choice BMR	AR-B-Seeds	FS	M	Y	83.3 ab	260.5 w-dd	20.2 k-s
AS781	AR-B-Seeds	FS	ML	Y	0.0 y	191.9 jj	28.1 e-l
BH111S	B-H Genetics		E	N	28.3 n-u	326.8 a-h	24.8 g-q
BH201 SB	B-H Genetics		PS	Y	34.2 m-s	330.5 a-f	25.4 g-p
BH211 SBD	B-H Genetics		L	Y	1.7 xy	265.7 u-cc	21.4 i-s
BH304 FB	B-H Genetics	FS	ML	Y	70.0 a-f	297.5 g-u	20.4 k-s
BH312 FBD	B-H Genetics	FS	ML	Y	1.7 xy	201.1 hh-jj	23.4 i-r
BH380F	B-H Genetics	FS	ML	N	57.5 e-l	281.5 l-z	28.0 e-l
BH390F	B-H Genetics	FS	L	N	43.3 j-p	305.5 e-o	30.3 d-i
2017 BMR	Coffey Forage Seeds		M	Y	6.7 v-y	273.6 o-aa	25.2 g-q
2017XL BMR	Coffey Forage Seeds		M	Y	35.0 m-r	332.0 a-e	20.7 j-s
3017 BMR	Coffey Forage Seeds		ME	Y	51.7 f-m	309.3 e-n	19.8 l-s
6810 BMR	Coffey Forage Seeds	FS	M	Y	80.8 a-c	285.7 k-y	21.4 i-s
Centurion BMR	Coffey Forage Seeds	FS	M	Y	75.8 a-e	268.4 s-bb	20.8 j-s
HSII	Coffey Forage Seeds	FS	ME	N	75.0 a-e	345.3 a-c	35.8 b-f
HSIV	Coffey Forage Seeds	FS	ME	N	68.3 a-g	308.2 e-n	27.1 e-o
MaxiGain BMR	Coffey Forage Seeds	SS	PS	Y	65.0 a-i	273.0 q-aa	18.0 o-s
DSS73862	Drussel Seed	FS	L	Y	1.7 xy	193.7 ii-jj	25.0 g-q
HP1010 BMR	Eastern Colorado Seeds	FS	ML	Y	70.0 a-f	300.8 e-r	25.2 g-q
HP120 BMR	Eastern Colorado Seeds	FS	M	Y	3.3 xy	210.0 ff-jj	24.6 g-q
HP95 BMR	Eastern Colorado Seeds	FS	M	Y	65.8 a-h	297.2 g-u	25.5 g-p
BMR105	Forage First	FS	ML	Y	66.7 a-h	298.6 f-t	24.7 g-q
BMR108 Leafy	Forage First	FS	L	Y	0.0 y	184.4 jj	24.3 h-q
FS5	Forage First	FS	M	N	59.2 d-l	297.0 g-u	27.1 e-n
Greentreat Dynamo	Forage First		L	Y	3.3 xy	252.1 z-ee	21.5 i-s
Greentreat P	Forage First		L	Y	38.3 l-q	341.7 a-d	23.8 h-r
XF1101	Forage First	FS	ME	Y	65.8 a-h	289.6 j-x	22.4 i-s

Table 2. continued.

Hybrid Information <sup>1</sup>					Lodging, Height and Forage Yield <sup>2</sup>		
Hybrid	Company	Type	Maturity	BMR	% Lodging	Height (cm)	Ton ac <sup>-1</sup> 65% Moist.
110381X	MMR Genetics	FS	L	N	1.7 xy	203.8 gg-jj	24.3 h-q
111310X	MMR Genetics	FS	L	N	26.7 n-v	268.1 t-bb	26.5 g-o
111381X	MMR Genetics	FS	L	N	40.8 k-q	262.7 v-cc	23.3 i-r
23392X	MMR Genetics	FS	ML	Y	77.5 a-e	305.2 e-p	26.2 g-p
36392X	MMR Genetics	FS	L	Y	65.8 a-h	288.4 k-x	22.0 i-s
73366X	MMR Genetics	FS	ML	N	11.7 t-y	211.9 ff-jj	27.4 e-m
88366X	MMR Genetics	FS	ML	Y	43.3 j-p	273.2 p-aa	25.5 g-p
88392X	MMR Genetics	FS	ML	Y	40.0 k-q	273.0 q-aa	23.6 h-r
841F	Pioneer	FS	ML	N	0.0 y	240.6 bb-ff	28.0 e-m
849F	Pioneer	FS	L	N	71.7 a-f	282.7 k-z	20.3 k-s
9500	Richardson Seeds	FS	ML	N	0.0 y	215.1 ff-jj	27.7 e-m
BundleKing BMR	Richardson Seeds	FS	L	Y	72.5 a-f	314.1 c-k	21.3 i-s
DairyMaster BMR	Richardson Seeds	FS	ML	Y	78.3 a-e	258.9 x-dd	17.1 p-s
Pacesetter BMR	Richardson Seeds	FS	PS	Y	44.2 j-o	307.9 e-n	21.5 i-s
Pacesetter BMR Red	Richardson Seeds	FS	PS	Y	47.5 g-n	291.7 j-w	41.2 a-c
Silo700D	Richardson Seeds	FS	L	N	0.0 y	240.3 bb-ff	25.3 g-q
Silo700D BMR	Richardson Seeds	FS	L	Y	5.0 w-y	241.7 aa-ff	23.5 i-r
SweeterNHoney BMR	Richardson Seeds	SS	ME	Y	12.5 t-y	285.1 k-y	14.9 rs
SweeterNHoney BMR Red	Richardson Seeds	SS	ME	Y	34.2 m-s	270.4 r-bb	19.7 l-s
BMRGold	Scott Seed	FS	M	Y	70.0 a-f	301.8 e-r	23.9 h-r
BMRGoldII	Scott Seed	SS	M	Y	43.3 j-p	351.1 ab	26.7 f-o
BMRGoldX	Scott Seed	FS	M	Y	83.3 ab	300.2 e-s	16.3 q-s
GreatScott BMR	Scott Seed	FS	ML	Y	1.7 xy	224.1 ee-ii	17.9 o-s
GS9	Scott Seed		L	Y	82.5 ab	278.9 m-z	36.0 b-e
Premium StockLS	Scott Seed	SS	PS	N	6.7 v-y	327.3 a-g	33.6 b-g
Rush	Scott Seed	FS	M	N	83.3 ab	279.2 m-z	18.9 m-s
SugarDaddy	Scott Seed	FS	M	N	85.8 a	324.9 a-i	24.6 g-q

Table 2. continued.

Hybrid Information <sup>1</sup>					Lodging, Height and Forage Yield <sup>2</sup>		
Hybrid	Company	Type	Maturity	BMR	% Lodging	Height (cm)	Ton ac <sup>-1</sup> 65% Moist.
Canex BMR208	Sharp Bros Seed	FS	ME	Y	79.2 a-d	267.9 t-bb	23.7 h-r
Graze BMR301	Sharp Bros Seed		ME	Y	13.3 s-y	304.0 e-q	23.0 i-r
Grazex BMR718	Sharp Bros Seed		ME	Y	31.7 m-t	327.2 a-g	50.1 a
Grazex BMR801	Sharp Bros Seed		ML	Y	64.2 b-j	311.8 d-l	24.1 h-q
Grazex III	Sharp Bros Seed		ME	N	25.0 o-w	293.2 i-v	23.4 i-r
Silex BMR520	Sharp Bros Seed	FS	M	Y	5.0 w-y	196.1 ii-jj	22.8 i-r
1990	Sorghum Partners	FS	PS	N	41.7 k-q	253.8 y-ee	38.9 b-d
Hikane II	Sorghum Partners	FS	ME	N	79.2 a-d	313.9 c-k	28.1 e-l
NK300	Sorghum Partners	FS	ME	N	22.5 p-x	229.4 dd-hh	29.1 e-k
Sordan 79	Sorghum Partners		E	N	60.0 c-k	348.1 ab	18.1 n-s
Sordan Headless	Sorghum Partners		PS	N	15.0 r-y	303.0 e-q	30.1 d-i
SS304	Sorghum Partners	FS	M	N	67.5 a-h	263.1 v-cc	39.9 bc
SS405	Sorghum Partners	FS	ML	N	21.7 q-x	330.3 a-f	38.7 b-d
SS506	Sorghum Partners	FS	L	N	41.7 k-q	352.8 a	42.6 ab
Trudan 8	Sorghum Partners		E	N	65.8 a-h	278.9 m-z	13.4 s
Trudan Headless	Sorghum Partners		PS	N	10.0 u-y	350.2 ab	24.9 g-q
4EverGreen	Walter Moss Seed	FS	PS	N	60.0 c-k	277.9 n-z	32.7 c-h25.4
4EverGreen BMR	Walter Moss Seed	FS	PS	Y	46.7 j-n	312.2 d-l	18.1 n-s
Desperado BMR	Walter Moss Seed	FS	L	Y	11.7 t-y	235.3 cc-gg	22.3 i-s
F-18 BMR	Walter Moss Seed	FS	L	Y	65.8 a-h	291.2 j-w	19.8 l-s
MegaGreen	Walter Moss Seed	SS	PS	N	13.3 s-y	295.1 h-u	28.2 e-l
Millennium BMR	Walter Moss Seed	FS	L	Y	77.5 a-e	320.8 b-j	23.4 i-r
SU2-LM BMR	Walter Moss Seed	SS	L	Y	16.7 r-y	310.6 d-m	29.8 d-j
<b>Means</b>					<b>41.3</b>	<b>280.5</b>	<b>25.4</b>
<b>CV</b>					<b>45.5</b>	<b>10.0</b>	<b>31.1</b>
<b>Location</b>							
Kearney					44.8 a	289.5 a	29.2 a
Westside					37.8 b	271.5 b	21.4 b

<sup>1</sup>Hybrid information provided by seed companies. SS=Sorghum-Sudangrass, FS=Forage sorghum, E=Early, ME=Medium Early, M=Medium, ML=Medium Late, L=Late, PS=Photoperiod Sensitive.

<sup>2</sup>Means followed by the same letter do not significantly differ using LSD (P=0.01)



Table 3. 2011 comparisons of sorghum forage hybrids and locations for nutrient composition and calculations at Westside Research and Extension and Kearney Agriculture Research and Extension Centers by seed company.

Hybrid Information <sup>1</sup>					Nutrient Composition & Calculations <sup>2</sup>					
Hybrid	Company	Type	Maturity	BMR	% Crude Protein	% ADF	% NDF	% Lignin	% Starch	% Fat
AF7301	Advanta	FS	ML	Y	9.1 a-s	38.9 n-aa	55.8 l-aa	3.8 cc-hh	3.1 y-dd	1.8 a-l
AF7401	Advanta-Alta Seed	FS	L	Y	9.0 a-t	34.7 bb-dd	49.5 bb-dd	4.2 x-ff	13.9 d-h	1.9 a-g
AS6402	Advanta-Alta Seed	FS	ME	Y	9.5 a-n	38.3 q-bb	55.3 n-aa	4.4 u-dd	6.3 n-bb	1.9 a-e
Sweet Choice BMR	AR-B-Seeds	FS	M	Y	10.2 a-e	40.5 h-u	58.0 h-u	4.6 r-cc	3.8 w-dd	1.7 a-o
AS781	AR-B-Seeds	FS	ML	Y	8.5 c-v	32.9 ccdd	46.7 dd	3.8 dd-hh	19.5 ab	1.9 a-h
BH111S	B-H Genetics		E	N	7.8 n-aa	39.2 n-z	54.0 s-bb	6.6 a-c	15.6 b-f	1.5 e-v
BH201 SB	B-H Genetics		PS	Y	7.9 m-aa	43.6 a-j	62.5 b-i	5.6 e-n	1.9 ccdd	1.6 c-v
BH211 SBD	B-H Genetics		L	Y	10.5 ab	38.1 r-bb	54.2 q-bb	4.5 t-dd	8.7 l-r	1.9 a-f
BH304 FB	B-H Genetics	FS	ML	Y	10.6 a	39.5 m-y	56.1 l-z	4.1 z-gg	3.2 y-dd	1.5 g-v
BH312 FBD	B-H Genetics	FS	ML	Y	10.1 a-f	35.4 aa-cc	50.4 aa-dd	4.2 z-ff	15.4 b-f	1.5 e-v
BH380F	B-H Genetics	FS	ML	N	9.3 a-p	37.9 s-bb	54.7 o-bb	5.2 l-u	8.3 m-u	1.4 i-v
BH390F	B-H Genetics	FS	L	N	8.0 j-aa	39.3 n-z	56.9 j-x	5.5 g-p	6.8 m-z	1.7 a-p
2017 BMR	Coffey Forage Seeds		M	Y	10.2 a-c	39.0 n-aa	56.6 j-y	3.9 aa-hh	5.2 p-dd	1.8 a-j
2017XL BMR	Coffey Forage Seeds		M	Y	9.4 a-o	42.0 d-p	59.4 g-s	5.7 e-n	7.0 m-z	1.7 a-p
3017 BMR	Coffey Forage Seeds		ME	Y	8.4 e-v	41.3 f-s	58.3 h-u	5.5 h-p	10.0 h-n	1.4 i-v
6810 BMR	Coffey Forage Seeds	FS	M	Y	10.0 a-g	38.6 p-aa	55.2 n-aa	3.3 hh	3.7 w-dd	1.9 a-g
Centurion BMR	Coffey Forage Seeds	FS	M	Y	10.5 a	40.3 i-v	56.9 j-x	4.3 w-ee	8.4 m-t	1.5 f-v
HSII	Coffey Forage Seeds	FS	ME	N	8.0 i-aa	36.3 w-cc	52.8 u-bb	4.6 r-aa	6.8 m-aa	1.6 b-u
HSIV	Coffey Forage Seeds	FS	ME	N	7.1 u-aa	39.6 l-x	56.9 j-w	4.7 q-z	3.4 x-dd	1.4 j-v
MaxiGain BMR	Coffey Forage Seeds	SS	PS	Y	8.7 b-u	42.6 c-n	61.1 c-l	4.8 p-z	2.1 bb-dd	1.5 h-v
DSS73862	Drussel Seed	FS	L	Y	10.1 a-e	39.1 n-aa	55.2 n-aa	4.5 t-dd	8.9 l-q	1.7 a-n
HP1010 BMR	Eastern Colorado Seeds	FS	ML	Y	9.0 a-t	37.8 s-bb	54.4 q-bb	3.4 gghh	4.7 q-dd	1.3 o-w
HP120 BMR	Eastern Colorado Seeds	FS	M	Y	9.6 a-m	37.1 u-bb	52.5 v-cc	4.5 t-dd	12.8 f-l	1.6 a-t
HP95 BMR	Eastern Colorado Seeds	FS	M	Y	10.1 a-f	39.6 k-x	57.3 i-w	4.6 s-cc	6.9 m-z	2.0 ab
BMR105	Forage First	FS	ML	Y	9.7 a-j	40.8 f-t	57.2 i-w	4.8 p-z	4.5 r-dd	1.9 a-g
BMR108 Leafy	Forage First	FS	L	Y	9.8 a-h	37.4 t-bb	53.6 t-bb	4.3 w-dd	11.0 g-m	1.8 a-k
FS5	Forage First	FS	M	N	8.1 h-z	44.4 a-f	62.7 b-h	6.3 a-e	7.3 m-y	1.2 u-w
Greentreat Dynamo	Forage First		L	Y	9.2 a-r	40.6 g-u	58.0 h-u	4.5 t-dd	4.7 r-dd	2.0 a-c
Greentreat P	Forage First		L	Y	9.7 a-k	43.3 a-l	60.2 e-n	5.4 h-q	3.3 y-dd	1.5 f-v
XF1101	Forage First	FS	ME	Y	10.2 a-d	42.6 c-n	59.9 f-o	5.1 l-u	6.3 n-bb	1.7 a-r

Table 3. continued.

Hybrid Information <sup>1</sup>					Nutrient Composition & Calculations <sup>2</sup>					
Hybrid	Company	Type	Maturity	BMR	% Crude Protein	% ADF	% NDF	% Lignin	% Starch	% Fat
110381X	MMR Genetics	FS	L	N	9.3 a-q	42.3 c-o	61.9 b-j	5.2 k-t	2.9 z-dd	1.2 t-w
111310X	MMR Genetics	FS	L	N	8.1 h-y	36.6 v-bb	52.2 w-cc	5.0 n-v	15.9 b-f	1.3 q-w
111381X	MMR Genetics	FS	L	N	8.3 f-w	43.1 b-m	62.0 b-j	5.9 d-l	5.2 p-dd	1.3 n-w
23392X	MMR Genetics	FS	ML	Y	8.7 b-u	40.7 f-u	59.6 g-q	4.7 q-z	7.9 m-w	1.7 a-r
36392X	MMR Genetics	FS	L	Y	8.4 c-v	43.3 a-k	64.3 a-g	4.2 z-ff	2.3 bb-dd	1.4 j-v
73366X	MMR Genetics	FS	ML	N	8.6 c-v	36.2 x-cc	51.0 z-dd	4.7 q-aa	18.5 a-c	1.6 a-s
88366X	MMR Genetics	FS	ML	Y	8.3 f-w	38.1 q-bb	55.8 l-aa	4.6 r-cc	13.2 f-k	1.9 a-f
88392X	MMR Genetics	FS	ML	Y	8.1 h-y	38.0 r-bb	55.7 l-aa	4.4 u-dd	13.5 e-j	1.7 a-o
841F	Pioneer Hibred	FS	ML	N	8.2 g-x	37.8 s-bb	54.1 r-bb	4.9 n-x	14.6 c-g	1.5 d-v
849F	Pioneer Hibred	FS	L	N	8.2 h-y	42.2 c-p	59.9 f-o	5.8 d-m	7.7 m-x	1.3 o-w
9500	Richardson Seeds	FS	ML	N	8.5 c-v	36.3 w-cc	51.0 z-dd	4.9 n-x	18.1 a-d	1.7 a-p
BundleKing BMR	Richardson Seeds	FS	L	Y	7.1 u-aa	37.3 t-bb	54.4 p-bb	3.9 bb-hh	4.0 u-dd	1.8 a-m
DairyMaster BMR	Richardson Seeds	FS	ML	Y	8.6 c-v	41.4 f-s	60.2 e-n	4.5 t-dd	7.2 m-y	1.6 c-v
Pacesetter BMR	Richardson Seeds	FS	PS	Y	7.3 t-aa	42.4 c-o	64.5 a-g	4.1 z-ff	1.7 cedd	1.7 a-o
Pacesetter BMR Red	Richardson Seeds	FS	PS	Y	6.3 aa	43.5 a-j	65.4 a-e	4.1 z-gg	1.6 dd	1.5 d-v
Silo700D	Richardson Seeds	FS	L	N	7.9 l-aa	35.7 z-cc	51.4 x-dd	5.1 n-v	17.6 a-e	1.6 c-v
Silo700D BMR	Richardson Seeds	FS	L	Y	8.1 h-z	35.7 z-cc	53.0 u-bb	4.1 z-gg	17.0 b-f	1.6 c-v
SweeterNHoney BMR	Richardson Seeds	SS	ME	Y	8.5 c-v	38.0 r-bb	56.2 l-z	3.8 cc-hh	7.4 m-y	1.7 a-o
SweeterNHoney BMR Red	Richardson Seeds	SS	ME	Y	7.9 n-aa	39.9 j-w	58.1 h-u	4.3 v-dd	9.0 k-p	1.9 a-i
BMRGold	Scott Seed	FS	M	Y	10.4 ab	35.9 z-cc	51.3 y-dd	3.9 bb-hh	9 l-q	1.7 a-n
BMRGoldII	Scott Seed	SS	M	Y	9.2 a-r	42.5 c-o	59.8 g-p	5.9 c-k	9.3 j-p	1.4 l-v
BMRGoldX	Scott Seed	FS	M	Y	9.0 a-t	42.0 d-p	59.4 g-s	5.0 n-w	3.9 v-dd	1.6 c-v
GreatScott BMR	Scott Seed	FS	ML	Y	9.3 a-p	38.0 r-bb	55.4 m-aa	4.1 z-gg	9.5 i-o	2.0 a-d
GS9	Scott Seed		L	Y	7.4 s-aa	39.4 n-z	56.3 k-z	5.3 i-r	7.0 m-z	1.4 j-v
Premium StockLS	Scott Seed	SS	PS	N	6.4 zaa	44.0 a-h	62.9 b-h	6.7 a-c	2.5 aa-dd	1.4 i-v
Rush	Scott Seed	FS	M	N	9.7 a-i	39.4 m-z	55.1 n-aa	5.1 n-v	13.6 e-i	1.7 a-r
SugarDaddy	Scott Seed	FS	M	N	7.7 o-aa	42.2 c-p	60.4 d-n	5.6 f-o	6.2 n-bb	1.7 a-s

Table 3. continued.

Hybrid Information <sup>1</sup>					Nutrient Composition & Calculations <sup>2</sup>					
Hybrid	Company	Type	Maturity	BMR	% Crude Protein	% ADF	% NDF	% Lignin	% Starch	% Fat
Canex BMR208	Sharp Bros Seed	FS	ME	Y	8.7 b-u	38.9 o-aa	57.1 i-w	4.5 u-dd	9.4 i-p	1.7 a-p
Graze BMR301	Sharp Bros Seed		ME	Y	8.3 g-w	41.7 e-r	59.7 g-q	6.0 c-j	7.2 m-y	1.6 b-u
Grazex BMR718	Sharp Bros Seed		ME	Y	8.6 c-v	43.9 a-i	62.8 b-h	6.3 b-e	4.3 s-dd	1.4 m-v
Grazex BMR801	Sharp Bros Seed		ML	Y	9.4 a-o	41.7 e-r	60.5 d-n	5.3 j-s	4.3 t-dd	1.3 m-w
Grazex III	Sharp Bros Seed		ME	N	8.4 d-v	44.2 a-g	62.4 b-i	6.4 a-d	5.3 o-dd	1.3 p-w
Silex BMR520	Sharp Bros Seed	FS	M	Y	9.7 a-l	39.5 m-y	56.4 k-z	4.6 r-bb	8.1 m-v	1.7 a-p
1990	Sorghum Partners	FS	PS	N	6.7 w-aa	45.6 a-d	65.9 a-d	6.4 a-d	2.1 bb-dd	1.3 n-w
Hikane II	Sorghum Partners	FS	ME	N	8.8 b-u	41.7 e-q	59.5 g-r	5.6 f-o	8.6 m-s	1.3 p-w
NK300	Sorghum Partners	FS	ME	N	8.3 g-x	35.7 z-cc	50.6 aa-dd	5.1 m-u	21.4 a	1.4 i-v
Sordan79	Sorghum Partners		E	N	7.9 k-aa	43.3 a-l	60.7 c-m	6.6 a-d	7.7 m-x	1.3 o-w
Sordan Headless	Sorghum Partners		PS	N	7.6 p-aa	45.6 a-d	64.6 a-g	6.9 ab	2.5 aa-dd	1.2 s-w
SS304	Sorghum Partners	FS	M	N	8.0 i-aa	40.8 f-t	58.6 h-t	5.3 j-s	5.9 b-cc	1.4 k-v
SS405	Sorghum Partners	FS	ML	N	7.5 q-aa	43.4 a-j	61.6 b-k	6.5 a-d	6.7 n-aa	1.3 n-w
SS506	Sorghum Partners	FS	L	N	7.5 r-aa	45.1 a-e	64.6 a-g	6.6 a-c	5.1 p-dd	1.3 r-w
Trudan 8	Sorghum Partners		E	N	8.3 g-w	38.2 q-bb	54.2 q-bb	6.2 c-h	16.3 b-f	1.6 a-s
Trudan Headless	Sorghum Partners		PS	N	6.9 v-aa	45.8 a-c	64.4 a-g	6.9 ab	1.8 ccdd	1.2 u-w
4EverGreen	Walter Moss Seed	FS	PS	N	6.5 x-aa	46.8 a	66.6 ab	6.0 c-i	1.3 dd	0.9 w
4EverGreen BMR	Walter Moss Seed	FS	PS	Y	9.4 a-o	43.8 a-i	66.1 a-c	3.5 ff-hh	2.2 bb-dd	1.3 m-w
Desperado BMR	Walter Moss Seed	FS	L	Y	6.9 v-aa	31.6 dd	47.1 ccdd	3.5 ee-hh	18.9 ab	2.0 a
F-18BMR	Walter Moss Seed	FS	L	Y	7.4 s-aa	44.1 a-h	65.7 a-e	4.8 o-y	1.9 ccdd	1.7 a-q
MegaGreen	Walter Moss Seed	SS	PS	N	7.3 t-aa	46.7 ab	65.3 a-f	7.0 a	1.7 ccdd	1.2 vw
Millennium BMR	Walter Moss Seed	FS	L	Y	8.5 c-v	39.7 k-x	57.6 h-v	4.5 t-dd	10.1 h-n	1.6 a-u
SU2-LM BMR	Walter Moss Seed	SS	L	Y	6.4 y-aa	46.8 a	69.0 a	6.3 b-g	2.5 aa-dd	1.3 o-w
<b>Mean</b>					<b>8.6</b>	<b>40.3</b>	<b>57.9</b>	<b>5.0</b>	<b>7.8</b>	<b>1.6</b>
<b>CV</b>					<b>18.0</b>	<b>8.0</b>	<b>8.2</b>	<b>13.1</b>	<b>47.8</b>	<b>23.9</b>
<b>Location</b>										
Kearney					8.0 b	37.8 b	55.1 b	4.9 b	10.3 a	1.9 a
Westside					9.1 a	42.9 a	60.8 a	5.1 a	5.4 b	1.3 b

Table 3. continued.

Hybrid Information <sup>1</sup>					Nutrient Composition & Calculations <sup>2</sup>					
Hybrid	Company	Type	Maturity	BMR	% TDN	48 hr NDFD	48 hr IVTD	% Ca	% P	% Mg
AF7301	Advanta	FS	ML	Y	55.4 f-w	46.4 b-j	70.0 b-i	0.28 b-q	0.22 c-q	0.17 n-t
AF7401	Advanta-Alta Seed	FS	L	Y	59.3 b-d	45.0 e-l	72.9 a-d	0.27 c-s	0.25 a-j	0.18 k-t
AS6402	Advanta-Alta Seed	FS	ME	Y	57.6 b-i	45.4 e-k	69.8 c-l	0.30 a-l	0.22 g-s	0.18 k-t
Sweet Choice BMR	AR-B-Seeds	FS	M	Y	55.0 f-x	43.0 i-s	66.9 g-v	0.31 a-h	0.22 c-q	0.18 i-t
AS781	AR-B-Seeds	FS	ML	Y	60.7 ab	44.9 e-l	74.2 ab	0.25 d-u	0.24 a-k	0.19 g-s
BH111S	B-H Genetics		E	N	55.4 f-w	34.6 bb-jj	64.5 p-aa	0.29 a-o	0.21 i-s	0.21 b-o
BH201 SB	B-H Genetics		PS	Y	53.0 r-dd	40.1 p-x	62.5 w-ee	0.31 a-i	0.22 g-s	0.19 i-t
BH211 SBD	B-H Genetics		L	Y	57.6 b-j	43.9 f-o	69.6 c-l	0.34 a-c	0.24 b-m	0.19 f-s
BH304 FB	B-H Genetics	FS	ML	Y	53.9 m-cc	51.0 a	72.4 a-e	0.31 a-h	0.24 b-m	0.19 g-s
BH312 FBD	B-H Genetics	FS	ML	Y	57.0 d-n	46.8 b-i	73.2 a-c	0.31 a-i	0.27 ab	0.20 d-r
BH380F	B-H Genetics	FS	ML	N	56.6 d-q	37.9 v-cc	66.0 h0y	0.30 a-l	0.20 l-u	0.23 a-g
BH390F	B-H Genetics	FS	L	N	56.8 d-o	38.4 v-z	64.9 n-aa	0.29 a-p	0.19 o-u	0.20 e-r
2017 BMR	Coffey Forage Seeds		M	Y	56.2 d-r	44.2 e-m	68.4 e-q	0.30 a-k	0.22 g-s	0.19 i-t
2017XL BMR	Coffey Forage Seeds		M	Y	54.2 i-bb	39.3 s-y	63.9 t-cc	0.33 a-d	0.22 e-r	0.20 d-q
3017 BMR	Coffey Forage Seeds		ME	Y	54.8 f-z	38.3 v-bb	64.0 r-bb	0.29 a-p	0.22 e-r	0.18 k-t
6810 BMR	Coffey Forage Seeds	FS	M	Y	56.7 d-q	49.8 ab	72.3 a-f	0.27 c-s	0.25 a-i	0.15 st
Centurion BMR	Coffey Forage Seeds	FS	M	Y	53.2 q-cc	45.8 c-k	69.3 c-m	0.31 a-i	0.28 a	0.18 m-t
HSII	Coffey Forage Seeds	FS	ME	N	58.2 b-f	40.9 m-v	68.7 d-q	0.22 k-x	0.20 l-u	0.17 o-t
HSIV	Coffey Forage Seeds	FS	ME	N	55.1 f-w	41.2 l-u	66.5 g-x	0.16 w-x	0.21 j-u	0.14 t
MaxiGain BMR	Coffey Forage Seeds	SS	PS	Y	53.4 o-cc	42.6 j-t	64.8 o-aa	0.32 a-f	0.23 c-p	0.19 f-s
DSS73862	Drussel Seed	FS	L	Y	54.6 h-z	46.3 b-j	70.2 b-h	0.36 ab	0.26 a-c	0.22 a-l
HP1010 BMR	Eastern Colorado Seeds	FS	ML	Y	54.4 h-aa	49.2 a-d	72.5 a-e	0.35 ab	0.22 d-r	0.20 d-q
HP120 BMR	Eastern Colorado Seeds	FS	M	Y	56.8 d-o	43.4 g-r	70.3 b-h	0.30 a-n	0.26 a-d	0.18 j-t
HP95 BMR	Eastern Colorado Seeds	FS	M	Y	57.0 d-n	43.2 h-r	67.4 g-u	0.26 c-s	0.24 a-j	0.18 m-t
BMR105	Forage First	FS	ML	Y	54.6 h-z	45.1 e-k	68.4 e-q	0.25 d-u	0.26 a-f	0.16 q-t
BMR108 Leafy	Forage First	FS	L	Y	56.5 d-q	45.8 c-k	70.9 b-g	0.30 a-m	0.26 a-d	0.20 d-r
FS5	Forage First	FS	M	N	52.0 w-dd	34.5 cc-jj	58.9 ee-ii	0.29 a-o	0.22 f-s	0.23 a-g
Greentreat Dynamo	Forage First		L	Y	55.8 e-t	44.1 e-m	67.6 g-t	0.30 a-k	0.24 b-m	0.18 j-t
Greentreat P	Forage First		L	Y	51.1 aa-dd	40.2 o-x	64.0 r-bb	0.34 a-c	0.26 a-f	0.21 b-p
XF1101	Forage First	FS	ME	Y	52.8 r-dd	43.8 f-p	66.2 h-y	0.32 a-g	0.26 a-e	0.20 d-q

Table 3. continued.

Hybrid Information <sup>1</sup>					Nutrient Composition & Calculations <sup>2</sup>					
Hybrid	Company	Type	Maturity	BMR	% TDN	48 hr NDFD	48 hr IVTD	% Ca	% P	% Mg
110381X	MMR Genetics	FS	L	N	52.1 v-dd	37.6 v-dd	61.4 z-ff	0.37 a	0.23 c-q	0.25 a
111310X	MMR Genetics	FS	L	N	56.1 d-s	40.2 n-x	68.3 e-r	0.28 b-r	0.24 b-k	0.25 ab
111381X	MMR Genetics	FS	L	N	52.6 t-dd	37.4 w-dd	61.2 aa-gg	0.31 a-j	0.23 c-q	0.24 a-e
23392X	MMR Genetics	FS	ML	Y	55.7 e-u	42.7 j-t	65.8 i-z	0.21 p-x	0.22 g-s	0.20 d-q
36392X	MMR Genetics	FS	L	Y	53.3 p-cc	46.4 b-j	65.6 j-z	0.24 f-v	0.18 r-u	0.22 a-m
73366X	MMR Genetics	FS	ML	N	58.2 b-g	40.0 q-x	69.2 c-n	0.22 j-x	0.26 a-g	0.18 i-t
88366X	MMR Genetics	FS	ML	Y	57.5 b-k	45.6 d-k	69.4 c-m	0.21 o-x	0.23 b-o	0.21 b-o
88392X	MMR Genetics	FS	ML	Y	56.8 d-o	46.3 b-j	69.7 c-l	0.19 s-x	0.24 b-k	0.21 b-o
841F	Pioneer Hibred	FS	ML	N	56.7 d-p	37.8 v-cc	66.2 h-y	0.22 k-x	0.25 a-h	0.19 h-s
849F	Pioneer Hibred	FS	L	N	53.4 o-cc	36.7 x-gg	61.9 y-ee	0.24 g-w	0.23 c-p	0.21 b-o
9500	Richardson Seeds	FS	ML	N	56.9 d-n	39.4 s-y	68.9 c0o	0.27 c-s	0.25 a-h	0.20 c-q
BundleKing BMR	Richardson Seeds	FS	L	Y	60.5 a-c	44.2 e-m	69.9 b-k	0.15 x	0.19 n-u	0.16 p-t
DairyMaster BMR	Richardson Seeds	FS	ML	Y	54.8 g-z	47.1 b-g	68.0 f-s	0.22 k-x	0.23 b-n	0.21 b-o
Pacesetter BMR	Richardson Seeds	FS	PS	Y	57.1 c-m	46.3 b-j	65.4 l-aa	0.20 q-x	0.19 n-u	0.20 d-r
Pacesetter BMR Red	Richardson Seeds	FS	PS	Y	54.8 f-y	45.7 d-k	64.4 q-aa	0.17 u-x	0.19 q-u	0.18 l-t
Silo700D	Richardson Seeds	FS	L	N	57.7 b-i	36.1 y-hh	67.0 g-v	0.29 a-p	0.23 c-q	0.23 a-g
Silo700D BMR	Richardson Seeds	FS	L	Y	59.0 b-e	43.8 f-q	70.2 b-h	0.18 t-x	0.23 b-o	0.20 d-r
SweeterNHoney BMR	Richardson Seeds	SS	ME	Y	55.6 e-v	46.6 b-i	70.0 b-j	0.24 f-v	0.22 f-s	0.20 d-q
SweeterNHoney BMR Red	Richardson Seeds	SS	ME	Y	56.9 d-n	44.6 e-m	67.6 g-s	0.22 m-x	0.22 e-r	0.19 h-s
BMRGold	Scott Seed	FS	M	Y	57.0 d-n	47.0 b-g	72.8 a-d	0.26 c-s	0.26 a-d	0.16 r-t
BMRGoldII	Scott Seed	SS	M	Y	52.8 r-dd	36.9 x-ff	62.2 x-ee	0.26 c-s	0.24 a-k	0.20 d-q
BMRGoldX	Scott Seed	FS	M	Y	52.7 s-dd	42.3 k-u	65.2 m-aa	0.22 l-x	0.24 a-j	0.16 r-t
GreatScott BMR	Scott Seed	FS	ML	Y	56.7 d-p	43.7 f-q	68.7 d-q	0.26 d-t	0.26 a-g	0.17 o-t
GS9	Scott Seed		L	Y	55.5 f-v	39.6 r-y	65.6 k-z	0.21 n-x	0.21 i-s	0.19 g-s
Premium Stock LS	Scott Seed	SS	PS	N	53.2 q-cc	31.8 ii-kk	57.0 gg-jj	0.24 g-w	0.18 s-u	0.21 a-n
Rush	Scott Seed	FS	M	N	55.8 e-t	37.5 v-dd	65.2 m-aa	0.23 i-x	0.27 ab	0.19 h-s
SugarDaddy	Scott Seed	FS	M	N	54.1 k-bb	37.1 w-ee	62.0 y-ee	0.26 c-t	0.21 j-u	0.19 f-s

Table 3. continued.

Hybrid Information <sup>1</sup>					Nutrient Composition & Calculations <sup>2</sup>					
Hybrid	Company	Type	Maturity	BMR	% TDN	48 hr NDFD	48 hr IVTD	% Ca	% P	% Mg
Canex BMR208	Sharp Bros Seed	FS	ME	Y	57.7 b-h	45.7 d-k	68.8 d-p	0.20 r-x	0.22 e-r	0.20 d-r
Graze BMR301	Sharp Bros Seed		ME	Y	54.8 f-y	37.9 v-cc	62.7 v-ee	0.28 b-r	0.20 l-u	0.23 a-g
Grazex BMR718	Sharp Bros Seed		ME	Y	52.4 t-dd	35.9 y-hh	59.6 cc-ii	0.29 a-p	0.20 k-u	0.24 a-d
Grazex BMR801	Sharp Bros Seed		ML	Y	54.3 h-bb	39.1 t-y	63.1 u-ee	0.24 f-v	0.21 i-t	0.23 a-g
Grazex III	Sharp Bros Seed		ME	N	51.6 x-dd	35.1 z-ii	59.7 bb-hh	0.33 a-e	0.21 j-u	0.24 a-e
Silex BMR520	Sharp Bros Seed	FS	M	Y	54.2 j-bb	44.5 e-m	68.7 d-q	0.33 a-e	0.27 ab	0.20 c-q
1990	Sorghum Partners	FS	PS	N	52.9 r-dd	33.9 dd-jj	56.4 hh-jj	0.24 g-w	0.17 tu	0.21 b-o
Hikane II	Sorghum Partners	FS	ME	N	53.6 n-cc	38.3 v-cc	62.9 v-ee	0.23 h-w	0.24 b-l	0.21 b-p
NK300	Sorghum Partners	FS	ME	N	57.4 b-l	38.8 u-z	69.1 c-o	0.21 n-x	0.25 a-i	0.22 a-m
Sordan79	Sorghum Partners		E	N	52.5 t-dd	33.2 ff-kk	59.4 dd-ii	0.28 b-q	0.23 c-q	0.22 a-m
Sordan Headless	Sorghum Partners		PS	N	50.9 bb-dd	30.9 jjkk	55.3 ii-jj	0.33 a-e	0.21 i-t	0.23 a-f
SS304	Sorghum Partners	FS	M	N	54.3 h-aa	38.4 v-aa	63.9 t-cc	0.28 b-q	0.19 o-u	0.19 g-s
SS405	Sorghum Partners	FS	ML	N	52.3 u-dd	33.4 ee-kk	58.9 ee-ii	0.31 a-i	0.21 i-u	0.24 a-f
SS506	Sorghum Partners	FS	L	N	52.1 w-dd	33.0 gg-kk	56.7 hh-jj	0.29 a-p	0.20 m-u	0.24 a-e
Trudan 8	Sorghum Partners		E	N	57.1 c-m	33.3 ff-kk	63.7 t-dd	0.27 c-s	0.21 h-s	0.21 a-m
Trudan Headless	Sorghum Partners		PS	N	51.3 z-dd	32.5 hh-kk	56.4 hh-jj	0.29 a-o	0.19 o-u	0.21 b-o
4EverGreen	Walter Moss Seed	FS	PS	N	49.7 dd	34.6 aa-jj	56.4 hh-jj	0.26 d-t	0.19 p-u	0.21 a-m
4EverGreen BMR	Walter Moss Seed	FS	PS	Y	54.0 l-cc	49.6 a-c	66.6 g-w	0.21 n-x	0.22 g-s	0.22 a-k
Desperado BMR	Walter Moss Seed	FS	L	Y	63.0 a	47.8 a-e	75.3 a	0.17 v-x	0.22 f-s	0.18 i-t
F-18BMR	Walter Moss Seed	FS	L	Y	54.7 g-z	44.0 e-n	63.2 t-ee	0.23 i-x	0.20 m-u	0.20 c-q
MegaGreen	Walter Moss Seed	SS	PS	N	50.6 ccdd	29.7 kk	54.0 jj	0.26 c-t	0.20 k-u	0.19 f-s
Millennium BMR	Walter Moss Seed	FS	L	Y	55.8 d-t	47.3 a-f	69.3 c-m	0.25 e-v	0.22 d-r	0.22 a-l
SU2-LM BMR	Walter Moss Seed	SS	L	Y	51.5 y-dd	38.1 v-cc	57.2 ff-jj	0.26 d-t	0.17 u	0.25 a-c
<b>Mean</b>					55.1	41.1	65.7	0.26	0.22	0.20
<b>CV</b>					5.5	8.1	5.8	27.5	15.8	19.4
<b>Location</b>										
Kearney					58.3 a	41.9 a	67.9 a	0.22 b	0.22 b	0.22 a
Westside					51.9 b	40.3 b	63.6 b	0.31 a	0.23 a	0.18 b

Table 3. continued.

Hybrid Information <sup>1</sup>					Nutrient Composition & Calculations <sup>2</sup>				
Hybrid	Company	Type	Maturity	BMR	% K	% S	Milk lbs ton <sup>-1</sup>	Rel. Forage Quality	Rel. Feed Value
AF7301	Advanta	FS	ML	Y	1.50 b-n	0.11 e-o	1923.0 j-v	87.86 e-q	97.91 g-u
AF7401	Advanta-Alta Seed	FS	L	Y	1.49 b-n	0.13 a-k	2177.8 b-i	109.45 bc	117.11 a-c
AS6402	Advanta-Alta Seed	FS	ME	Y	1.49 b-n	0.14 a-f	2099.8 c-l	93.42 c-m	100.03 d-r
Sweet Choice BMR	AR-B-Seeds	FS	M	Y	1.55 b-m	0.13 a-h	2007.9 e-r	79.40 j-u	92.53 k-bb
AS781	AR-B-Seeds	FS	ML	Y	1.38 f-o	0.12 a-m	2363.3 ab	118.63 ab	126.96 ab
BH111S	B-H Genetics		E	N	1.14 m-o	0.13 a-k	1888.2 l-x	81.05 g-u	104.86 c-m
BH201 SB	B-H Genetics		PS	Y	1.66 a-j	0.12 a-l	1657.6 w-dd	66.20 u-cc	82.53 w-hh
BH211 SBD	B-H Genetics		L	Y	1.51 b-n	0.15 a	2223.1 a-f	92.76 c-m	101.84 d-o
BH304 FB	B-H Genetics	FS	ML	Y	1.57 b-m	0.13 a-j	2068.4 d-o	95.89 c-k	97.36 h-v
BH312 FBD	B-H Genetics	FS	ML	Y	1.68 a-j	0.14 a-f	2191.1 a-g	106.69 b-d	114.02 a-d
BH380F	B-H Genetics	FS	ML	N	1.08 n-o	0.12 b-m	1832.2 o-aa	80.11 i-u	101.58 d-p
BH390F	B-H Genetics	FS	L	N	1.28 j-o	0.11 i-q	1761.6 s-dd	79.38 j-u	96.74 i-v
2017 BMR	Coffey Forage Seeds		M	Y	1.33 i-o	0.13 a-h	2053.7 d-p	83.93 f-t	96.62 i-v
2017XL BMR	Coffey Forage Seeds		M	Y	1.46 c-n	0.13 a-h	1929.3 j-v	74.08 n-x	90.61 m-dd
3017 BMR	Coffey Forage Seeds		ME	Y	1.33 h-o	0.12 a-m	1843.7 n-y	72.76 o-z	91.85 l-dd
6810 BMR	Coffey Forage Seeds	FS	M	Y	1.65 a-j	0.12 a-m	2044.0 d-p	98.94 c-f	101.16 d-q
Centurion BMR	Coffey Forage Seeds	FS	M	Y	2.02 a	0.14 a-d	2025.8 e-r	84.64 f-s	96.07 i-y
HSII	Coffey Forage Seeds	FS	ME	N	1.27 j-o	0.10 m-q	1654.4 x-dd	91.16 d-n	107.25 c-j
HSIV	Coffey Forage Seeds	FS	ME	N	1.57 b-m	0.08 q-r	1537.6 dd-hh	78.67 k-v	96.15 i-y
MaxiGain BMR	Coffey Forage Seeds	SS	PS	Y	1.59 a-l	0.12 a-m	1853.5 m-y	70.89 q-z	85.31 s-hh
DSS73862	Drussel Seed	FS	L	Y	1.76 a-i	0.14 a-c	2127.5 b-k	91.31 d-n	99.37 e-s
HP1010 BMR	Eastern Colorado Seeds	FS	ML	Y	1.65 a-j	0.11 f-p	1740.6 t-dd	92.49 c-m	101.99 d-o
HP120 BMR	Eastern Colorado Seeds	FS	M	Y	1.75 a-i	0.13 a-h	2073.3 d-n	95.79 c-k	107.79 c-j
HP95 BMR	Eastern Colorado Seeds	FS	M	Y	1.58 b-l	0.13 a-h	2179.3 b-i	85.55 e-s	95.46 i-z
BMR105	Forage First	FS	ML	Y	1.86 a-d	0.12 a-l	1837.6 n-z	89.52 d-p	96.36 i-x
BMR108 Leafy	Forage First	FS	L	Y	1.85 a-d	0.14 a-e	2188.4 b-h	97.51 c-i	105.24 c-l
FS5	Forage First	FS	M	N	1.38 f-o	0.11 f-p	1666.7 w-dd	56.00 z-ee	81.32 z-hh
Greentreat Dynamo	Forage First		L	Y	1.68 a-j	0.14 a-e	2135.7 b-k	82.00 f-u	91.91 l-cc
Greentreat P	Forage First		L	Y	1.82 a-f	0.14 a-f	1617.6 y-ee	66.77 t-cc	86.04 r-hh
XF1101	Forage First	FS	ME	Y	1.84 a-e	0.15 ab	2016.1 e-r	77.95 l-v	88.44 n-ff

Table 3. continued.

Hybrid Information <sup>1</sup>					Nutrient Composition & Calculations <sup>2</sup>				
Hybrid	Company	Type	Maturity	BMR	% K	% S	Milk lbs ton <sup>-1</sup>	Rel. Forage Quality	Rel. Feed Value
110381X	MMR Genetics	FS	L	N	1.84 a-e	0.13 a-h	1646.9 y-dd	59.88 w-ee	84.65 t-hh
111310X	MMR Genetics	FS	L	N	1.54 b-m	0.12 c-n	1988.3 f-s	94.78 c-l	112.72 b-f
111381X	MMR Genetics	FS	L	N	1.77 a-h	0.12 a-l	1734.0 t-dd	61.65 v-dd	83.43 u-hh
23392X	MMR Genetics	FS	ML	Y	1.59 a-l	0.12 d-o	2071.6 d-o	80.54 h-u	92.16 b-cc
36392X	MMR Genetics	FS	L	Y	1.49 b-n	0.10 m-q	1889.3 l-x	72.05 p-z	80.80 aa-hh
73366X	MMR Genetics	FS	ML	N	1.48 c-n	0.13 a-h	2106.1 c-l	97.53 c-i	113.61 b-e
88366X	MMR Genetics	FS	ML	Y	1.56 b-m	0.13 a-k	2326.0 a-c	96.78 c-j	102.03 d-o
88392X	MMR Genetics	FS	ML	Y	1.64 a-j	0.12 a-m	2199.2 a-g	97.45 c-i	102.86 c-n
841F	PioneerHibred	FS	ML	N	1.53 b-m	0.13 a-k	1940.6 i-v	82.55 f-u	104.43 c-m
849F	PioneerHibred	FS	L	N	1.70 a-j	0.12 a-m	1705.5 v-dd	69.37 r-aa	91.66 l-dd
9500	Richardson Seeds	FS	ML	N	1.48 c-n	0.14 a-g	2027.9 d-q	95.53 c-l	114.05 a-d
BundleKing BMR	Richardson Seeds	FS	L	Y	1.59 a-l	0.09 p-r	1724.3 u-dd	98.45 c-g	104.70 c-m
DairyMaster BMR	Richardson Seeds	FS	ML	Y	1.90 a-c	0.12 d-o	2178.5 b-i	85.10 f-s	89.24 n-ff
Pacesetter BMR	Richardson Seeds	FS	PS	Y	1.77 a-i	0.09 n-r	2182.1 b-h	77.08 m-w	81.28 z-hh
Pacesetter BMR Red	Richardson Seeds	FS	PS	Y	1.47 c-n	0.07 r	1897.4 l-w	70.99 q-z	78.81 bb-hh
Silo700D	Richardson Seeds	FS	L	N	1.29 j-o	0.12 a-m	1929.1 j-v	87.01 e-r	112.17 c-g
Silo700D BMR	Richardson Seeds	FS	L	Y	1.43 d-o	0.11 h-p	2268.1 a-d	97.95 c-h	108.62 c-i
SweeterNHoney BMR	Richardson Seeds	SS	ME	Y	1.63 a-k	0.11 f-p	2118.5 c-l	88.11 e-q	98.50 f-t
SweeterNHoney BMR Red	Richardson Seeds	SS	ME	Y	1.78 a-g	0.12 b-m	2136.9 b-j	88.33 e-q	95.82 i-z
BMRGold	Scott Seed	FS	M	Y	1.50 b-n	0.13 a-k	2087.7 c-m	102.99 b-e	111.41 c-h
BMRGoldII	Scott Seed	SS	M	Y	1.43 d-o	0.13 a-i	1786.7 r-cc	65.24 u-cc	87.57 o-gg
BMRGoldX	Scott Seed	FS	M	Y	1.80 a-f	0.12 b-m	1594.5 aa-ff	65.52 u-cc	82.20 w-hh
GreatScott BMR	Scott Seed	FS	ML	Y	1.68 a-j	0.13 a-i	2048.1 d-p	90.27 d-o	102.15 d-o
GS9	Scott Seed		L	Y	1.56 b-m	0.10 i-q	1630.4 y-ee	85.28 f-s	102.14 d-o
Premium StockLS	Scott Seed	SS	PS	N	1.19 l-o	0.10 k-q	1365.5 ff-ii	52.92 aa-ee	81.65 y-hh
Rush	Scott Seed	FS	M	N	1.60 a-l	0.14 a-g	1896.7 j-w	85.94 e-s	106.78 c-k
SugarDaddy	Scott Seed	FS	M	N	1.40 e-o	0.11 h-p	1789.5 q-cc	65.17 u-cc	86.87 q-gg



Table 3. continued.

Hybrid Information <sup>1</sup>					Nutrient Composition & Calculations <sup>2</sup>				
Hybrid	Company	Type	Maturity	BMR	% K	% S	Milk lbs ton <sup>-1</sup>	Rel. Forage Quality	Rel. Feed Value
Canex BMR208	Sharp Bros Seed	FS	ME	Y	1.60 a-l	0.12 b-m	2229.8 a-e	96.24 c-k	100.47 d-r
Graze BMR301	Sharp Bros Seed		ME	Y	1.38 f-o	0.13 a-j	1912.1 j-v	72.33 p-z	90.34 m-ee
Grazex BMR718	Sharp Bros Seed		ME	Y	1.38 f-o	0.12 a-l	1634.3 y-dd	59.80 w-ee	82.83 v-hh
Grazex BMR801	Sharp Bros Seed		ML	Y	1.44 d-o	0.12 a-m	1821.5 p-bb	68.41 s-bb	87.08 p-gg
Grazex III	Sharp Bros Seed		ME	N	1.29 j-o	0.13 a-k	1598.9 z-ff	56.86 y-ee	81.92 x-hh
Silex BMR520	Sharp Bros Seed	FS	M	Y	1.81 a-f	0.14 a-f	1971.5 g-t	84.23 f-t	96.08 i-y
1990	Sorghum Partners	FS	PS	N	1.14 m-o	0.10 l-q	1558.6 cc-gg	50.87 bb-ee	75.82 ee-hh
Hikane II	Sorghum Partners	FS	ME	N	1.58 b-l	0.12 c-n	1755.4 s-dd	73.88 n-x	93.61 j-aa
NK300	Sorghum Partners	FS	ME	N	1.29 j-o	0.12 a-m	2027.3 e-q	92.94 c-m	112.95 b-f
Sordan79	Sorghum Partners		E	N	1.49 b-n	0.13 a-k	1555.8 cc-gg	58.95 y-ee	86.12 r-gg
Sordan Headless	Sorghum Partners		PS	N	1.35 g-o	0.11 g-p	1393.6 ee-ii	46.11 ddee	77.27 dd-hh
SS304	Sorghum Partners	FS	M	N	1.08 n-o	0.10 k-q	1721.3 u-dd	70.71 q-z	91.86 l-dd
SS405	Sorghum Partners	FS	ML	N	1.29 j-o	0.11 e-o	1596.1 aa-ff	56.17 z-ee	83.72 u-hh
SS506	Sorghum Partners	FS	L	N	1.17 l-o	0.11 h-p	1589.4 bb-ff	51.02 bb-ee	78.28 bb-hh
Trudan 8	Sorghum Partners		E	N	1.01 o	0.13 a-k	1896.4 k-w	82.66 f-u	107.87 c-j
Trudan Headless	Sorghum Partners		PS	N	1.28 j-o	0.10 j-q	1313.1 hhii	50.64 cc-ee	77.78 cc-hh
4EverGreen	Walter Moss Seed	FS	PS	N	1.34 g-o	0.09 o-r	1332.6 gg-ii	46.25 ddee	73.63 gghh
4EverGreen BMR	Walter Moss Seed	FS	PS	Y	1.93 ab	0.11 f-p	2184.6 b-h	74.73 n-x	77.62 cc-hh
Desperado BMR	Walter Moss Seed	FS	L	Y	1.16 l-o	0.09 n-r	2429.0 a	128.42 a	128.50 a
F-18BMR	Walter Moss Seed	FS	L	Y	1.74 a-i	0.10 j-q	1948.1 h-u	69.59 r-aa	77.73 cc-hh
MegaGreen	Walter Moss Seed	SS	PS	N	1.34 h-o	0.11 h-p	1257.3 ii	43.41 ee	75.33 ff-hh
Millennium BMR	Walter Moss Seed	FS	L	Y	1.58 b-l	0.12 b-m	2237.6 a-e	93.74 c-m	96.61 i-v
SU2-LM BMR	Walter Moss Seed	SS	L	Y	1.52 b-n	0.11 h-p	1717.7 u-dd	52.81 aa-ee	71.44 hh
<b>Mean</b>					1.52	0.12	1896.50	79.73	94.90
<b>CV</b>					25.50	19.90	11.10	19.42	13.50
<b>Location</b>									
Kearney					1.20 b	0.11 b	2065.22 a	92.09 a	103.34 a
Westside					1.83 a	0.13 a	1728.49 b	67.42 b	86.48 b

<sup>1</sup>Hybrid information provided by seed companies. SS=Sorghum-Sudangrass, FS=Forage sorghum, E=Early, ME=Medium Early, M=Medium, ML=Medium Late, L=Late, PS=Photoperiod Sensitive.

<sup>2</sup>Means followed by the same letter do not significantly differ using LSD (P=0.01)

Table 4. Top 25% of hybrids in the 2011 Kearney and Westside trials based on % IVTD, lodging, and yield<sup>1</sup>.

Hybrid	Company	Type	Maturity	BMR	% Lodging	T ac <sup>-1</sup> 65% Moist.	% Crude Prot.	48 hr IVTD	Rel. Forage Quality
Desperado BMR	Walter Moss Seed	FS	L	Y	11.7	22.3	6.9	75.3	128.4
AS781	AR-B Seeds	FS	ML	Y	0.0	28.1	8.5	74.2	118.6
BH312 FBD	B-H Genetics	FS	ML	Y	1.7	23.4	10.1	73.2	106.7
AF7401	Advanta-Alta Seed	FS	L	Y	0.0	24.4	9.0	72.9	109.4
BMR108 Leafy	Forage First	FS	L	Y	0.0	24.3	9.8	70.9	97.5
HP120 BMR	Eastern Colorado Seeds	FS	M	Y	3.3	24.6	9.6	70.3	95.8
DSS73862	Drussel Seed	FS	L	Y	1.7	25.0	10.1	70.2	91.3
Silo700D BMR	Richardson Seeds	FS	L	Y	5.0	23.5	8.1	70.2	97.9
SweeterNHoney BMR	Richardson Seeds	SS	ME	Y	12.5	14.9	8.5	70.0	88.1
AS6402	Advanta-Alta Seed	FS	ME	Y	3.3	22.1	9.5	69.8	93.4
BH211 SBD	B-H Genetics		L	Y	1.7	21.4	10.5	69.6	92.8
73366X	MMR Genetics	FS	ML	N	11.7	27.4	8.6	69.2	97.5
NK300	Sorghum Partners	FS	ME	N	22.5	29.1	8.3	69.1	92.9
9500	Richardson Seeds	FS	ML	N	0.0	27.7	8.5	68.9	95.5
GreatScott BMR	Scott Seed	FS	ML	Y	1.7	17.9	9.3	68.7	90.3
Silex BMR520	Sharp Bros Seed	FS	M	Y	5.0	22.8	9.7	68.7	84.2
2017 BMR	Coffey Forage Seeds		M	Y	6.7	25.2	10.2	68.4	83.9
Greentreat Dynamo	Forage First		L	Y	3.3	21.5	9.2	67.6	82.0
Silo700D	Richardson Seeds	FS	L	N	0.0	25.3	7.9	67.0	87.0
841F	Pioneer Hibred	FS	ML	N	0.0	28.0	8.2	66.2	82.5

<sup>1</sup>The top 25% list was derived by taking those hybrids with the highest % IVTD and eliminating those hybrids that lodged by more than 25%.

Table 5. Top yielding hybrids that yielded over 25 tons acre<sup>-1</sup> averaged over Kearney and Westside trials in 2011.

Hybrid	Company	Type	Maturity	BMR	% Lodging	Ton acre <sup>-1</sup> 65% Moist.	48 hr IVTD
Grazex BMR718	Sharp Bros Seed		ME	Y	31.7	50.1	59.6
SS506	Sorghum Partners	FS	L	N	41.7	42.6	56.7
Pacesetter BMR Red	Richardson Seeds	FS	PS	Y	47.5	41.2	64.4
SS304	Sorghum Partners	FS	M	N	67.5	39.9	63.9
1990	Sorghum Partners	FS	PS	N	41.7	38.9	56.4
SS405	Sorghum Partners	FS	ML	N	21.7	38.7	58.9
GS9	Scott Seed		L	Y	82.5	36.0	65.6
HSII	Coffey Forage Seeds	FS	ME	N	75.0	35.8	68.7
Premium StockLS	Scott Seed	SS	PS	N	6.7	33.6	57.0
4EverGreen	Walter Moss Seed	FS	PS	N	60.0	32.7	56.4
BH 390F	B-H Genetics	FS	L	N	43.3	30.3	64.9
Sordan Headless	Sorghum Partners		PS	N	15.0	30.1	55.3
SU2-LM BMR	Walter Moss Seed	SS	L	Y	16.7	29.8	57.2
NK300	Sorghum Partners	FS	ME	N	22.5	29.1	69.1
MegaGreen	Walter Moss Seed	SS	PS	N	13.3	28.2	54.0
AS781	AR-B-Seeds	FS	ML	Y	0.0	28.1	74.2
Hikane II	Sorghum Partners	FS	ME	N	79.2	28.1	62.9
BH380F	B-H Genetics	FS	ML	N	57.5	28.0	66.0
841F	Pioneer Hibred	FS	ML	N	0.0	28.0	66.2
9500	Richardson Seeds	FS	ML	N	0.0	27.7	68.9
73366X	MMR Genetics	FS	ML	N	11.7	27.4	69.2
FS5	Forage First	FS	M	N	59.2	27.1	58.9
HSIV	Coffey Forage Seeds	FS	ME	N	68.3	27.1	66.5
BMRGoldII	Scott Seed	SS	M	Y	43.3	26.7	62.2
111310X	MMR Genetics	FS	L	N	26.7	26.5	68.3
23392X	MMR Genetics	FS	ML	Y	77.5	26.2	65.8
HP95 BMR	Eastern Colorado Seeds	FS	M	Y	65.8	25.5	67.4
88366X	MMR Genetics	FS	ML	Y	43.3	25.5	69.4
BH201SB	B-H Genetics		PS	Y	34.2	25.4	62.5
Silo700D	Richardson Seeds	FS	L	N	0.0	25.3	67.0
2017 BMR	Coffey Forage Seeds		M	Y	6.7	25.2	68.4
HP1010 BMR	Eastern Colorado Seeds	FS	ML	Y	70.0	25.2	72.5
DSS73862	Drussel Seed	FS	L	Y	1.7	25.0	70.2

<sup>1</sup>Hybrid information provided by seed companies. SS=Sorghum-Sudangrass, FS=Forage sorghum, E=Early, ME=Medium Early, M=Medium, ML=Medium Late, L=Late, PS=Photoperiod Sensitive.