

**Final Report**  
**UC-ANR**  
**2023 Field Research on Sorghum Forages for the California Dairy Industry**

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## **Introduction**

In California, the San Joaquin Valley is home to a multi-billion-dollar dairy industry largely dependent on nutritional silage for animal feeds. While 2023 saw significant precipitation, water still remains a challenging issue in California and the rest of the world.

Forage sorghum [*Sorghum bicolor* (L.) Moench] has garnered attention for its ability to thrive in regions with limited water availability, making it particularly well-suited to California's semi-arid and Mediterranean climates. The crop's resilience to drought, heat, and lower nitrogen requirements has positioned it as a forage option for livestock producers, providing a reliable source of feed even in the face of fluctuating environmental conditions and water scarcity. Moreover, forage sorghum offers a range of agronomic benefits, including rapid growth rates, high biomass production, and efficient nutrient uptake, making it an attractive choice for farmers seeking to maximize yield while minimizing inputs. Its deep root system aids in soil stabilization and erosion control, contributing to the overall health and sustainability of agricultural ecosystems.

Recent breeding efforts in both public and private sectors have resulted in improvements in various traits such as forage quality, maturity, harvest timing, resistance to lodging, and the presence or absence of grain. Sorghum as a crop experience relatively few diseases and insect pests. The sugar cane aphid is a relatively new pest for sorghum in California, but some good management options have been identified, including resistant hybrids and insecticides. Sorghum forage variety trials were planted in 2023 at the Kearney Agricultural Research and Extension Center (KARE), the Westside Research and Extension Center (WREC) and at the Davis Research Farm (Davis) and are a part of a long-term forage demonstration trial started in 2011. Previous reports can be found at the sorghum website: <https://sorghum.ucdavis.edu/>

## **Methods and Materials**

Five seed companies and one public University provided a total of 30 hybrids, which included traditional forage sorghums, brown mid-rib (BMR) and derivatives of both traditional and photoperiod sensitive (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. Furrow irrigation was primarily used to irrigate the plots at Kearney, Westside Center, and at the UC Davis Farm. The 2023 growing season experienced a fair amount of precipitation and reduced temperatures when compared to 2022. Rainfall totals from January through May 1, 2023, prior to planting at KARE were 12.8 inches, with an additional 0.6 inches of rainfall recorded during June through October growing season. Rainfall totals from January through June 5 prior to planting at WREC were 7.4 inches and 0.42 inches recorded throughout the growing season. Rainfall totals from January through June 5 prior to planting at UC Davis were 20.3 inches, with an additional 5.2 inches during the growing season. Irrigation water was applied through furrow irrigation throughout the growing season in the three locations,

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with the frequency of irrigations differing across locations due to differing soil water holding capacity and infiltration rates between the three sites. At Davis, KARE and WREC, 21.9 inches, 25.75 inches and 23.09 inches of irrigation water were applied respectively during the growing season. Fertilizer applications followed recommendations for forage sorghum for each site and soil type. Trials were harvested approximately 115 to 120 days after planting.

The following is a summary of the locations where trials were located.

**Trial Location:** Kearney Agricultural Research and Extension Center, Parlier  
**Cooperator:** UC-ANR  
**Previous Crop:** Winter forage (Oats, barley and wheat)  
**Soil Type:** Hanford sandy loam  
**Plot Size:** Four, 30 inch rows by 20 ft  
**Replications:** 3  
**Study Design:** Split-Plot  
**Planting Date:** May 24 2023  
**Planting Rate:** 100,000 seed acre<sup>-1</sup>  
**Seed Method:** Almaco 4 row plot planter  
**Fertilizer:** 200 lbs N ac<sup>-1</sup> 46-0-0, 25 lbs N ac<sup>-1</sup> and Solubor 4lbs to provide less than 1lb of Boron, and 52 lbs PO<sup>3-</sup> ac<sup>-1</sup> 11-52-0, and 500 lbs K<sub>2</sub>O ac<sup>-1</sup> 0-0-50 applied pre-planting  
**Herbicide:** Dual Magnum at 1.3 pints per ac<sup>-1</sup> as a pre-plant  
**Pesticide:** Sivanto 14 fl oz ac<sup>-1</sup> with Latron 1956 at 5 oz ac<sup>-1</sup> August 7  
**Irrigation:** Sprinklers for stand establishment, furrow – see narrative above  
**Silage Harvest Date:** Plots harvested with Wintersteiger Cibus S forage chopper on October 19-24, 2023

**Trial Location:** Westside Research and Extension Center, Five Points  
**Cooperator:** UC-ANR  
**Previous Crop:** Sorghum  
**Soil Type:** Panoche clay loam  
**Plot Size:** Four, 30 inch rows by 17 ft  
**Replications:** 3  
**Study Design:** Split-Plot  
**Planting Date:** June 6, 2023  
**Planting Rate:** 100,000 seed acre<sup>-1</sup>  
**Seed Method:** Almaco 4 row plot planter  
**Fertilizer:** 100 lbs acre<sup>-1</sup> 11-52-0 pre-plant, 50 lbs N/ac as 46-0-0 preplant, and 40 lbs N/ac as 46-0-0 at layby  
**Herbicide:** Dual Magnum 24 oz/ac as pre-emergent Clarity 8oz and Prowl-H<sub>2</sub>O at 32 oz ac<sup>-1</sup>  
**Pesticides:** Sivanto Prime 14oz ac<sup>-1</sup> (mid-August)  
**Irrigation:** Linear for stand establishment, gated pipe furrow irrigation subsequent irrigations – see narrative for amounts  
**Silage Harvest Date:** October 4-5, 2023

**Trial Location:** UC Davis Research Station, Davis  
**Cooperator:** UC-ANR

Previous Crop: Fallow  
 Soil Type: Yolo loam  
 Plot Size: Four, 30 inch rows by 20 ft  
 Replications: 3  
 Study Design: Split-Plot  
 Planting Date: May 25, 2023  
 Planting Rate: 100,000 seed acre<sup>-1</sup>  
 Seed Method: Wintersteiger Self Propelled Drill Planter  
 Fertilizer: 18 lbs N ac<sup>-1</sup> 8-24-6 June, 82 lbs N ac<sup>-1</sup> 8-28-6 mid-July  
 Herbicide: Dual Magnum as pre-plant  
 Pesticide: None applied  
 Irrigation: See above narrative  
 Silage Harvest Date: Plots harvested with Wintersteiger Cibus S forage chopper  
 October 17, 2023

#### 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. The middle two rows of each plot were harvested with a Wintersteiger Cibus S forage chopper. Yields are reported at 65% moisture in tons/acre.
6. Nutrient analysis: Samples were collected from the forage chopper in the field, weighed and then placed in forced air Gruenberg oven (Model T35HV216, Williamsport, PA) at 50° 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. ADF: % acid detergent fiber; constituent of the cell wall includes cellulose and lignin; inversely related to energy availability.
  - c. aNDF: neutral detergent fiber; cell wall fraction of the forage
  - d. Lignin: percent estimated lignin present
  - e. Starch: estimated starch content
  - f. Fat: estimated fat content
  - g. NDFd30: neutral detergent fiber digestibility over 30 hours
  - h. NDFd240: neutral detergent fiber digestibility over 240 hours
  - i. uNDFom240:
  - j. WSC Sugar: Water soluble carbohydrates
  - k. ESC Sugar: Ethanol soluble carbohydrates
  - l. NFC: Non-fiber carbohydrate; starch, simple sugars and organic acids
  - m. RFQ: relative feed quality is an index for comparing forages calculated from TDN and DMI. An RFQ of 100 is considered the average score and represents fully mature alfalfa.
  - n. Milk lbs/ton: A projection of potential milk yield per ton for forage dry matter.

Data was analyzed using the R :4.2.2 statistical package.

## Results

Table 1 shows the summary of yields, agronomic traits and nutritional analyses reported by types of forage sorghums grown in all locations. See Tables 2, 6, 7 and 8 for a comparison of the different hybrids agronomic, yield, and nutritional characteristics.

Table 1. Summary of key forage characteristics by type of forage grown, averaged across three locations, Kearney, West Side and Davis in 2023.

Sorghum Type (number of cultivars) <sup>2</sup>	% Lodge @ Harvest <sup>2</sup>	Silage Yield (T/A) @ 65% Moisture <sup>2</sup>	% Crude Protein	% ADF <sup>2</sup>	% aNDF <sup>2</sup>	% Lignin <sup>2</sup>	% NDFD30 <sup>2</sup>	% NDFD240 <sup>2</sup>	Milk lbs/ton DM <sup>2</sup>	Relative Feed Quality (RFQ) <sup>2</sup>
PS (4)	6.67 b	42.69 a	5.99 c	39.91 a	62.88 a	4.7 b	50.28 b	67.14 a	2625.33 b	91.22 d
PSBMR (2)	21.39 ab	36.92 b	7.23 b	38.65 a	58.02 b	5.71 a	52.98 a	67.75 a	2739 b	107.01 c
FNON (15)	25.45 a	29.5 c	7.45 b	32.2 b	48.6 c	4.02 c	48.55 c	64.75 b	3083.25 a	128.82 b
FBMR (9)	20.21 ab	25.58 d	7.77 a	31.07 b	46.81 c	4.49 b	53.14 a	66.2 a	3162.03 a	144.03 a
<b>Mean</b>	<b>21.28</b>	<b>30.71</b>	<b>7.33</b>	<b>33.36</b>	<b>50.65</b>	<b>4.35</b>	<b>50.3</b>	<b>65.65</b>	<b>3020.25</b>	<b>126.41</b>

<sup>1</sup>Number in parenthesis is the number of hybrids in each sorghum type. PSBMR = Photoperiod sensitive brown mid-rib; PS = Photoperiod sensitive; FBMR= Forage brown mid-rib; FNON= forage.

<sup>2</sup>Means followed by the same letter do not significantly differ using LSD (P=0.05)

### Lodging, Yields, and Heights

Average lodging across the three locations was 21.3% lower than the previous year, with this year's lodging ranging from 0 to 65% (Table 2). The highest average lodging across hybrids was observed at WREC, with 29.9% (Table 4), compared to KARE (Table 3) and Davis (Table 5), which stood at 11.8% and 22.1%, respectively. These percentages were lower than last year, although there were hybrids with lodging as high as 80%. At the KARE site, seven hybrids had an average lodging percentage exceeding 20%, while at Davis, there were 13 hybrids with lodging percentages over 20%, and at WREC, there were 16 hybrids with lodging exceeding 20%. When sorted according to photoperiod-sensitive brown mid-rib (PSBMR), photoperiod-sensitive (PS), forage brown mid-rib (FBMR), and forage (FNON) trait groups (Table 1), reduced lodging percentages were observed in the PS group, but these showed no significant difference compared to the other groups. However, compared to the 2022 results, this year saw an increase in lodging percentages for the PS and PSBMR groups. In general, lodging was not confined to any specific group.

The tallest hybrids were observed at WREC. Across all entries and locations, the average at-harvest height was 249.3 cm. The tallest hybrids at WREC, KARE, and Davis measured 351.4, 343.3 cm, and 331 cm respectively. This category included two PS hybrids and one FNON hybrid. Davis recorded the highest average yields per acre (corrected to 65% moisture content) among the three sites, with averages of 38.4 tons per acre, while WREC and KARE had average yields of 28 tons per acre and 25.8 tons per acre, respectively. The average forage yield across three locations for individual entries ranged from a low of 20.8 to a high of 50.3 tons per acre, with an overall average of 30.71 tons per acre across the three locations, exceeding all previous years in these University of CA field trials.

The highest yielding hybrids documented in 2023 were F15234 and Dynagraze II, yielding 59.17 and 58.26 tons per acre, respectively, at the Davis trial site (Table 5). KARE's highest yielding hybrid was F152334 at 53.38 tons per acre (Table 3), while at WREC, the highest yielding hybrid was Supra 1337 with 38.42 tons per acre (Table 4). Ten high-yielding hybrids with less than 10% lodging were identified (Table 9), including hybrids planted at all three sites: X54243-Scott Seed Co (42 T/ac), TX08005-Rooney (40.89 T/ac), A11003/F17300-Rooney (40.65 T/ac), NK300-S&W Seed Co (29.75 T/ac), F72FS05-DynaGro Seed (29.42 T/ac), X52053-Scott Seed Co (27.76 T/ac), F74FS72BMR-DynaGro Seed (27.73 T/ac), X50665-Scott Seed Co (27.24 T/ac), F72FS25-DynaGro Seed (26.36 T/ac), SP2707 DT (23.60 T/ac),

### Nutritional Composition Data Summaries

Data from nutritional analyses done on the harvest samples from all three sites, KARE, WREC and Davis are summarized (Table 6-8). Limited forage quality analyses are provided as part of these variety evaluations, with analyses done on forage samples submitted to Dairyland Laboratories. Definitions of the different forage quality values are shown on page 3 of this report in the “Data Collected” section. The Nutrition composition shows a relative increase in milk LB/ton/DM and relative feed quality in the different forage hybrids as compared to previous years. The average across the three locations was 3020.25 Lbs/ton<sup>-1</sup> and 126.41 for milk lbs per ton-1 and relative feed quality respectively. Since the values shown in these tables are the means across three field sites, significant differences between cultivars in some forage quality components represent differences likely to also show up in production fields or on-farm trials. It should be recognized that while some of the forage quality values are within certain ranges in 2023, the mean and range of values may differ considerably in other years, so it is useful to compare these results with other years when available. Results from similar forage quality analyses done in prior years of our University of CA forage sorghum variety trials can be found on the UC-ANR Sorghum website: <https://sorghum.ucdavis.edu/>

### **Discussion**

Quality and yield assessments were conducted on a selection of 30 experimental and commercial forage sorghum varieties. In 2023, trials were carried out at three different locations: two in the San Joaquin Valley (KARE, WREC) and one in the Sacramento Valley (UC Davis farm). Despite experiencing high winter and mid-summer rains, along with lower temperatures during the summer across all sites, this year's yield outcomes were highly promising. The majority of hybrids, when averaging across the three locations, demonstrated yields exceeding 20 tons per acre. Notably, ten hybrids (Table 9) emerged as exemplary performers in terms of both high yield and minimal lodging, with average yields surpassing 30 tons per acre across all sites. However, the heavy rains during the growing season, coupled with strong winds at the Davis and WREC sites, led to high lodging for certain hybrids, while others remained unaffected. In general, the high yield and improvements in some forage nutritional quality underscore the significant efforts in breeding aimed at boosting the productivity of modern forage sorghum varieties while simultaneously enhancing resistance to lodging, which is crucial for mechanical harvesting. Additionally, reductions in lignin content, milk, and relative feed quality indicate potential enhancements in forage quality and digestibility. Considering these advancements, sorghum remains a practical choice for farmers contending with the constraints of limited irrigation water in California, offering a dependable source of high-quality animal feed.

Table 2. Three-site means for lodging %, height at harvest time, and forage yields corrected to 65% moisture for 2023 sorghum forage hybrids at KARE, WREC, and Davis.

Hybrid information <sup>1</sup>					Agronomic Measurements <sup>2</sup>		
Hybrid	Company	Type	Maturity	BMR	Height (cm)	% Lodging	Yield
							(Ton ac-1 65% Moist)
NK300	S&W Seed Co	FNON	ME	NO	183.21 kl	0.00 j	29.75 e-j
SS405	S&W Seed Co	FNON	ML	NO	258.9 b-h	15.56 f-j	34.08 c-e
X50665	Scott Seed Co	FBMR	M	YES	176.21 l	1.11 ij	27.24 f-k
X54243	Scott Seed Co	FNON	L	NO	288.24 a-c	1.11 ij	42.00 b
F72FS05	DYNAGRO	FNON	M	NO	215.79 h-l	0.00 j	29.42 e-j
F74FS72 BMR	DYNAGRO	FBMR	M	YES	181.6 kl	0.00 j	27.73 e-j
Super Sile 20	DYNAGRO	FNON	ML	NO	251.95 c-i	46.11 a-c	28.60 e-j
Fullgraze II	DYNAGRO	FNON	ML	NO	265.82 a-g	34.44 c-f	26.34 g-k
Fullgraze II BMR	DYNAGRO	FBMR	ML	YES	280.92 a-e	40 b-d	24.46 i-k
TX08001	Bill Rooney	PS	PS	NO	284.3 a-d	7.78 h-j	38.89 b-d
F17300	Bill Rooney	PS	PS	NO	284.87 a-d	0.00 j	40.65 bc
Z-1310 BMR PPS	Zinna Seeds	PSBMR	PS	YES	293.58 a-c	17.78 e-j	42.57 b
SP2707 DT	S&W Seed Co	FNON	ME	NO	191.99 j-l	0.00 j	23.60 jk
SP2606 BMR	S&W Seed Co	FBMR	ME	YES	223.5 g-k	11.11 h-j	26.11 g-k
X52053	Scott Seed Co	FBMR	M	NO	235.15 e-j	0.00 j	27.76 e-j
X52242	Scott Seed Co	FNON	M	NO	224.29 f-k	22.22 d-h	30.05 h-k
F71FS72 BMR	DYNAGRO	FBMR	E	YES	214.98 h-l	20 d-j	25.19 h-k
Super Sile 30	DYNAGRO	FNON	ME	NO	261.35 a-h	51.67 a-c	26.90 f-k
F75FS13	DYNAGRO	FNON	M	NO	238.29 d-j	31.67 c-g	27.90 e-j
F74FS23 BMR	DYNAGRO	FBMR	M	YES	220.43 g-l	65 a	20.83 k
F72FS25 BMR	DYNAGRO	FBMR	M	YES	205.1 i-l	0.00 j	26.36 f-k
SweetTon MS	DYNAGRO	FNON	ML	NO	270.79 a-f	58.89 ab	23.47 jk
Danny Boy II BMR	DYNAGRO	PSBMR	PS	YES	276.37 a-e	25 d-h	31.27 e-h
Dynagraze II	DYNAGRO	FNON	ME	NO	240.03 d-i	25.56 d-h	33.03 d-f
Dynagraze II BMR	DYNAGRO	FBMR	ME	YES	280 a-e	24.44 d-h	26.70 f-k
Super Sweet 10	DYNAGRO	FNON	M	NO	252.51 c-h	37.78 c-e	26.41 f-k
TX08005	Bill Rooney	PS	PS	NO	308.18 a	6.67 h-j	40.89 b

Table 2. continued.

Hybrid information <sup>1</sup>					Agronomic Measurements <sup>2</sup>		
Hybrid	Company	Type	Maturity	BMR	Height (cm)	% Lodging	Yield
							(Ton ac-1 65% Moist)
F15234	Bill Rooney	PS	PS	NO	303.55 ab	12.22 g-j	50.33 a
SSG 1131	Supra International	FNON	M	NO	273.59 a-e	21.11 d-i	32.27 d-g
Supra 1337	Supra International	FNON	M	NO	291.99 a-c	61.11 a	30.36 e-i
<b>Mean</b>					<b>249.25</b>	<b>21.28</b>	<b>30.71</b>
<b>CV (coefficient of variation-%)</b>					<b>20.39</b>	<b>102.13</b>	<b>24.09</b>
<b>Location Means</b>							
<b>KARE</b>					<b>240.71 b</b>	<b>11.83 c</b>	<b>25.84 b</b>
<b>WREC</b>					<b>266 a</b>	<b>29.89 a</b>	<b>27.95 b</b>
<b>DAVIS</b>					<b>241 b</b>	<b>22.11 b</b>	<b>38.34 a</b>

<sup>1</sup>Hybrid information provided by seed companies. Under type, F=Forage sorghum. Under Maturity, E=Early, F=Full, ME=Medium Early, MF=Medium Full, 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=0.05)

Table 3. 2023 comparisons of sorghum forage hybrids and locations for agronomic characteristics and yield at KARE by seed company.

Hybrid information <sup>1</sup>					Agronomic Measurements <sup>2</sup>		
Hybrid	Company	Type	Maturity	BMR	% Lodging	Height (cm)	Yield (Ton ac-1 65% Moist)
F15234	Bill Rooney	PS	PS	NO	0.00 d	343.33 a	53.38 a
Z-1310 BMR PPS	Zinma Seeds	PSBMR	PS	YES	0.00 d	340.67 a	43.52 b
AII003/F17300	Bill Rooney	PS	PS	NO	0.00 d	270.67 de	36.46 c
X54243	Scott Seed Co	FNON	L	NO	3.33 cd	336.67 ab	34.78 c
TX08001	Bill Rooney	PS	PS	NO	0.00 d	279.67 cd	33.22 cd
TX08005	Bill Rooney	PS	PS	NO	0.00 d	336.67 ab	31.63 c-e
Danny Boy II BMR	DYNAGRO	PSBMR	PS	YES	8.33 cd	341.67 a	28.71 d-f
SSG 1131	Supra International	FNON	M	NO	0.00 d	274.67 d	28.52 d-g
Supra 1337	Supra International	FNON	M	NO	40.00 bc	307.33 bc	28.41 d-g
Super Sile 30	DYNAGRO	FNON	ME	NO	3.33 cd	240.00 f-h	27.93 d-h
X52242	Scott Seed Co	FNON	M	NO	0.00 d	215.67 h-j	26.76 i
F71FS72 BMR	DYNAGRO	FBMR	E	YES	0.00 d	203.00 i-j	26.34 e-j
F72FS05	DYNAGRO	FNON	M	NO	0.00 d	176.00 k-n	24.65 f-k
F75FS13	DYNAGRO	FNON	M	NO	1.67 d	227.00 h-i	24.47 f-k
SS405	S&W Seed Co	FNON	ML	NO	0.00 d	265.00 d-g	23.90 f-l
Super Sile 20	DYNAGRO	FNON	ML	NO	46.67 ab	274.33 d	23.35 f-m
SP2606 BMR	S&W Seed Co	FBMR	ME	YES	0.00 d	206.00 i-k	23.12 f-n
F72FS25 BMR	DYNAGRO	FBMR	M	YES	0.00 d	166.33 mn	22.88 f-n
F74FS72 BMR	DYNAGRO	FBMR	M	YES	0.00 d	155.33 no	22.26 h-o
NK300	S&W Seed Co	FNON	ME	NO	0.00 d	166.67 mn	21.87 i-o
Fullgraze II BMR	DYNAGRO	FBMR	ML	YES	26.67 bcd	274.67 d	20.96 i-o
Fullgraze II	DYNAGRO	FNON	ML	NO	36.67 bcd	241.67 e-h	20.54 j-o
Dynagraze II	DYNAGRO	FNON	ME	NO	20.00 bcd	236.67 gh	19.62 k-o
Dynagraze II BMR	DYNAGRO	FBMR	ME	YES	0.00 d	241.00 e-h	19.52 k-o
X50665	Scott Seed Co	FBMR	M	YES	0.00 d	153.33 no	19.14 k-o
X52053	Scott Seed Co	FBMR	M	NO	0.00 d	191.67 j-m	19.12 k-o

Table 3. continued.

Hybrid information <sup>1</sup>					Agronomic Measurements <sup>2</sup>		
Hybrid	Company	Type	Maturity	BMR	% Lodging	Height (cm)	Yield (Ton ac-1 65% Moist)
Super Sweet 10	DYNAGRO	FNON	M	NO	53.33 ab	240.67 e-h	18.53 l-o
F74FS23 BMR	DYNAGRO	FBMR	M	YES	35.00 bcd	212.33 h-j	17.75 m-o
SP2707 DT	S&W Seed Co	FNON	ME	NO	0.00 d	132.67 o	17.20 no
SweetTon MS	DYNAGRO	FNON	ML	NO	80.00 a	268.33 def	16.70 o
<b>Mean</b>					<b>11.09</b>	<b>239.29</b>	<b>25.61</b>
<b>CV (coefficient of variation-%)</b>					<b>203.20</b>	<b>7.68</b>	<b>14.20</b>

<sup>1</sup>Hybrid information provided by seed companies. Under type, F=Forage sorghum. Under Maturity, E=Early, F=Full, ME=Medium Early, MF=Medium Full, 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=0.05)

Table 4. 2023 comparisons of sorghum forage hybrids and locations for agronomic characteristics and yield at WREC by seed company.

Hybrid information <sup>1</sup>					Agronomic Measurements <sup>2</sup>		
Hybrid	Company	Type	Maturity	BMR	Height (cm)	% Lodging	Yield
							(Ton ac-1 65% Moist)
F15234	Bill Rooney	PS	PS	NO	325.98 a-d	20.00 e-h	38.42 a
SS405	S&W Seed Co	FNON	ML	NO	309.05 c-f	20.00 e-h	37.62 ab
X54243	Scott Seed Co	FNON	L	NO	351.38 a	0.00 h	35.28 abc
TX08005	Bill Rooney	PS	PS	NO	330.21 a-c	16.67 fgh	34.84 abc
F17300	Bill Rooney	PS	PS	NO	313.28 b-e	0.00 h	34.22 a-d
X50665	Scott Seed Co	FBMR	M	YES	165.95 n	0.00 h	32.88 a-e
X52053	Scott Seed Co	FBMR	M	NO	207.44 kl	0.00 h	32.75 a-e
SSG 11 31	Supra international	FNON	M	NO	292.11 e-g	46.67 b-f	31.78 a-f
TX08001	Bill Rooney	PS	PS	NO	342.91 ab	6.67 h	31.58 a-f
F72FS05	DYNAGRO	FNON	M	NO	224.38 jk	0.00 h	31.32 b-g
Z-1310 BMR PPS	Zinma Seeds	PSBMR	PS	YES	299.73 c-f	50.00 b-e	31.07 b-g
Super Sile 20	DYNAGRO	FNON	ML	NO	317.51 b-e	55.00 bcd	29.44 c-h
Fullgraze II BMR	DYNAGRO	FBMR	ML	YES	321.75 a-e	46.67 b-f	28.42 c-i
F72FS25 BMR	DYNAGRO	FBMR	M	YES	208.29 kl	0.00 h	28.42 c-i
Supra 1337	Supra International	FNON	M	NO	325.98 a-d	90.00 a	31.78 e-j
NK300	S&W Seed Co	FNON	ME	NO	198.97 kl	0.00 h	26.38 e-j
X52242	Scott Seed Co	FNON	M	NO	245.54 ij	43.33 c-f	26.04 e-k
Danny Boy II BMR	DYNAGRO	PSBMR	PS	YES	292.11 e-g	46.67 b-f	25.43 f-k
Dynagraze II BMR	DYNAGRO	FBMR	ME	YES	296.35 d-g	43.33 c-f	25.19 f-k
Fullgraze II	DYNAGRO	FNON	ML	NO	271.79 f-i	40.00 c-g	25.16 f-k
Super Sile 10	DYNAGRO	FNON	M	NO	245.54 ij	46.67 b-f	24.84 f-k
F75FS13	DYNAGRO	FNON	M	NO	254.86 h-j	50.00 b-e	24.56 g-k
F74FS72 BMR	DYNAGRO	FBMR	M	YES	188.81 l-n	0.00 h	24.1 h-k
SP2606 BMR	S&W Seed Co	FBMR	ME	YES	210.83 kl	26.67 d-g	23.39 h-k
F71FS72 BMR	DYNAGRO	FBMR	E	YES	197.28 k-m	10.00 gh	23.36 h-k

Table 4. continued.

Hybrid information <sup>1</sup>					Agronomic Measurements <sup>2</sup>		
Hybrid	Company	Type	Maturity	BMR	Height (cm)	% Lodging	Yield
							(Ton ac-1 65% Moist)
F74FS23 BMR	DYNAGRO	FBMR	M	YES	270.94 f-i	76.67 ab	23.08 h-k
SP2707 DT	S&W Seed Co	FNON	ME	NO	167.65 mn	0.00 h	21.80 ijk
Dynagraze II	DYNAGRO	FNON	ME	NO	259.09 hi	23.33 d-h	21.22 jk
SweetTon MS	DYNAGRO	FNON	ML	NO	266.71 g-i	60.00 abc	19.38 k
Super Sile 30	DYNAGRO	FNON	ME	NO	277.72 f-h	78.33 ab	19.35 k
<b>Mean</b>					<b>266.00</b>	<b>27.17</b>	<b>27.71</b>
<b>CV (coefficient of variation-%)</b>					<b>7.06</b>	<b>75.05</b>	<b>15.35</b>

<sup>1</sup>Hybrid information provided by seed companies. Under type, F=Forage sorghum. Under Maturity, E=Early, F=Full, ME=Medium Early, MF=Medium Full, 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=0.05)

Table 5. 2023 comparisons of sorghum forage hybrids and locations for agronomic characteristics and yield at Davis by seed company.

Hybrid information <sup>1</sup>					Agronomic Measurements <sup>2</sup>		
Hybrid	Company	Type	Maturity	BMR	% Lodging	Height (cm)	Yield (Ton ac-1 65% Moist)
F15234	Bill Rooney	PS	PS	NO	16.67 g-j	327.33 a	59.17 a
Dynagraze II	DYNAGRO	FNON	ME	NO	33.33 c-g	222.00 fg	58.26 a
TX08005	Bill Rooney	PS	PS	NO	3.33 ij	329.67 a	56.17 ab
X54243	Scott Seed Co	FNON	L	NO	0.00 j	318.00 ab	55.93 ab
Z-1310 BMR PPS	Zinma Seeds	PSBMR	PS	YES	3.33 ij	331.00 a	53.12 abc
TX08001	Bill Rooney	PS	PS	NO	16.67 g-j	330.67 a	51.87 a-d
F17300	Bill Rooney	PS	PS	NO	0.00 j	276.00 cd	51.27 a-e
NK300	S&W Seed Co	FNON	ME	NO	0.00 j	180.33 ijk	41.02 b-f
SS405	S&W Seed Co	FNON	ML	NO	26.67 d-i	280.00 cd	40.73 b-f
Danny Boy II BMR	DYNAGRO	PSBMR	PS	YES	20.00 f-j	301.33 abc	39.68 c-f
X52242	Scott Seed Co	FNON	M	NO	23.33 e-j	211.33 f-i	37.35 d-g
F74FS72 BMR	DYNAGRO	FBMR	M	YES	0.00 j	133.00 m	36.81d-h
SSG 1131	Supra International	FNON	M	NO	16.67 g-j	265.33 de	36.51 d-h
Super Sweet 10	DYNAGRO	FNON	M	NO	13.33 g-j	237.00 ef	35.86 e-h
Supra 1337	Supra International	FNON	M	NO	53.33 bc	299.67 abc	35.81 e-h
Dynagraze II BMR	DYNAGRO	FBMR	ME	YES	30.00 c-h	276.33 cd	35.39 fgh
F75FS13	DYNAGRO	FNON	M	NO	43.33 c-f	270.67 cd	34.67 fgh
SweetTon MS	DYNAGRO	FNON	ML	NO	36.67 c-g	301.00 abc	34.32 fgh
Super Sile 30	DYNAGRO	FNON	ME	NO	73.33 ab	222.00 fg	33.41 fgh
Fullgraze II	DYNAGRO	FNON	ML	NO	26.67 d-i	217.67 fgh	33.33 fgh
Super Sile 20	DYNAGRO	FNON	ML	NO	36.67 c-g	227.33 f	33.00 fgh
F72FS05	DYNAGRO	FNON	M	NO	0.00 j	194.33 g-j	32.28 fgh
SP2606 BMR	S&W Seed Co	FBMR	ME	YES	6.67 hij	191.00 g-j	31.82 fgh
SP2707 DT	S&W Seed Co	FNON	ME	NO	0.00 j	149.33 klm	31.80 fgh
X52053	Scott Seed Co	FBMR	M	NO	0.00 j	177.33 jkl	31.41 fgh

Table 5. continued.

Hybrid information <sup>1</sup>					Agronomic Measurements <sup>2</sup>		
Hybrid	Company	Type	Maturity	BMR	% Lodging	Height (cm)	Yield (Ton ac-1 65% Moist)
X50665	Scott Seed Co	FBMR	M	YES	3.33 ij	148.00 lm	29.69 fgh
F72FS25 BMR	DYNAGRO	FBMR	M	YES	0.00 j	166.33 jkl	27.78 fgh
F71FS72 BMR	DYNAGRO	FBMR	E	YES	50.00 bcd	190.00 hij	25.88 fgh
Fullgraze II BMR	DYNAGRO	FBMR	ML	YES	46.67 cde	290.67 bcd	24.02 gh
F74FS23 BMR	DYNAGRO	FBMR	M	YES	83.33 a	166.33 jkl	21.67 h
<b>Mean</b>					<b>20.83</b>	<b>236.59</b>	<b>37.82</b>
<b>CV (coefficient of variation-%)</b>					<b>68.97</b>	<b>8.14</b>	<b>25.07</b>

<sup>1</sup>Hybrid information provided by seed companies. Under type, F=Forage sorghum. Under Maturity, E=Early, F=Full, ME=Medium Early, MF=Medium Full, 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=0.05)

Table 6. Forage quality characteristics were determined from harvest samples submitted to Dairyland Laboratories from the 2023 University of California forage sorghum variety trials at KARE, WREC, and Davis. The meanings of the different quality component values are provided in the Materials and Methods section.

Hybrid information					Nutrient Composition and Calculation					
Hybrid	Company	Type	Maturity	BMR	% Crude Protein	% ADF	% aNDF	% Lignin	% Starch	% EE (Fat)
NK300	S&W Seed Co	FNON	ME	NO	7.33 d-j	29.31 h-k	43.93 i-n	4.25 g-j	29.7 a-c	2.44 d-h
SS405	S&W Seed Co	FNON	ML	NO	6.82 j-l	34.63 c-e	52.93 d-f	4.1 g-k	16.55 i-k	2.17 h-k
X50665	Scott Seed Co	FBMR	M	YES	8.4 ab	27.73 k	41.37 mn	3.54 kl	30.48 ab	2.45 d-g
X54243	Scott Seed Co	FNON	L	NO	6.81 j-l	38.91 ab	61.02 a-c	5.03 c-e	11.76 k-n	2.09 i-k
F72FS05	DYNAGRO	FNON	M	NO	7.6 b-j	30.59 g-k	46.9 g-l	3.96 g-k	25.77 b-f	2.66 a-d
F74FS72 BMR	DYNAGRO	FBMR	M	YES	8.11 a-e	27.96 jk	42.25 k-n	4.44 e-i	28.21 a-d	2.8 ab
Super Sile 20	DYNAGRO	FNON	ML	NO	7.1 g-l	32.78 e-g	48.43 f-j	4.1 g-k	21.68 f-i	2.3 f-i
Fullgraze II	DYNAGRO	FNON	ML	NO	7.75 a-h	33.7 d-g	49.13 f-i	4.54 d-h	21.1 f-i	2.38 e-h
Fullgraze II BMR	DYNAGRO	FBMR	ML	YES	6.76 j-l	34.41 d-f	52.8 ef	4.97 c-f	13.33 j-l	2.56 b-f
TX08001	Bill Rooney	PS	PS	NO	6.27 lm	38.34 b	60.85 a-c	4.5 d-i	9.13 l-o	2.01 j-l
F17300	Bill Rooney	PS	PS	NO	6.39 k-m	39.63 ab	62.63 ab	4.59 d-g	7.68 m-o	1.93 kl
Z-1310 BMR PPS	Zinma Seeds	PSBMR	PS	YES	7.13 f-l	37.08 b-d	55.93 c-e	5.88 a	12.11 k-n	2.21 g-j
SP2707 DT	S&W Seed Co	FNON	ME	NO	8.23 a-c	27.27 k	40.74 n	4.32 f-j	32.51 a	2.77 a-c
SP2606 BMR	S&W Seed Co	FBMR	ME	YES	8.45 ab	28.57 i-k	41.64 l-n	4.44 e-i	27.75 a-e	2.56 b-f
X52053	Scott Seed Co	FBMR	M	NO	7.85 a-g	30.62 g-k	46.72 g-m	4.16 g-k	25.71 b-f	2.52 c-f
X52242	Scott Seed Co	FNON	M	NO	7.46 c-j	30.44 g-k	45.51 h-n	3.9 h-k	24.8 c-g	2.74 a-c
F71FS72 BMR	DYNAGRO	FBMR	E	YES	8.49 a	28.74 h-k	43.23 j-n	4.34 f-i	22.25 f-h	2.88 a
Super Sile 30	DYNAGRO	FNON	ME	NO	6.86 i-l	34.41 d-f	51.5 e-g	3.95 g-k	17.21 h-k	2.21 g-j
F75FS13	DYNAGRO	FNON	M	NO	8.17 a-d	31.64 e-i	47.72 f-j	3.85 i-k	19.48 g-i	2.69 a-d
F74FS23 BMR	DYNAGRO	FBMR	M	YES	7.22 f-k	32.01 e-h	47.96 f-j	4.2 g-k	18.35 h-j	2.53 c-f
F72FS25 BMR	DYNAGRO	FBMR	M	YES	7.44 c-j	31.2 f-j	46.96 g-l	4.25 g-j	21.96 f-i	2.75 a-c
SweetTon MS	DYNAGRO	FNON	ML	NO	7.44 c-j	32.11 e-h	50.09 f-h	3.04 lm	12.77 k-m	2.65 a-e
Danny Boy II BMR	DYNAGRO	PSBMR	PS	YES	7.32 d-j	40.22 ab	60.1 bc	5.53 a-c	4.86 o	2.31 f-i
Dynagraze II	DYNAGRO	FNON	ME	NO	7.99 a-f	31.15 f-j	44.86 h-n	4.3 f-j	23.96 d-g	2.56 b-f
Dynagraze II BMR	DYNAGRO	FBMR	ME	YES	7.26 e-j	37.91 bc	58.25 b-d	5.77 ab	12.17 k-n	2.17 h-k

Table 6. continued.

Hybrid information <sup>1</sup>					Nutrient Composition and Calculation <sup>2</sup>					
Hybrid	Company	Type	Maturity	BMR	% Crude Protein	% ADF	% aNDF	% Lignin	% Starch	% EE (Fat)
Super Sweet 10	DYNAGRO	FNON	M	NO	7.72 a-i	31.87 e-i	47.29 g-k	4.33 f-j	22.31 e-h	2.52 c-f
TX08005	Bill Rooney	PS	PS	NO	5.53 m	39.67 ab	62.32 ab	4.57 d-h	7.13 no	1.93 kl
F15234	Bill Rooney	PS	PS	NO	5.76 m	42 a	65.73 a	5.13 b-d	5.91 o	1.81 l
SSG 1131	Supra International	FNON	M	NO	7.14 f-l	33.76 d-g	51.13 e-g	3.66 j-l	13.33 jl	2.34 f-i
Supra 1337	Supra International	FNON	M	NO	6.92 h-l	32.07 e-h	49.67 f-h	2.79 m	13.06 j-m	2.52 c-f
<b>Mean</b>					<b>7.33</b>	<b>33.36</b>	<b>50.7</b>	<b>4.35</b>	<b>18.43</b>	<b>2.42</b>
<b>CV (coefficient of variation-%)</b>					<b>12.89</b>	<b>11.04</b>	<b>11.46</b>	<b>16.81</b>	<b>31.99</b>	<b>12.22</b>
<b>Location Means</b>										
<b>KARE</b>					<b>6.05 c</b>	<b>32.10 b</b>	<b>49.97 b</b>	<b>4.15 b</b>	<b>19.65 a</b>	<b>2.46 a</b>
<b>WREC</b>					<b>7.54 b</b>	<b>34.41 a</b>	<b>53.28 a</b>	<b>4.37 a</b>	<b>15.60 b</b>	<b>2.53 a</b>
<b>DAVIS</b>					<b>8.39 a</b>	<b>35.57 a</b>	<b>48.71 b</b>	<b>4.53 a</b>	<b>20.05 a</b>	<b>2.25 b</b>

<sup>1</sup>Hybrid information provided by seed companies. Under type, F=Forage sorghum. Under Maturity, E=Early, F=Full, ME=Medium Early, MF=Medium Full, M=Medium, ML=Medium Late, L=Late, PS=Photoperiod Sensitive.

Table 7. Additional forage quality characteristics were determined from harvest samples submitted to Dairyland Laboratories from the 2023 University of California forage sorghum variety trials at KARE, WREC, and Davis. Meanings of the different quality component values are shown in the Materials and Methods section.

Hybrid information <sup>1</sup>					Nutrient Composition and Calculation <sup>2</sup>			
Hybrid	Company	Type	Maturity	BMR	NDFD30	uNDFom240	NDFD240	WSC Sugar
NK300	S&W Seed Co	FNON	ME	NO	46.51 l	15.94 g-l	62.31 i	10.4 e-h
SS405	S&W Seed Co	FNON	ML	NO	48.32 i-l	17.83 cd	64.89 d-i	11.72 c-f
X50665	Scott Seed Co	FBMR	M	YES	47.95 i-l	14.65 k-n	62.92 g-i	10.56 e-h
X54243	Scott Seed Co	FNON	L	NO	47.7 i-l	19.68 ab	65.4 b-g	8.8 h
F72FS05	DYNAGRO	F-NON	M	NO	50.53 e-k	15.59 h-m	65.52 b-g	10.37 e-h
F74FS72 BMR	DYNAGRO	FBMR	M	YES	52.5 b-h	14.04 n	65.83 b-g	11.11 d-f
Super Sile 20	DYNAGRO	FNON	ML	NO	47.11 j-l	17.38 c-g	62.43 hi	10.73 d-g
Fullgraze II	DYNAGRO	FNON	ML	NO	48.8 g-l	16.77 d-h	64.29 e-i	9.91 f-h
Fullgraze II BMR	DYNAGRO	FBMR	ML	YES	52.8 a-f	16.55 d-i	66.77 a-e	11.86 c-e
TX08001	Bill Rooney	PS	PS	NO	51.03 d-i	18.43 bc	68.06 a-c	10.48 e-h
F17300	Bill Rooney	PS	PS	NO	50.9 e-j	19.76 ab	66.64 a-e	8.91 gh
Z-1310 BMR PPS	Zinma Seeds	PSBMR	PS	YES	49.43 e-l	17.51 c-f	65.98 b-f	10.99 d-f
SP2707 DT	S&W Seed Co	FNON	ME	NO	47.56 i-l	14.54 l-n	63.16 f-i	10.73 d-g
SP2606 BMR	S&W Seed Co	FBMR	ME	YES	52.67 a-g	14.18 mn	64.85 d-i	11.1 d-f
X52053	Scott Seed Co	FBMR	M	NO	51.17 c-i	15.3 i-n	65.99 b-f	9.95 f-h
X52242	Scott Seed Co	FNON	M	NO	48.22 i-l	15.23 i-n	65.28 c-h	11.16 d-f
F71FS72 BMR	DYNAGRO	FBMR	E	YES	52.93 a-e	14 n	65.99 b-f	12.59 b-d
Super Sile 30	DYNAGRO	FNON	ME	NO	46.85 kl	17.55 c-f	64.15 e-i	11.58 c-f
F75FS13	DYNAGRO	FNON	M	NO	48.71 h-l	16.02 g-k	64.93 d-i	11.5 c-f
F74FS23 BMR	DYNAGRO	FBMR	M	YES	54.98 a-c	14.49 mn	67.57 a-d	11.91 b-e
F72FS25 BMR	DYNAGRO	FBMR	M	YES	56.37 ab	14.3 mn	68.17 a-c	10.36 e-h
SweetTon MS	DYNAGRO	FNON	ML	NO	50.42 e-l	15.97 g-l	66.97 a-e	13.73 ab
Danny Boy II BMR	DYNAGRO	PSBMR	PS	YES	56.53 a	17.67 c-e	69.51 a	9.86 f-h
Dynagraze II	DYNAGRO	FNON	ME	NO	48.27 i-l	16.04 g-k	62.38 hi	10.92 d-f
Dynagraze II BMR	DYNAGRO	FBMR	ME	YES	54.93 a-d	16.77 d-h	67.47 a-d	8.94 gh

Table 7. continued.

Hybrid information <sup>1</sup>					Nutrient Composition and Calculation <sup>2</sup>			
Hybrid	Company	Type	Maturity	BMR	NDFD30	uNDFom240	NDFD240	WSC Sugar
Super Sweet 10	DYNAGRO	FNON	M	NO	46.63 kl	16.35 e-j	63.25 f-i	10.95 d-f
TX08005	Bill Rooney	PS	PS	NO	49 f-l	19.32 ab	66.39 b-e	10.92 d-f
F15234	Bill Rooney	PS	PS	NO	50.18 e-l	20.29 a	67.46 a-d	8.84 h
SSG 1131	Supra International	FNON	M	NO	50.23 e-l	16.13 f-j	66.88 a-e	13.22 bc
Supra 1337	Supra International	FNON	M	NO	49.85 e-l	15.09 j-n	68.22 ab	15.09 a
<b>Mean</b>					<b>50.3</b>	<b>16.45</b>	<b>65.65</b>	<b>10.97</b>
<b>CV (coefficient of variation-%)</b>					<b>8.38</b>	<b>9.45</b>	<b>4.77</b>	<b>18.34</b>
<b>Location Means</b>								
<b>KARE</b>					<b>47.81 b</b>	<b>16.98 a</b>	<b>64.01 b</b>	<b>13.27 a</b>
<b>WREC</b>					<b>51.06 a</b>	<b>16.97 a</b>	<b>66.54 a</b>	<b>10.37 b</b>
<b>DAVIS</b>					<b>52.04 a</b>	<b>15.38 b</b>	<b>66.42 a</b>	<b>9.28 c</b>

<sup>1</sup>Hybrid information provided by seed companies. Under type, F=Forage sorghum, D=Dual Forage/grain sorghum. Under Maturity, E=Early, F=Full, ME=Medium Early, MF=medium Full, 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=0.05)

Table 8. Additional forage quality characteristics were determined from harvest samples submitted to Dairyland Laboratories from the 2023 University of California forage sorghum variety trials at KARE, WREC, and Davis.

Hybrid information <sup>1</sup>					Nutrient Composition and Calculation <sup>2</sup>			
Hybrid	Company	Type	Maturity	BMR	ESC Sugar	NFC	Milk Lbs per ton-1	Rel. Feed Quality (RFQ)
NK300	S&W Seed Co	FNON	ME	NO	8.17 i-k	42.11 a-c	3184.78 b-f	142.01 b-g
SS405	S&W Seed Co	FNON	ML	NO	10.06 c-g	35.2 g-j	2926.78 g-k	111.79 i-m
X50665	Scott Seed Co	FBMR	M	YES	8.41 g-k	43.41 ab	3314.22 a-d	156.92 a-d
X54243	Scott Seed Co	FNON	L	NO	7.56 k	30.51 j-l	2770.11 j-m	92.5 m-o
F72FS05	DYNAGRO	FNON	M	NO	8.32 h-k	39.59 b-g	3211.78 b-f	138.99 c-h
F74FS72 BMR	DYNAGRO	FBMR	M	YES	9.02 d-k	42.34 a-c	3328.11 a-c	159.98 a-c
Super Sile 20	DYNAGRO	FNON	ML	NO	8.85 e-k	37.78 c-i	2971 e-k	126.55 f-k
Fullgraze II	DYNAGRO	FNON	ML	NO	8.05 jk	36.67 d-i	2979.44 e-k	121.66 g-k
Fullgraze II BMR	DYNAGRO	FBMR	ML	YES	10.52 b-e	34.43 g-k	2894.56 h-k	118.13 h-l
TX08001	Bill Rooney	PS	PS	NO	9.24 d-k	29.49 kl	2752.33 k-n	99.95 l-o
F17300	Bill Rooney	PS	PS	NO	7.75 k	27.06 l	2610.33 mn	92.65 m-o
Z-1310 BMR PPS	Zinma Seeds	PSBMR	PS	YES	9.55 d-j	33.63 h-k	2871.22 i-l	108.8 j-n
SP2707 DT	S&W Seed Co	FNON	ME	NO	8.37 g-k	45.71 a	3502.56 a	164.13 a
SP2606 BMR	S&W Seed Co	FBMR	ME	YES	9.08 d-k	42.53 a-c	3348.22 ab	162.69 ab
X52053	Scott Seed Co	FBMR	M	NO	8 jk	39.08 b-g	3191.44 b-f	138.91 c-h
X52242	Scott Seed Co	FNON	M	NO	9.15 d-k	40.95 a-f	3202.33 b-f	137.92 d-h
F71FS72 BMR	DYNAGRO	FBMR	E	YES	10.71 b-d	41.75 a-d	3315.33 a-c	158.71 a-d
Super Sile 30	DYNAGRO	FNON	ME	NO	9.94 c-h	36.09 e-i	2885.78 h-l	111.28 i-m
F75FS13	DYNAGRO	FNON	M	NO	9.64 d-j	38.88 b-h	3136.22 b-h	130.87 e-i
F74FS23 BMR	DYNAGRO	FBMR	M	YES	10.33 c-f	37.4 c-i	3039.22 e-i	141 c-g
F72FS25 BMR	DYNAGRO	FBMR	M	YES	8.66 f-k	37.35 c-i	3091.89 c-i	144.62 a-f
SweetTon MS	DYNAGRO	FNON	ML	NO	12.06 ab	36.6 d-i	3007.22 e-j	123.45 f-k
Danny Boy II BMR	DYNAGRO	PS-BMR	PS	YES	8.81 e-k	25.77 l	2606.78 mn	105.21 k-o
Dynagraze II	DYNAGRO	FNON	ME	NO	8.84 e-k	41.24 a-e	3220.56 b-e	149.25 a-e
Dynagraze II BMR	DYNAGRO	FBMR	ME	YES	7.67 k	32.94 i-k	2964.67 f-k	110.15 i-n

Table 8. continued.

Hybrid information					Nutrient Composition and Calculation			
Hybrid	Company	Type	Maturity	BMR	ESC Sugar	NFC	Milk Lbs per ton-1	Rel. Feed Quality (RFQ)
Super Sweet 10	DYNAGRO	FNON	M	NO	8.97 e-k	40.83 a-f	3172.44 b-g	127.82 e-j
TX08005	Bill Rooney	PS	PS	NO	9.79 d-i	29.65 kl	2639.11 l-n	88.64 no
F15234	Bill Rooney	PS	PS	NO	7.78 k	25.14 l	2499.56 n	83.64 o
SSG 1131	Supra International	FNON	M	NO	11.64 bc	35.77 f-j	2909.11 h-k	118.61 h-l
Supra 1337	Supra International	FNON	M	NO	13.42 a	38.33 b-i	3060.44 d-i	125.38 f-k
<b>Mean</b>					<b>9.28</b>	<b>36.61</b>	<b>3020.25</b>	<b>126.41</b>
<b>CV (coefficient of variation-%)</b>					<b>19.93</b>	<b>15.97</b>	<b>9.05</b>	<b>18.47</b>
<b>Location Means</b>								
<b>KARE</b>					<b>11.34 a</b>	<b>39.29 a</b>	<b>3068.77 a</b>	<b>123.17 b</b>
<b>WREC</b>					<b>8.79 b</b>	<b>33.79 c</b>	<b>2929.09 b</b>	<b>119.07 b</b>
<b>DAVIS</b>					<b>7.70 c</b>	<b>36.74 b</b>	<b>3062.9 a</b>	<b>136.99 a</b>

<sup>1</sup>Hybrid information provided by seed companies. Under type, F=Forage sorghum, D=Dual Forage/grain sorghum. Under Maturity, E=Early, F=Full, ME=Medium Early, MF=medium Full, 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=0.05)

Table 9. Top ten highest yielding varieties from 2023 studies, calculated using three-location average yields for hybrids in the 2023 UC Sorghum Forage Trials, with the requirement that they also have less than 10% lodging when averaged across all three sites<sup>1</sup>. Lodging percentages and some select forage quality analyses are also presented for these high yielding varieties.

Hybrid	Company	Type	Maturity	BMR	Height	L% Lodging	Yield (T/A) @ 65% Moist	% Crude Protein	240 hr NDFd	Milk Lbs ton-1	Rel. Feed Quality
X54243	Scott Seed Co	FOR-NON	L	NO	288.24 a-c	1.11 ij	42.00 b	6.81 j-l	65.4 b-g	2770.11 j-m	92.5 m-o
TX08005	Bill Rooney	PS	PS	NO	308.18 a	6.67 h-j	40.89 b	5.53 m	66.39 b-e	2639.11 l-n	88.64 no
F17300	Bill Rooney	PS	PS	NO	284.87 a-d	0.00 j	40.65 bc	6.39 k-m	66.64 a-e	2610.33 mn	92.65 m-o
NK300	S&W Seed Co	FOR-NON	ME	NO	183.21 kl	0.00 j	29.75 e-j	7.33 d-j	62.31 i	3184.78 b-f	142.01 b-g
F72FS05	DYNAGRO	FOR-NON	M	NO	215.79 h-l	0.00 j	29.42 e-j	7.6 b-j	65.52 b-g	3211.78 b-f	138.99 c-h
X52053	Scott Seed Co	FOR-BMR	M	NO	235.15 e-j	0.00 j	27.76 e-j	7.85 a-g	65.99 b-f	3191.44 b-f	138.91 c-h
F74FS72 BMR	DYNAGRO	FOR-BMR	M	YES	181.6 kl	0.00 j	27.73 e-j	8.11 a-e	65.83 b-g	3328.11 a-c	159.98 a-c
X50665	Scott Seed Co	FOR-BMR	M	YES	176.21 l	1.11 ij	27.24 f-k	8.4 ab	62.92 g-i	3314.22 a-d	156.92 a-d
F72FS25 BMR	DYNAGRO	FOR-BMR	M	YES	205.1 i-l	0.00 j	26.36 f-k	7.44 c-j	68.17 a-c	3091.89 c-i	144.62 a-f
SP2707 DT	S&W Seed Co	FOR-NON	ME	NO	191.99 j-l	0.00 j	23.60 jk	8.23 a-c	63.16 f-i	3502.56 a	164.13 a

<sup>1</sup>The top hybrid list was derived by taking those hybrids with the highest yields and eliminating those hybrids that lodged by more than 10%.