

# 2022 University of California Forage Sorghum Research Results

## UC-Agriculture and Natural Resources (UC ANR) and UC Davis

Jackie Atim<sup>1</sup>, Robert Hutmacher<sup>2</sup>, Daniel Putnam<sup>3</sup>, Jeff Dahlberg<sup>4</sup>, Julie Pedraza<sup>7</sup>, Chris de Ben<sup>6</sup>, Tarilee Frigulti-Schramm<sup>8</sup>, Jorge Angeles<sup>8</sup>, Maikon Lemos<sup>7</sup>, Nicholas Clark<sup>5</sup>, Ernesto Duran<sup>7</sup>, Brian Neufeld<sup>9</sup>, Vince Silva<sup>10</sup>

### INTRODUCTION

In California, the San Joaquin Valley is home to a multi-billion-dollar dairy industry largely dependent on nutritional silage for animal feeds. Drought incidences over the past decade in the state have affected many dairy farms. Many irrigation water districts have multiple years with significant cut-backs in allocated water, and many instances of groundwater overdraft and depletion have negatively influenced farming operations and ability to maintain dairy production across the state. Forage sorghum [*Sorghum bicolor*(L) Moench] was introduced to the US in the mid-1800's as animal feed, and has varieties with characteristics helpful in adaptation to drought, high temperatures and marginal soils, making it one of the more highly adaptable forage crops in terms of expected issues with climate change. Recent breeding efforts in both public and private have made improvements in different traits such as forage quality, maturity and harvest timing, resistance to lodging and presence or absence of grain. Sorghum as a crop has few diseases and insect pests. Sugarcane Aphid is a relatively new pest for sorghum in California, but there are some good management options identified currently in the form of resistant hybrids and insecticides. Sorghum forage variety trials were planted in 2022 at the Kearney Agricultural Research and Extension Center (KARE, Parlier, CA), the Westside Research and Extension Center (WREC, Five Points, CA) and at the UC Davis Plant Sciences Research Farm (Davis, CA) and are a part of a long-term forage demonstration trial started more than 20 years also. Previous reports can be found at the sorghum website: [www.sorghum.ucanr.edu](http://www.sorghum.ucanr.edu).

### METHODS AND MATERIALS

Five seed companies provided a total of 35 hybrids, which included traditional forage sorghums and brown mid-rib (BMR) 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 with three replications per site. Furrow irrigation was primarily used to irrigate the plots at Kearney, Westside Center, and at the Davis Farm to satisfy the full Evapotranspiration needs of the crop. The 2022 growing season experienced reduced precipitation and increased temperatures when compared with recent years. Rainfall totals from January through May 1, 2022 prior to planting at KARE were 4.84 inches, with an additional 0.15 inches of rainfall recorded during June through August growing season. Rainfall totals from January through June 5 prior to planting at WREC were 2.48 inches and no rainfall was recorded throughout the growing season. Rainfall totals from January through June 5 prior to planting at UC Davis were

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<sup>1</sup> Cooperative Extension Specialist, University of California Kearney Agricultural Research and Extension Center, 9240 S. Riverbend Ave, Parlier, CA 93648, phone: 559-646-6506, Email: jatim@ucanr.edu

<sup>2</sup> Emeritus Cooperative Extension Agronomy Specialist and Center Director, University of California Westside Research and Extension Center, PO Box 158, Five Points, CA 93624, phone: 559-260-8957, Email: rbhutmacher@ucdavis.edu

<sup>3</sup> Alfalfa & Forage Cooperative Extension Specialist, University of CA Davis, Plant Sciences Dept., Davis, CA

<sup>4</sup> Retired Center Director, formerly University of CA Kearney Agricultural Research and Extension Center, Parlier, CA

<sup>5</sup> Cooperative Extension Farm Advisor, University of CA Agriculture and Natural Resources, Hanford, CA

<sup>6</sup> Staff Research Associate III, University of California Davis, Plant Sciences Department, Davis, CA

<sup>7</sup> Staff Research Associate II, University of CA Kearney Research and Extension Center, UC\_ANR, Parlier, CA

<sup>8</sup> Staff Research Associate II, University of California Davis, Plant Science Department, Davis, CA

<sup>9</sup> Superintendent, University of CA West Side Research and Extension Center, UC\_ANR, Five Points, CA

<sup>10</sup> Superintendent, University of CA Kearney Research and Extension Center, UC\_ANR, Parlier, CA

2 inches, with an additional 0.24 inches during the growing season. Irrigation water was applied through furrow irrigation throughout the growing season in the three locations, with the frequency of irrigations differing across locations due to differing soil water holding capacity and infiltration rates between the three sites. Once the crops had nearly full canopy cover, irrigation frequency occurred about every 7-10 days at the Kearney REC site, versus every 14 to 17 days at the other two sites, with irrigation water amounts planned to essentially keep up with evapotranspiration demand of the crop. Fertilizer applications followed recommendation for forage sorghums for each site and soil type. Trials were harvested approximately 100 to 115 days after planting. Yields were measured over two full rows of each plot (20' x 5' area), and subsamples taken for dry matter determination, and yields calculated on 100% dry matter basis, then standardized at 65% moisture to express as silage yield.

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)  
 Soil Type: Hanford sandy loam  
 Plot Size: Four, 30 inch rows by 20 ft  
 Replications: 3  
 Study Design: Split-Plot  
 Planting Date: June 1 2022  
 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 before May 31  
 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> July 28  
 Irrigation: See narrative above  
 Silage Harvest Date: Plots harvested with Wintersteiger Cibus S forage chopper on October 4-5, 2022

**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, 2022  
 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> (two times, mid-August, early September)  
 Irrigation: Sprinklers for stand establishment, gated pipe furrow irrigation subsequent irrigations – see narrative for amounts  
 Silage Harvest Date: September 27-28, 2022

**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: June 7, 2022  
 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: Sivanto Prime two times (July and August) at 7.2 oz ac<sup>-1</sup>  
 Irrigation: See above narrative  
 Silage Harvest Date: Plots harvested with Wintersteiger Cibus S forage chopper  
 September 21, 2022

### Data Collected:

1. Plant stands (plants per unit area)
2. Plant height (cm) 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 concentration.
  - b. ADF: % acid detergent fiber; constituent of the cell wall, mostly cellulose and lignin; inversely related to energy availability.
  - c. NDF: neutral detergent fiber; cell wall fraction of the forage, mostly cellulose, hemicellulose and lignin, inversely related to energy availability.
  - d. Lignin: Acid Detergent Lignin
  - e. Starch: estimated starch content
  - f. Fat: (Ether Extract) - estimated fat content
  - g. NDFD30: neutral detergent fiber digestibility over 30 hours as a percentage of NDF content
  - h. NDFD240: neutral detergent fiber digestibility over 240 hours as a percentage of NDF content
  - i. uNDFom240: Undigested NDF (cell wall) after 10 days in the rumen (measured in situ).
  - 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 prediction of potential milk yield per ton for forage dry matter.

Data was analyzed using the SAS statistical package.

## RESULTS

Table 1 shows the summary of yields, agronomic trait and nutritional analyses reported by types of forage sorghums grown in the 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 at three locations, Kearney, West Side and Davis in 2022. Abbreviations are shown in the footnote with

Sorghum Type (number of cultivars) <sup>1</sup>	% Lodging @ Harvest <sup>2</sup>	Silage Yield (T/A) @65% Moist. <sup>2</sup>	% Crude Protein <sup>2</sup>	% ADF <sup>2</sup>	% NDF <sup>2</sup>	% Lignin <sup>2</sup>	% NDF D30 <sup>2</sup>	% NDF D240 <sup>2</sup>	Milk lbs/ton DM <sup>2</sup>	Relative Feed Quality (RFQ) <sup>2</sup>
PS (2)	0.28 c	33.78 a	6.32 b	40.79 a	62.97 a	5.12 a	49.05 b	66.40 a,b	2476.44 b	87.10 d
PS-BMR (7)	12.70 b,c	27.29 b	7.36 a	38.56 b	57.85 b	4.08 b	53.68 a	67.67 a	2556.13 b	105.11 c
FOR-NON (17)	24.62 a,b	26.37 b	7.31 a	33.68 c	50.52 c	4.14 b	47.38 b	63.54 c	2808.98 a	114.69 b
FFOR--BMR (9)	34.75 a	23.52 c	7.54 a	32.50 c	49.20 c	3.51 c	51.95 a	65.59 b	2870.64 a	126.74 a
Average	23.47	26.25	7.32	34.74	52.32	4.02	49.86	65.03	2756.27	114.3

<sup>1</sup>Number in parenthesis is the number of cultivars for each sorghum type. PS-BMR = Photoperiod-sensitive brown mid-rib; PS = Photoperiod sensitive; FOR-BMR=Forage brown mid-rib type; FOR-NON= forage type.

<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 23.47% and this year's lodging ranged from 0.0 to 88% (Table 2), which was higher than other recent years. The highest average lodging across hybrids was at Davis with 35.1% (Table 5) compared to KARE (Table 3) and WREC (Table 4) that were at 22.1 and 13.5% respectively. At the Davis site, there were 19 hybrids that had average lodging % that were >20%, while at KARE there were 9 hybrids with lodging % >20% and at WREC there were 7 hybrids with lodging >20%. When sorted according to photoperiod sensitive brown mid-rib (PS-BMR), photoperiod sensitive (PS), Forage brown mid-rib (FOR-BMR) and forage (FOR-NON) trait groups (Table 1), there were reduced lodging % in the PS group and also in the PS-BMR grouping. In general, however, lodging was not limited to any specific group.

The tallest hybrids were seen at KARE and WREC with an average at-harvest height of 249 cm across all three locations. WREC had the highest average yields acre<sup>-1</sup>(corrected to 65% moisture content) of the three sites. WREC averages were 29.03 tons acre<sup>-1</sup>, while KARE and Davis had relatively similar average yields at 24.86 acre<sup>-1</sup> and 24.81 acre<sup>-1</sup> respectively. The average forage yield ranged from 18.89 to 34.49 tons acre<sup>-1</sup> with an average of 26.25 tons acre<sup>-1</sup> across the three locations, which is higher than last year but relatively the same average as what was achieved at WREC in 2021.

### 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. The method used for these samples is Near Infrared Spectroscopy (NIR), a method that allows for rapid and cost effective characterization of many important nutrients. NIR analysis is based upon the amount of light absorbed at multiple near-infrared wavelengths, and with adequate large data bases from samples, forage quality component values are accurately predicted. Traditional "wet chemistry" approaches can also be used for similar analyses, but the cost of such analyses is beyond available funding for these trials. Definitions of the different forage quality values are shown on page 3 of this report in the "Data Collected" section. Forage quality data shown in Tables 6 through 8 in this report identify some significant differences across cultivars in some of the component values. Table 1 indicates that the BMR types exhibit slightly lower NDF and ADF values than traditional forage sorghum types

or the photoperiod sensitive types, and also, on average, indicate higher NDF digestibility, on average. Since the values shown in these tables are the means across three field sites, significant differences between cultivars in some forage quality components may differ by variety in each site, and those 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 2022, 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: [www.sorghum.ucanr.edu](http://www.sorghum.ucanr.edu)

## **DISCUSSION**

Experimental and commercial forage sorghums (35) was evaluated for quality and yield. 2022 variety trials were conducted at three sites, two in the San Joaquin Valley (KARE, WREC) and one in the Sacramento Valley (UC Davis farm). This year's yield results were very promising. While low rainfalls and some mid-summer periods with very high temperatures were experienced across the three locations, high yield performance were achieved. Most hybrids averaged across the three location had yields above 20 tons acre<sup>-1</sup>. This is an indicator of how breeding work has gone into enhancing productivity of modern forage sorghum cultivars, while improving resistance to lodging for the mechanical harvesting of forage sorghum. Reduced lignin percentages and some other quality measurements also show some potential for improved forage quality and digestability. Sorghum continues to be a viable choice for farmers who are faced with the challenges of providing good quality animal feed under conditions of limited irrigation water in California.

Table 2. Three-site means for lodging %, height at harvest time, and forage yields corrected to 65% moisture for 2022 sorghum forage hybrids at KARE, WREC, and Davis.

Hybrid Information <sup>1</sup>					Agronomic Measurements <sup>2</sup>		
Hybrid	Company	Type	Maturity	BMR	% Lodging	Height (cm)	Ton ac <sup>-1</sup> 65% Moist
A11003/F17300	Rooney	PS	PS	NO	0.00 l	338.22 b,c	34.49 a
TX08001	Rooney	PS	PS	NO	0.56 l	315.11 c-e	33.08 a,b
Fullgraze II	Dyna-Gro Seed	FOR-NON	ML	NO	0.00 l	376.56 a	31.89 a-c
Hybrid X54243	Scott Seed Co.	FOR-NON	MED	NO	0.00 l	347.33 b	30.93 a-d
SS405	S&W Seed	FOR-NON	ML	NO	12.22 h-k	327.00 b-d	30.54 a-e
Z-1310 PPS	Zinma Seed	PS-BMR	PS	YES	7.78 i-l	314.56 c-e	29.47 b-f
Fullgraze II BMR	Dyna-Gro Seed	FOR-BMR	ML	YES	17.78 f-i	324.44 b-d	28.87 b-g
Super Sile 20	Dyna-Gro Seed	FOR-NON	ML	NO	62.22 b,c	310.89 c-e	28.76 b-h
Hybrid X50652	Scott Seed Co.	PS-BMR	PS	YES	0.00 l	219.44 m-p	28.51 b-h
SFS Star	Dyna-Gro Seed	FOR-NON	E	NO	60.00 c	288.33 e-h	28.47 b-h
Hybrid X52053	Scott Seed Co.	FOR-NON	MED	NO	2.22 k,l	169.33 r-t	27.68 c-i
Hybrid X50665	Scott Seed Co.	FOR-BMR	MED	YES	0.00 l	159.89 s,t	27.68 c-i
SweetTon MS	Dyna-Gro Seed	FOR-NON	ML	NO	26.67 e,f	270.89 g-j	27.43 c-j
F72FS05	Dyna-Gro Seed	FOR-NON	ME	NO	0.00 l	206.33 o-q	27.25 c-j
Super Sweet 10	Dyna-Gro Seed	FOR-NON	M	NO	26.11 e,f	237.56 k-n	27.20 c-j
NK300	S&W Seed	FOR-NON	ME	NO	20.56 f-h	199.44 p,q	27.11 c-j
Super Sile 30	Dyna-Gro Seed	FOR-NON	ME	NO	71.11 b	276.78 f-i	26.52 d-k
SP3905 BD BMR	S&W Seed	FOR-BMR	ME	YES	2.78 k,l	197.78 p-r	26.48 d-k
Danny Boy II BMR	Dyna-Gro Seed	PS-BMR	PS	YES	63.33 b,c	307.33 d,e	26.24 d-l
SPBD703	S&W Seed	FOR-BMR	E	YES	0.56 l	216.00 n-p	26.21 d-l
Dynagraze II BMR	Dyna-Gro Seed	FOR-BMR	ME	YES	23.89 f,g	266.22 g-j	25.77 e-m
SP1792 MS	S&W Seed	FOR-NON	M	NO	36.67 d,e	261.33 h-k	24.76 f-n
Z-1220 BMR	Zinma Seed	FOR-BMR	ML	YES	85.56 a	300.00 d-f	24.65 f-n

Table 2. continued.

Hybrid Information <sup>1</sup>					Agronomic Measurements <sup>2</sup>		
Hybrid	Company	Type	Maturity	BMR	% Lodging	Height (cm)	Ton ac-1 65% Moist
SP3904 BD BMR	S&W Seed	FOR-BMR	MF	YES	0.00 l	183.56 q-s	24.18 g-n
Hybrid X52265	Scott Seed Co.	FOR-NON	MED	NO	1.11 l	150.11 t	24.05 h-n
F74FS72 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	0.00 l	157.00 t	23.38 i-o
Dynagraze II	Dyna-Gro Seed	FOR-NON	ME	NO	40.00 d	255.33 i-l	23.27 i-o
F72FS25 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	0.00 l	194.89 p-r	22.83 j-o
SPBD702	S&W Seed	FOR-BMR	E	YES	4.44 j-l	185.00 q-s	22.80 j-o
SP2774 BMR	S&W Seed	FOR-BMR	ME	YES	41.67 d	290.33 e-g	22.63 j-o
SP1727 MS BMR	S&W Seed	FOR-BMR	M	YES	56.11 c	246.00 j-m	21.86 k-o
F75FS13	Dyna-Gro Seed	FOR-NON	M	NO	71.11 b	261.33 h-k	21.60 l-o
Hybrid X50315	Scott Seed Co.	FOR-NON	MED	NO	0.00 l	153.89 t	21.10 m-o
F71FS72 BMR	Dyna-Gro Seed	FOR-BMR	E	YES	14.44 g-j	203.11 o-q	20.31 n,o
F74FS23 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	88.33 a	231.22 l-o	18.89 o
<b>Means</b>					<b>23.47</b>	<b>248.99</b>	<b>26.25</b>
<b>CV (coefficient of variation- %)</b>					<b>50.33</b>	<b>12.30</b>	<b>19.62</b>
<i>Location Means</i>							
<b>KARE</b>					<b>22.08 b</b>	<b>275.01 a</b>	<b>24.86 b</b>
<b>WREC</b>					<b>13.52 c</b>	<b>269.37 a</b>	<b>29.03 a</b>
<b>Davis</b>					<b>35.14 a</b>	<b>201.28 b</b>	<b>24.81 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-BMR = Photoperiod-sensitive brown mid-rib; PS = Photoperiod sensitive; FOR-BMR=Forage brown mid-rib type; FOR-NON= forage type

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

Table 3. 2022 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)	Ton ac <sup>-1</sup> 65% Moist
Fullgraze II	Dyna-Gro Seed	FOR-NON	ML	NO	0.00 g	405.00 a,b	34.27 a-d
Hybrid X54243	Scott Seed Co.	FOR-NON	MED	NO	0.00 g	412.00 a,b	32.78 a-e
Fullgraze II BMR	Dyna-Gro Seed	FOR-BMR	ML	YES	0.00 g	390.33 b,c	29.56 a-g
5FS Star	Dyna-Gro Seed	FOR-NON	E	NO	0.00 g	306.00 g-j	29.51 a-g
Super Sile 20	Dyna-Gro Seed	FOR-NON	ML	NO	100.00 a	357.33 c-e	28.16 a-i
Hybrid X52053	Scott Seed Co.	FOR-NON	MED	NO	6.67 f,g	193.67 q-s	26.27 b-j
F72FS05	Dyna-Gro Seed	FOR-NON	ME	NO	0.00 g	221.33 o-q	25.51 c-j
SweetTon MS	Dyna-Gro Seed	FOR-NON	ML	NO	0.00 g	292.00 h-k	25.25 c-j
Hybrid X50652	Scott Seed Co.	PS-BMR	PS	YES	0.00 g	254.00 m-o	25.17 d-j
Super Sile 30	Dyna-Gro Seed	FOR-NON	ME	NO	91.67 a,b	315.33 f-i	24.00 e-j
Hybrid X50665	Scott Seed Co.	FOR-BMR	MED	YES	0.00 g	167.00 s	23.46 e-j
Super Sweet 10	Dyna-Gro Seed	FOR-NON	M	NO	10.00 f	256.67 l-n	23.07 f-j
Danny Boy II BMR	Dyna-Gro Seed	PS-BMR	PS	YES	40.00 e	346.33 d-f	22.16 f-j
Dynagraze II BMR	Dyna-Gro Seed	FOR-BMR	ME	YES	8.33 f,g	290.67 h-l	21.72 f-j
TX08001	Rooney	PS	PS	NO	0.00 g	379.00 b-d	36.93 a
Z-1310 BMR	Zinma Seed	PS-BMR	PS	YES	0.00 g	358.67 c-e	35.03 a,b
A11003/F17300	Rooney	PS	PS	NO	0.00 g	425.67 a	34.53 a-c
NK300	S&W Seed	FOR-NON	ME	NO	0.00 g	203.00 q,r	29.92 a-f
SS405	S&W Seed	FOR-NON	ML	NO	6.67 f,g	360.00 c-e	28.61 a-h
SP3904 BD BMR	S&W Seed	FOR-BMR	MF	YES	0.00 g	209.00 q,r	25.54 c-j
SPBD703	S&W Seed	FOR-BMR	E	YES	0.00 g	266.00 k-n	25.15 d-j
SP1792 MS	S&W Seed	FOR-NON	M	NO	0.00 g	276.00 j-n	23.06 f-j
Z-1220 BMR	Zinma Seed	FOR-BMR	ML	YES	100.00 a	334.33 e-g	23.00 f-j



Table 3. continued.

Hybrid Information <sup>1</sup>					Agronomic Measurements <sup>2</sup>		
Hybrid	Company	Type	Maturity	BMR	% Lodging	Height (cm)	Ton ac-1 65% Moist
SP3905 BD BMR	S&W Seed	FOR-BMR	ME	YES	6.67 f,g	213.00 p,q	21.71 f-j
F74FS72 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	0.00 g	175.67 r,s	21.17 f-j
Hybrid X50315	Scott Seed Co.	FOR-NON	MED	NO	0.00 g	175.67 r,s	20.85 f-j
SP2774 BMR	S&W Seed	FOR-BMR	ME	YES	65.00 d	317.00 f-h	20.74 f-j
Dynagraze II	Dyna-Gro Seed	FOR-NON	ME	NO	100.00 a	244.00 n-p	20.33 g-j
F71FS72 BMR	Dyna-Gro Seed	FOR-BMR	E	YES	0.00 g	204.00 q,r	19.67 h-j
Hybrid X52265	Scott Seed Co.	FOR-NON	MED	NO	0.00 g	167.33 s	19.07 I,j
F75FS13	Dyna-Gro Seed	FOR-NON	M	NO	76.67 c	268.00 k-n	18.56 j
SPBD702	S&W Seed	FOR-BMR	E	YES	0.00 g	197.33 q-s	18.43 j
F72FS25 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	0.00 g	198.33 q-s	18.33 j
SP1727 MS BMR	S&W Seed	FOR-BMR	M	YES	93.3 3a,b	281.33 i-m	18.33 j
F74FS23 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	90.00 b	248.00 m-o	18.25 j
<b>Mean</b>					<b>22.08</b>	<b>275.01</b>	<b>24.86</b>
<b>CV (coefficient of variation - %)</b>					<b>23.27</b>	<b>7.66</b>	<b>23.05</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. 2022 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	% Lodging	Height (cm)	Ton ac <sup>-1</sup> 65% Moist
A11003/F17300	Rooney	PS	PS	NO	0.00 f	345.67 a-d	40.92 a
Hybrid X54243	Scott Seed Co.	FOR-NON	MED	NO	0.00 f	351.67 a-c	39.19 a
SS405	S&W Seed	FOR-NON	ML	NO	0.00 f	365.67 a,b	39.08 a
Fullgraze II	Dyna-Gro Seed	FOR-NON	ML	NO	0.00 f	374.67 a	36.25 a,b
TX08001	Rooney	PS	PS	NO	0.00 f	331.33 b-f	36.06 a-c
Super Sile 20	Dyna-Gro Seed	FOR-NON	ML	NO	3.33 f	347.00 a-d	35.17 a-d
Fullgraze II BMR	Dyna-Gro Seed	FOR-BMR	ML	YES	0.00 f	336.33 a-e	34.50 a-d
Dynagraz II BMR	Dyna-Gro Seed	FOR-BMR	ME	YES	1.67 f	246.33 i-k	32.04 b-e
F72FS05	Dyna-Gro Seed	FOR-NON	ME	NO	0.00 f	246.00 i-k	31.21 b-f
5FS Star	Dyna-Gro Seed	FOR-NON	E	NO	91.67 a,b	295.67 f-h	30.45 b-h
Hybrid X50652	Scott Seed Co.	PS-BMR	PS	YES	0.00 f	232.67 j-l	30.37 b-h
SP3905 BD BMR	S&W Seed	FOR-BMR	ME	YES	0.00 f	215.00 k-n	29.77 c-i
NK300	S&W Seed	FOR-NON	ME	NO	0.00 f	228.67 j-m	29.47 d-i
SP3904 BD BMR	S&W Seed	FOR-BMR	MF	YES	0.00 f	222.00 k-n	29.20 d-j
Hybrid X50665	Scott Seed Co.	FOR-BMR	MED	YES	0.00 f	192.67 m-p	28.84 d-j
F72FS25 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	0.00 f	213.00 k-n	28.82 d-j
Hybrid X52053	Scott Seed Co.	FOR-NON	MED	NO	0.00 f	186.00 n-p	28.75 d-j
SweetTon MS	Dyna-Gro Seed	FOR-NON	ML	NO	3.33 f	294.00 f-h	28.71 d-j
SP1792 MS	S&W Seed	FOR-NON	M	NO	28.33 d	268.00 g-j	27.52 e-k
Super Sile 30	Dyna-Gro Seed	FOR-NON	ME	NO	23.33 d,e	323.33 c-f	27.44 e-k
SPBD702	S&W Seed	FOR-BMR	E	YES	0.00 f	232.67 j-l	27.26 e-k
SPBD703	S&W Seed	FOR-BMR	E	YES	0.00 f	243.67 i-k	27.12 e-k
Z-1220 BMR	Zinma Seed	FOR-BMR	ML	YES	98.33 a	297.33 e-h	26.76 e-k

Table 4. continued.

Hybrid Information <sup>1</sup>					Agronomic Measurements <sup>2</sup>		
Hybrid	Company	Type	Maturity	BMR	% Lodging	Height (cm)	Ton ac-1 65% Moist
Dynagraze II	Dyna-Gro Seed	FOR-NON	ME	NO	0.00 f	267.00 h-j	26.52 e-k
Danny Boy II BMR	Dyna-Gro Seed	PS-BMR	PS	YES	91.67 a,b	322.33 c-f	26.22 e-k
F74FS72 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	0.00 f	193.67 l-p	26.17 e-k
SP2774 BMR	S&W Seed	FOR-BMR	ME	YES	5.00 f	300.67 e-h	25.19 f-k
Super Sweet 10	Dyna-Gro Seed	FOR-NON	M	NO	8.33 e,f	276.00 g-i	24.60 g-k
Hybrid X52265	Scott Seed Co.	FOR-NON	MED	NO	0.00 f	171.33 o,p	24.29 g-k
F71FS72 BMR	Dyna-Gro Seed	FOR-BMR	E	YES	0.00 f	210.33 k-o	24.04 h-k
F75FS13	Dyna-Gro Seed	FOR-NON	M	NO	50.00 c	294.33 f-h	23.36 i-k
Z-1310 BMR	Zinma Seed	PS-BMR	PS	YES	0.00 f	346.67 a-d	23.33 i-k
SP1727 MS BMR	S&W Seed	FOR-BMR	M	YES	1.67 f	236.67 i-k	22.78 j,k
Hybrid X50315	Scott Seed Co.	FOR-NON	MED	NO	0.00 f	158.33 p	21.85 k
F74FS23 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	80.00 b	307.33 d-g	21.06 k
<b>Mean</b>					<b>13.52</b>	<b>269.37</b>	<b>29.03</b>
<b>CV (coefficient of variation - %)</b>					<b>75.39</b>	<b>9.05</b>	<b>13.69</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. 2022 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)	Ton ac <sup>-1</sup> 65% Moist
Super Sweet 10	Dyna-Gro Seed	FOR-NON	M	NO	60.00 c-g	180.00 e-l	33.93 a
Hybrid X50665	Scott Seed Co.	FOR-BMR	MED	YES	0.00 k	120.00 l,m	30.73 a,b
Danny Boy II BMR	Dyna-Gro Seed	PS-BMR	PS	YES	58.33 d-g	253.33 b-d	30.34 a,b
Z-1310 PPS	Zinma Seed	PS-BMR	PS	YES	23.33 i-k	238.33 b-f	30.03 a-c
Hybrid X50652	Scott Seed Co.	PS-BMR	PS	YES	0.00 k	171.67 f-l	30.00 a-c
Hybrid X52265	Scott Seed Co.	FOR-NON	MED	NO	3.33 j,k	111.67 l,m	28.78 a-d
SP3905 BD BMR	S&W Seed	FOR-BMR	ME	YES	1.67 k	158.33 h-m	28.53 a-d
SweetTon MS	Dyna-Gro Seed	FOR-NON	ML	NO	76.67 a-f	226.67 b-h	28.31 a-d
Super Sile 30	Dyna-Gro Seed	FOR-NON	ME	NO	98.33 a	191.67 d-k	28.12 a-d
Hybrid X52053	Scott Seed Co.	FOR-NON	MED	NO	0.00 k	128.33 j-m	28.01 a-d
A11003/F17300	Rooney	PS	PS	NO	0.00 k	243.33 b-e	28.01 a-d
SPBD703	S&W Seed	FOR-BMR	E	YES	1.67 k	138.33 j-m	26.37 a-d
TX08001	Rooney	PS	PS	NO	1.67 k	235.00 b-g	26.24 a-d
SFS Star	Dyna-Gro Seed	FOR-NON	E	NO	88.33 a,b	263.3 3 b.c	25.46 a-e
Fullgraze II	Dyna-Gro Seed	FOR-NON	ML	NO	0.00 k	350.00 a	25.16 a-e
F72FS05	Dyna-Gro Seed	FOR-NON	ME	NO	0.00 k	151.67 i-m	25.01 b-e
SP1727 MS BMR	S&W Seed	FOR-BMR	M	YES	73.33 a-f	220.00 b-i	24.46 b-e
Z-1220 BMR	Zinma Seed	FOR-BMR	ML	YES	58.33 d-g	268.33 b	24.19 b-e
SS405	S&W Seed	FOR-NON	ML	NO	30.00 h-j	255.33 b-d	23.94 b-e
SP1792 MS	S&W Seed	FOR-NON	M	NO	81.67 a-e	240.00 b-f	23.71 b-e
Dynagraze II BMR	Dyna-Gro Seed	FOR-BMR	ME	YES	61.67 b-g	261.67 b.c	23.56 b-e
Dynagraze II	Dyna-Gro Seed	FOR-NON	ME	NO	20.00 i-k	255.00 b-d	22.96 b-e
Super Sile 20	Dyna-Gro Seed	FOR-NON	ML	NO	83.33 a-d	228.33 b-g	22.95 b-e

Table 5. continued.

Hybrid Information <sup>1</sup>					Agronomic Measurements <sup>2</sup>		
Hybrid	Company	Type	Maturity	BMR	% Lodging	Height (cm)	Ton ac-1 65% Moist
F75FS13	Dyna-Gro Seed	FOR-NON	M	NO	86.67 a-c	221.67 b-h	22.87 b-e
F74FS72 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	0.00 k	101.67 m	22.79 b-e
SPBD702	S&W Seed	FOR-BMR	E	YES	13.33 j,k	125.00 k-m	22.72 b-e
Fullgraze II BMR	Dyna-Gro Seed	FOR-BMR	ML	YES	53.33 f-h	246.67 b-e	22.55 b-e
SP2774 BMR	S&W Seed	FOR-BMR	ME	YES	55.00 e-h	253.33 b-d	21.97 b-e
NK300	S&W Seed	FOR-NON	ME	NO	61.67 b-g	166.67 g-m	21.94 b-e
F72FS25 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	0.00 k	173.33 f-l	21.35 c-e
Hybrid X54243	Scott Seed Co.	FOR-NON	MED	NO	0.00 k	278.33 b	20.83 d,e
Hybrid X50315	Scott Seed Co.	FOR-NON	MED	NO	0.00 k	127.67 j-m	20.60 d,e
F74FS23 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	95.00 a	138.33 j-m	17.36 e
SP3904 BD BMR	S&W Seed	FOR-BMR	MF	YES	0.00 k	126.67 j-m	17.22 e
F71FS72 BMR	Dyna-Gro Seed	FOR-BMR	E	YES	43.33 g-i	195.00 c-j	17.21 e
<b>Mean</b>					<b>35.14</b>	<b>201.28</b>	<b>24.81</b>
<b>CV (coefficient of variation - %)</b>					<b>48.72</b>	<b>21.20</b>	<b>21.88</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 determined from harvest samples submitted to Dairyland Laboratories from 2022 University of CA forage sorghum variety trials. Meanings of the different quality component values are shown in the Materials and Methods section.

Hybrid Information <sup>1</sup>					Nutrient Composition & Calculations <sup>2</sup>					
Hybrid	Company	Type	Maturity	BMR	% Crude Protein	% ADF	% NDF	% Lignin	% Starch	% Fat
A11003/F17300	Rooney	PS	PS	NO	6.32 l	39.68 b	61.15 a,b	4.90 a-c	4.88 n-q	2.03 p-r
TX08001	Rooney	PS	PS	NO	6.33 l-n	41.90 a,b	64.80 a	5.34 a	0.52 q	1.92 r
Fullgraze II	Dyna-Gro Seed	FOR-NON	ML	NO	5.99 m,n	39.86 b	61.83 a,b	4.66 c-e	2.91 o-q	2.22 m-p
Hybrid X54243	Scott Seed Co.	FOR-NON	MED	NO	5.87 n	41.51 a,b	64.41 a,b	4.90 a-c	1.70 p,q	2.13 o-q
SS405	S&W Seed	FOR-NON	ML	NO	6.68 j-m	35.25 c-f	51.61 e-h	4.59 c-f	12.90 f-j	2.20 n-p
Z-1310 PPS	Zinma Seed	PS-BMR	PS	YES	7.05 f-l	42.94 a	64.30 a,b	5.21 a,b	2.60 p,q	1.92 r
Fullgraze II BMR	Dyna-Gro Seed	FOR-BMR	ML	YES	7.43 c-j	36.65 c,d	56.32 c,d	3.76 k-q	5.90 m-p	2.44 f-l
Super Sile 20	Dyna-Gro Seed	FOR-NON	ML	NO	6.55 k-n	36.11 c-e	52.67 d-f	4.45 d-i	12.53 g-k	2.14 o-q
Hybrid X50652	Scott Seed Co.	PS-BMR	PS	YES	7.89 a-d	40.79 a,b	60.22 b,c	3.94 i-o	2.37 p,q	2.23 m-o
SFS Star	Dyna-Gro Seed	FOR-NON	E	NO	6.82 i-l	34.35 c-j	51.81 d-h	4.08 f-m	11.30 i-l	2.27 l-o
Hybrid X52053	Scott Seed Co.	FOR-NON	MED	NO	7.88 a-d	31.94 i-m	48.31 f-i	4.16 e-l	17.49 a-f	2.48 e-k
Hybrid X50665	Scott Seed Co.	FOR-BMR	MED	YES	8.15 a-c	31.90 i-m	48.73 f-i	3.62 m-r	20.02 a-c	2.31 k-o
SweetTon MS	Dyna-Gro Seed	FOR-NON	ML	NO	6.93 h-l	32.02 i-l	47.42 h-j	3.35 q-s	9.720 j-m	2.63 c-f
F72FS05	Dyna-Gro Seed	FOR-NON	ME	NO	7.27 d-k	34.02 c-j	52.87 d-f	4.52 c-g	16.53 b-h	2.39 h-m
Super Sweet 10	Dyna-Gro Seed	FOR-NON	M	NO	7.45 c-i	34.10 c-j	48.92 f-i	4.52 c-g	16.46 b-h	2.50 e-k
NK300	S&W Seed	FOR-NON	ME	NO	7.48 b-i	32.67 f-l	49.08 f-i	4.49 d-h	21.91 a	2.19 n-p
Super Sile 30	Dyna-Gro Seed	FOR-NON	ME	NO	7.10 e-k	36.81 c	54.08 d,e	4.79 b-d	14.41 e-j	1.96 q,r
SP3905 BD BMR	S&W Seed	FOR-BMR	ME	YES	7.26 d-k	29.19 m,n	42.56 k	2.74 t	18.49 a-e	2.87 a,b
Danny Boy II BMR	Dyna-Gro Seed	PS-BMR	PS	YES	7.94 a-d	41.95 a,b	60.87 a-c	3.93 j-p	0.86 q	2.21 m-p
SPBD703	S&W Seed	FOR-BMR	E	YES	8.14 a-c	31.09 k-n	47.38 h-j	3.82 k-q	20.10 a-c	2.48 e-k
Dynagraze II BMR	Dyna-Gro Seed	FOR-BMR	ME	YES	7.86 a-e	33.52 e-k	52.64 d-f	4.15 e-l	11.97 h-l	2.53 d-j
SP1792 MS	S&W Seed	FOR-NON	M	NO	6.91 h-l	34.87 c-h	51.84 d-h	3.53 n-s	7.45 l-o	2.44 g-l
Z-1220 BMR	Zinma Seed	FOR-BMR	ML	YES	7.74 b-g	34.26 c-j	50.50 e-h	3.92 j-p	13.86 e-j	2.49 e-k

Table 6. continued.

Hybrid Information <sup>1</sup>					Nutrient Composition & Calculations <sup>2</sup>					
Hybrid	Company	Type	Maturity	BMR	% Crude Protein	% ADF	% NDF	% Lignin	% Starch	% Fat
SP3904 BD BMR	S&W Seed	FOR-BMR	MF	YES	7.87 a-d	33.10 f-k	49.72 e-h	3.42 p-s	15.34 c-i	2.61 c-g
Hybrid X52265	Scott Seed Co.	FOR-NON	MED	NO	8.53 a	32.10 h-l	48.94 f-i	4.05 g-n	19.45 a-d	2.35 j-n
F74FS72 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	7.61 b-h	33.23 f-k	51.28 e-h	3.52 o-s	13.43 f-j	2.58 c-h
Dynagraze II	Dyna-Gro Seed	FOR-NON	ME	NO	7.78 a-f	32.70 f-l	48.63 f-i	4.36 d-j	17.14 a-g	2.49 e-k
F72FS25 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	7.48 b-i	32.99 f-k	49.08 f-i	3.36 q-s	14.48 e-j	2.65 c-e
SPBD702	S&W Seed	FOR-BMR	E	YES	7.80 a-f	32.25 g-l	48.67 f-i	3.12 r-t	14.96 d-i	2.73 a-c
SP2774 BMR	S&W Seed	FOR-BMR	ME	YES	6.83 i-l	33.89 d-k	52.23 d-g	3.99 h-o	11.86 h-l	2.43 g-l
SP1727 MS BMR	S&W Seed	FOR-BMR	M	YES	7.65 b-h	32.80 f-k	49.19 f-i	3.04 s,t	7.99 k-n	2.70 b-d
F75FS13	Dyna-Gro Seed	FOR-NON	M	NO	6.99 g-l	29.97 l-n	44.63 i-k	3.70 l-q	20.56 a,b	2.54 c-i
Hybrid X50315	Scott Seed Co.	FOR-NON	MED	NO	8.24 a,b	31.78 j-m	47.89 g-i	4.16 e-l	20.20 a,b	2.43 g-l
F71FS72 BMR	Dyna-Gro Seed	FOR-BMR	E	YES	7.57 b-i	28.67 n	42.87 j,k	3.11 r-t	20.58 a,b	2.89 a
F74FS23 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	7.24 d-k	35.00c-g	52.80 d-f	3.51 o-s	12.77 f-k	2.36 i-n
<b>Means</b>					<b>7.32</b>	<b>34.74</b>	<b>52.32</b>	<b>4.02</b>	<b>12.54</b>	<b>2.39</b>
<b>CV (coefficient of variation - %)</b>					<b>11.11</b>	<b>8.62</b>	<b>9.35</b>	<b>13.79</b>	<b>41.15</b>	<b>8.63</b>
<b>Location</b>										
<b>KARE</b>					<b>7.27 b</b>	<b>35.36 a</b>	<b>53.46 a</b>	<b>4.39 a</b>	<b>14.12 b</b>	<b>2.41 a</b>
<b>WREC</b>					<b>6.29 c</b>	<b>35.69 a</b>	<b>52.55 a</b>	<b>3.45 b</b>	<b>8.03 c</b>	<b>2.44 a</b>
<b>Davis</b>					<b>8.45 a</b>	<b>33.11 b</b>	<b>50.92 b</b>	<b>4.25 a</b>	<b>15.53 a</b>	<b>2.31 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 determined from harvest samples submitted to Dairyland Laboratories from 2022 University of CA forage sorghum variety trials. Meanings of the different quality component values are shown in the Materials and Methods section.

Hybrid Information <sup>1</sup>					Nutrient Composition & Calculations <sup>2</sup>				
Hybrid	Company	Type	Maturity	BMR	NDFd30	NDFd240	UNDFom 240	Milk Lbs ton-1	Rel. Forage Quality
A11003/F17300	Rooney	PS	PS	NO	48.99 h-p	66.08 b-i	19.97 a-c	2542.9 j-m	92.30 n-q
TX08001	Rooney	PS	PS	NO	49.10 g-o	66.73 b-g	21.01 a	2410.0 m,n	81.91 q
Fullgraze II	Dyna-Gro Seed	FOR-NON	ML	NO	48.22 j-q	65.54 c-l	20.79 a	2501.7 k-m	86.52 o-q
Hybrid X54243	Scott Seed Co.	FOR-NON	MED	NO	49.79 f-l	66.65 b-h	20.89 a	2477.2 l,m	84.66 p,q
SS405	S&W Seed	FOR-NON	ML	NO	44.42 r,s	62.66 m-p	18.61 d-f	2777.8 d-i	103.96 k-n
Z-1310 PPS	Zinma Seed	PS-BMR	PS	YES	51.91 c-i	67.44 a-d	20.25 a,b	2368.8 m,n	88.14 o-q
Fullgraze II BMR	Dyna-Gro Seed	FOR-BMR	ML	YES	52.64 b-f	66.70 b-h	18.11 d-i	2674.6 g-k	106.32 j-m
Super Sile 20	Dyna-Gro Seed	FOR-NON	ML	NO	45.27 q-s	62.95 m-p	18.85 c-e	2649.9 h-l	101.91 l-n
Hybrid X50652	Scott Seed Co.	PS-BMR	PS	YES	56.35 a	69.76 a	17.63 e-l	2387.7 m,n	101.24 l-n
SFS Star	Dyna-Gro Seed	FOR-NON	E	NO	47.26 k-r	64.15 h-p	17.93 d-i	2767.8 d-i	109.43 i-l
Hybrid X52053	Scott Seed Co.	FOR-NON	MED	NO	48.65 i-p	64.52 f-n	16.39 k-o	2896.0 b-e	122.74 c-h
Hybrid X50665	Scott Seed Co.	FOR-BMR	MED	YES	53.94 a-d	65.67 c-k	15.84 n-p	2869.7 b-e	131.91 b,c
SweetTon MS	Dyna-Gro Seed	FOR-NON	ML	NO	45.87 o-s	65.18 c-m	15.94 n-p	2924.1 a-e	122.34 c-h
F72FS05	Dyna-Gro Seed	FOR-NON	ME	NO	50.08 f-k	64.91 d-m	17.69 e-j	2819.4 d-h	115.79 g-k
Super Sweet 10	Dyna-Gro Seed	FOR-NON	M	NO	45.75 p-s	61.96 n-p	17.95 d-i	2844.7 c-g	114.70 h-k
NK300	S&W Seed	FOR-NON	ME	NO	46.57 l-r	61.59 p,q	17.88 d-j	2826.6 d-g	119.34 d-i
Super Sile 30	Dyna-Gro Seed	FOR-NON	ME	NO	45.35 q-s	63.16 k-p	19.09 b-d	2632.7 i-l	98.81 l-o
SP3905 BD BMR	S&W Seed	FOR-BMR	ME	YES	49.32 g-n	63.09 l-p	14.98 p	3022.3 a,b	143.69 a,b
Danny Boy II BMR	Dyna-Gro Seed	PS-BMR	PS	YES	56.25 a	68.62 a,b	18.50 d-h	2262.4 n	96.85 m-p
SPBD703	S&W Seed	FOR-BMR	E	YES	50.24 e-k	63.44 j-p	16.54 k-o	2941.7 a-d	129.59 c-e
Dynagraze II BMR	Dyna-Gro Seed	FOR-BMR	ME	YES	52.36 c-g	67.28 a-e	16.43 k-o	2919.6 a-e	120.15 c-i
SP1792 MS	S&W Seed	FOR-NON	M	NO	46.34 m-s	64.52 f-n	17.55 e-l	2693.4 f-j	106.81 j-m
Z-1220 BMR	Zinma Seed	FOR-BMR	ML	YES	50.84 d-j	64.22 g-o	17.26 h-m	2754.9 e-i	116.65 f-j



Table 7. continued.

Hybrid Information <sup>1</sup>					Nutrient Composition & Calculations <sup>2</sup>				
Hybrid	Company	Type	Maturity	BMR	NDFd30	NDFd240	UNDFom 240	Milk Lbs ton-1	Rel. Forage Quality
SP3904 BD BMR	S&W Seed	FOR-NON	MF	YES	55.07 a-c	67.73 a-c	15.41 o,p	2858.6 b-f	130.35 c,d
Hybrid X52265	Scott Seed Co.	FOR-BMR	MED	NO	49.83 f-l	64.40 f-o	16.36 l	2884.7 b-e	124.82 c-h
F74FS72 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	55.75 a,b	68.51 a,b	15.52 o,p	2855.4 b-f	127.64 c-g
Dynagraze II	Dyna-Gro Seed	FOR-BMR	ME	NO	46.09 n-s	61.91 o-p	17.54 f-l	2875.0 b-e	117.26 e-j
F72FS25 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	53.74 a-d	66.82 b-f	15.49 o,p	2863.7 b-f	128.22 c-f
SPBD702	S&W Seed	FOR-NON	E	YES	53.52 a-d	65.65 c-l	16.05 n-p	2903.3 b-e	131.53 b-d
SP2774 BMR	S&W Seed	FOR-BMR	ME	YES	52.23 c-h	67.49 a-c	16.37 l-o	2890.3 b-e	119.33 d-i
SP1727 MS BMR	S&W Seed	FOR-NON	M	YES	50.20 e-k	64.76 e-m	16.59 j-o	2806.4 d-i	120.79 c-i
F75FS13	Dyna-Gro Seed	FOR-NON	M	NO	43.09 s	59.99 q	17.13 i-n	3004.8 a-c	125.81 c-h
Hybrid X50315	Scott Seed Co.	FOR-BMR	MED	NO	47.69 j-q	63.57 i-p	16.45 k-o	2924.9 a-e	124.51 c-h
F71FS72 BMR	Dyna-Gro Seed	FOR-BMR	E	YES	49.47 f-m	63.39 j-p	15.04 p	3083.0 a	145.05 a
F74FS23 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	53.45 a-e	65.91 c-j	17.30 g-m	2634.1 i-l	115.42 g-k
<b>Means</b>					<b>49.86</b>	<b>65.03</b>	<b>17.49</b>	<b>2756.27</b>	<b>114.30</b>
<b>CV (coefficient of variation - %)</b>					<b>7.00</b>	<b>4.21</b>	<b>7.99</b>	<b>6.78</b>	<b>11.62</b>
<b>Location Means</b>									
<b>KARE</b>					<b>49.27 b</b>	<b>64.59 b</b>	<b>18.05 a</b>	<b>2690.00 b</b>	<b>108.75 b</b>
<b>WREC</b>					<b>49.16 b</b>	<b>64.93 a,b</b>	<b>17.69 a</b>	<b>2655.05 b</b>	<b>110.19 b</b>
<b>Davis</b>					<b>51.24 a</b>	<b>65.58 a</b>	<b>16.70 b</b>	<b>2928.54 a</b>	<b>124.25 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 8. Additional forage quality characteristics determined from harvest samples submitted to Dairyland Laboratories from 2022 University of CA forage sorghum variety trials. Meanings of the different quality component values are shown in the Materials and Methods section.

Hybrid Information <sup>1</sup>					Nutrient Composition & Calculations <sup>2</sup>				
Hybrid	Company	Type	Maturity	BMR	NFC	ESC Sugar	WSC Sugar	Milk Lbs per ton-1	Rel. Forage Quality
A11003/F17300	Rooney	PS	PS		22.49l,m	8.17 i-p	9.40 f-l	2542.9 j-m	92.30 n-q
TX08001	Rooney	PS	PS		22.2m	7.54 k-p	8.60 k-m	2410.0 m,n	81.91 q
Fullgraze II	Dyna-Gro Seed	FOR-NON	ML	NO	33.51d-h	8.81 f-l	10.04 f-k	2501.7 k-m	86.52 o-q
Hybrid X54243	Scott Seed Co.	FOR-NON	MED	NO	41.16a,b	7.75 j-p	8.91 j-m	2477.2 l,m	84.66 p,q
SS405	S&W Seed	FOR-NON	ML	NO	26.88i-l	9.30 e-i	11.03 c-f	2777.8 d-i	103.96 k-n
Z-1310 PPS	Zinma Seed	PS-BMR	PS	YES	23.86k-m	7.00 m-p	8.14 l,m	2368.8 m,n	88.14 o-q
Fullgraze II BMR	Dyna-Gro Seed	FOR-BMR	ML	YES	33.32d-h	9.71 d-h	10.95 c-g	2674.6 g-k	106.32 j-m
Super Sile 20	Dyna-Gro Seed	FOR-NON	ML	NO	34.87c-f	8.78 f-l	10.44 e-j	2649.9 h-l	101.91 l-n
Hybrid X50652	Scott Seed Co.	PS-BMR	PS	YES	41.09a,b	7.32 l-p	8.15 l,m	2387.7 m,n	101.24 l-n
SFS Star	Dyna-Gro Seed	FOR-NON	E	NO	36.47c-e	10.05 c-f	11.73 b-e	2767.8 d-i	109.43 i-l
Hybrid X52053	Scott Seed Co.	FOR-NON	MED	NO	41.56a	8.71 f-l	10.59 d-i	2896.0 b-e	122.74 c-h
Hybrid X50665	Scott Seed Co.	FOR-BMR	MED	YES	36.64b-d	7.56 k-p	9.33 g-l	2869.7 b-e	131.91 b,c
SweetTon MS	Dyna-Gro Seed	FOR-NON	ML	NO	34.45c-g	12.67 a	14.45 a	2924.1 a-e	122.34 c-h
F72FS05	Dyna-Gro Seed	FOR-NON	ME	NO	36.15c-e	7.35 l-p	9.07 i-m	2819.4 d-h	115.79 g-k
Super Sweet 10	Dyna-Gro Seed	FOR-NON	M	NO	33.53d-h	8.52 f-m	10.40 e-j	2844.7 c-g	114.70 h-k
NK300	S&W Seed	FOR-NON	ME	NO	32.6d-h	6.64 p	8.59 k-m	2826.6 d-g	119.34 d-i
Super Sile 30	Dyna-Gro Seed	FOR-NON	ME	NO	35.77c-e	7.13 m-p	8.74 k-m	2632.7 i-l	98.81 l-o
SP3905 BD BMR	S&W Seed	FOR-BMR	ME	YES	29.29h-j	11.32 a-c	13.22 a,b	3022.3 a,b	143.69 a,b
Danny Boy II BMR	Dyna-Gro Seed	PS-BMR	PS	YES	34.17d-g	6.86 n-p	7.58 m	2262.4 n	96.85 m-p
SPBD703	S&W Seed	FOR-BMR	E	YES	33.07d-h	8.19 h-o	10.05 f-k	2941.7 a-d	129.59 c-e
Dynagraze II BMR	Dyna-Gro Seed	FOR-BMR	ME	YES	34.08d-g	9.17 e-j	10.81 d-h	2919.6 a-e	120.15 c-i
SP1792 MS	S&W Seed	FOR-NON	M	NO	30.13g-i	11.22 a-d	12.73 b	2693.4 f-j	106.81 j-m
Z-1220 BMR	Zinma Seed	FOR-BMR	ML	YES	24.97j-m	8.37 h-n	9.89 f-k	2754.9 e-i	116.65 f-j

Table 8. continued.

Hybrid Information <sup>1</sup>					Nutrient Composition & Calculations <sup>2</sup>				
Hybrid	Company	Type	Maturity	BMR	NFC	ESC Sugar	WSC Sugar	Milk Lbs per ton-1	Rel. Forage Quality
SP3904 BD BMR	S&W Seed	FOR-NON	MF	YES	27.27i-k	8.49 g-m	10.05 f-k	2858.6 b-f	130.35 c,d
Hybrid X52265	Scott Seed Co.	FOR-BMR	MED	NO	38.81a-c	7.34 l-p	9.18 h-m	2884.7 b-e	124.82 c-h
F74FS72 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	35.02c-f	9.05 e-k	10.57 d-i	2855.4 b-f	127.64 c-g
Dynagraze II	Dyna-Gro Seed	FOR-BMR	ME	NO	34.11d-g	8.81 f-l	10.74 d-i	2875.0 b-e	117.26 e-j
F72FS25 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	34.88c-f	9.25 e-j	10.82 d-h	2863.7 b-f	128.22 c-f
SPBD702	S&W Seed	FOR-NON	E	YES	33.29d-h	9.05 e-k	10.65 d-i	2903.3 b-e	131.53 b-d
SP2774 BMR	S&W Seed	FOR-BMR	ME	YES	32.03e-h	9.32 e-i	10.91 c-g	2890.3 b-e	119.33 d-i
SP1727 MS BMR	S&W Seed	FOR-NON	M	YES	31.17f-i	11.84 a,b	13.30 a,b	2806.4 d-i	120.79 c-i
F75FS13	Dyna-Gro Seed	FOR-NON	M	NO	35.54c-f	10.00 c-g	12.10 b-d	3004.8 a-c	125.81 c-h
Hybrid X50315	Scott Seed Co.	FOR-BMR	MED	NO	36.62b-d	7.84 i-p	9.77 f-l	2924.9 a-e	124.51 c-h
F71FS72 BMR	Dyna-Gro Seed	FOR-BMR	E	YES	36.4c-e	10.47 b-d	12.50 b,c	3083.0 a	145.05 a
F74FS23 BMR	Dyna-Gro Seed	FOR-BMR	M	YES	34.94c-f	7.76 j-p	9.21 h-m	2634.1 i-l	115.42 g-k
<b>Means</b>						<b>8.74</b>	<b>10.33</b>	<b>2756.3</b>	<b>114.30</b>
<b>CV (coefficient of variation - %)</b>						<b>18.72</b>	<b>17.07</b>	<b>6.78</b>	<b>11.62</b>
<b>Location Means</b>									
<b>UC Davis</b>						<b>7.32 c</b>	<b>8.88 c</b>	<b>2690.00 b</b>	<b>108.75 b</b>
<b>KARE1</b>						<b>10.60 a</b>	<b>12.09 a</b>	<b>2655.05 b</b>	<b>110.19 b</b>
<b>KARE2</b>						<b>8.30 b</b>	<b>10.00 b</b>	<b>2928.54 a</b>	<b>124.25 a</b>
<b>WREC</b>						<b>7.32 c</b>	<b>8.88 c</b>	<b>2690.00 b</b>	<b>108.75 b</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)