University of California ANR Forage Sorghum Variety Trials
2021 Field Research on Forage Sorghum Cultivars for California

Bob Hutmacher[1], Jeff Dahlberg[2], Dan Putnam[3], Julie Pedraza[4], Nick Clark[5],
Ernesto Duran[6], Ryan Puckett[6], Chris de Ben[7], Jorge Angeles[8], Vincent Silva[6] and Brian Neufeld[9]

Introduction

Sorghum [*Sorghum bicolor* (L.) Moench] is known for including many biotypes, encompassing a wide range of biomass yield potential, crop feed quality and composition, in biotypes that vary greatly in plant height, photoperiod response, and presence or absence of grain heads. In addition, the inherent ability of many types of sorghum to remain productive even when subjected to repeated water deficits can be of significant value in regions where periodic droughts are experiences or where difficult decisions need to be made regarding where to direct limited irrigation water supplies. Potential for reduced water allocations when components of California's Sustainable Groundwater Management Act are implemented, and periods of atmospheric drought have spurred renewed interest in forage sorghums as potential alternative silage crops for the multi-billion dollar dairy industry in the San Joaquin Valley of California. Reliable production of high quality forage remains a primary goal of dairy opertors when growing forage. Interest in use of sorghum as a livestock feed crop for dairy operations still received mixed reviews, so there continues to be a need for public information on yield potential and agronomic performance and quality of available commercial forage sorghums. Data herein represents forage trials planted in 2021 at the Kearney Agricultural Research and Extension (KARE) Center near Parlier, CA, and at the West Side Research and Extension (WREC) Center near Five Points, CA.

A forage variety trial was conducted also in 2021 at the UC Davis campus farm, but at the time of preparation of this report, the data has not been made available to include in the report. We will send a separate report covering the data at that trial location when the data analysis has been completed.

Methods and Materials

Six seed companies provided a total of 48 hybrids for the 2021 UC-ANR Forage sorghum variety trials. Descriptions of the cultural practices and site characteristics of the test sites are shown at the end of this section.

Entries in the trials 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. Overhead sprinklers (linear move sprinkler system) were used to irrigate the plots at Kearney (KARE) site for the first 6 weeks of the irrigation season, with supplemental furrow irrigation applied during the remaining season as needed to meet full crop irrigation water needs during warmer weather, higher evapotranspiration periods. A combination of overhead sprinklers (linear move sprinkler system) during the first 4 weeks after emergence and furrow irrigation for the remaining irrigation season was also used at the West Side REC site (WREC). Fertilizer applications followed similar recommendation for forage sorghums for the region, with N fertilizer application

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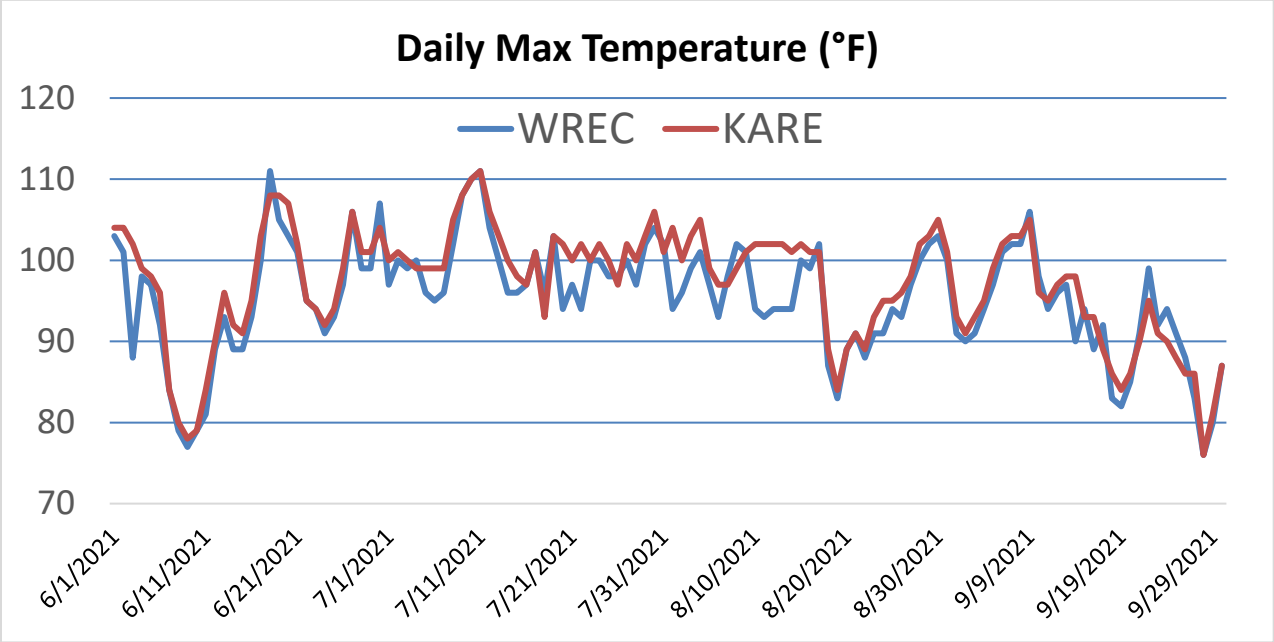
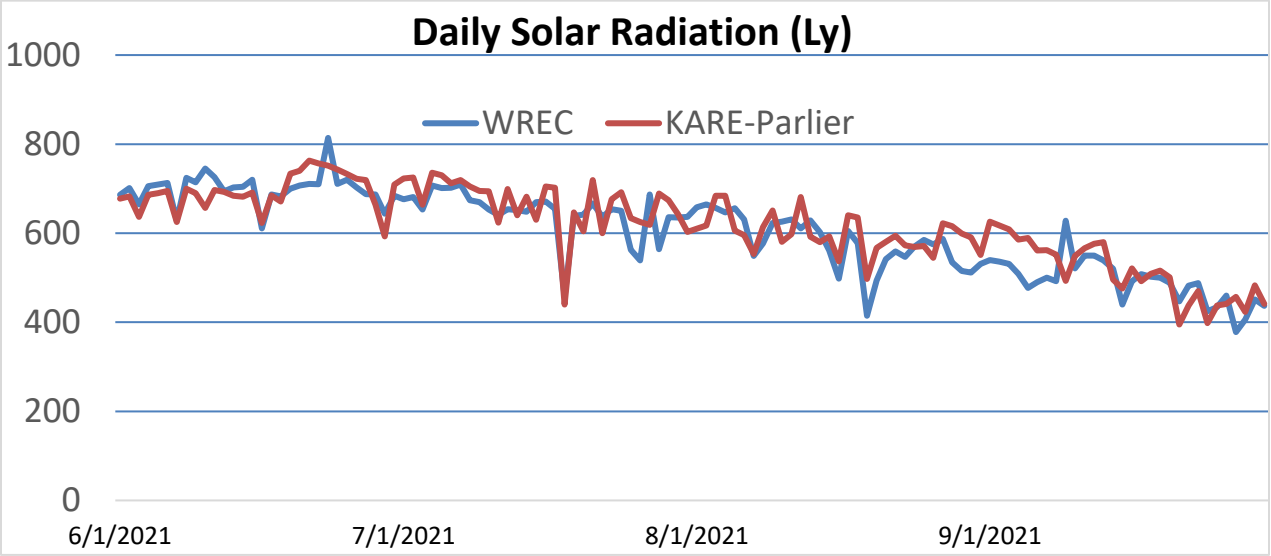
[1] Cooperative Extension Agronomy Specialist and Center Director, University of California Westside Research and Extension Center, PO Box 158, Five Points, CA 93624, phone: 559-260-8957, Email: rbhutmacher@ucdavis.edu;
[2] Retired Center Director, formerly University of CA Kearney Agricultural Research and Extension Center, Parlier, CA
[3] Alfalfa & Forage Cooperative Extension Specialist, University of CA Davis, Plant Sciences Dept., Davis, CA
[4] Staff Research Associate II, University of CA Kearney Agricultural Research and Extension Center, 9240 S. Riverbend Ave, Parlier, CA
[5] Cooperative Extension Farm Advisor, University of CA Agriculture and Natural Resources, Hanford, CA
[6] UC ANR Kearney Agricultural Research and Extension Center, Parlier, CA
[7] Staff Research Associate III, University of California Davis, Plant Sciences Department, Davis, CA
[8]Staff Research Associate II, University of California Davis, Plant Sciences Department, Davis, CA
[9] Superintendent, University of CA West Side Research and Extension Center, UC_ANR, Five Points, CA

amounts modified based on at-planting soil residual nitrate estimates for the upper 24 inches of the soil profile at each site. Types and amounts of fertilizers applied are shown in the descriptions for each site at the end of this section. The following charts show the daily high temperatures and daily solar radiation levels experienced at the WREC and KARE test sites in 2021 during the June to September period. Notable are the multiple periods of fairly extreme daily high temperatures that were experienced in late June and mid-July, and again in the late August / early September periods. Some of the variation shown in the daily solar radiation values were related to multiple periods when we had some significant forest fires in the region which impacted the area. The 2021 calendar year also experienced reduced pre-planting precipitation when compared with recent years.





Rainfall totals from January through May 4 were approximately ½ to 2/3 of long-term averages for all trial locations. Trials at Kearney (KARE) and West Side (WREC) were irrigated as needed and according to ET demands of the crop at the various locations. The first planting at KARE received preplant irrigations totaling 3.7 inches and a total of 16.72 inches of applied irrigation during the growing season . The second planting at KARE received preplant irrigations totaling 2.9 inches and a total of 17.32 inches of applied irrigation during

the growing season. Rainfall totals from January through May 17, 2021 prior to the first planting at KARE were 4.5 inches with additional rainfall of 0.32 inches prior to the second planting on June 11, 2021. Rainfall totals from January through June 8 prior to planting at WREC were 4.21 inches, with an additional 1.15 inches of rainfall recorded during the period between planting and harvest. At WREC, a total of 2 inches was applied prior to June 3 using sprinklers to ensure good stand establishment. An additional 8.5 inches was applied by overhead sprinkler irrigation during the first 6 weeks of the growing season, with the remaining irrigations applied using furrow irrigation. In total, 18.8 inches of irrigation were applied during the 2021 growing season at the WREC site. Trials were harvested approximately 115 to 125 days after planting using a forage chopper, with harvests done on the center two rows of four row plots. Subsamples were collected at harvest time, and submitted to Dairyland Laboratories for nutritional analyses.

Other cultural practices and study information:

Trial Location:	Kearney REC - Planting 1 (KARE1) and planting date 2 (KARE2), Parlier, CA (eastern Fresno County)
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:	May 17, and June 11, 2021
Planting Rate:	100,000 seed $acre^{-1}$
Seed Method:	Almaco 4 row plot planter
Fertilizer:	200 lbs N ac^{-1} 46-0-0, 25 lbs N ac^{-1} and Solubor 4lbs to provide less than 1lb of Boron, and 52 lbs PO^{3-} ac^{-1} 11-52-0, and 500 lbs K_2O ac^{-1} 0-0-50 applied pre-planting before May 7 for 1st planting and June 4 for 2nd planting
Herbicide:	Dual Magnum at 1.3 pints per ac^{-1} as a pre-plant
Pesticide:	Sivanto 14 fl oz ac^{-1} with Latron 1956 at 5 oz ac^{-1} August 11 for 1st planting and August 25 for 2nd planting
Irrigation:	See narrative above
Silage Harvest Date:	Plots harvested with Wintersteiger Cibus S forage chopper on September 16, and October 6, 2021

Trial Location:	West Side Research and Extension Center (WREC), Five Points, CA (western Fresno County)
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 8, 2021
Planting Rate:	100,000 seed $acre^{-1}$
Seed Method:	Almaco 4 row plot planter
Fertilizer:	100 lbs N $acre^{-1}$ N-P-K 11-52-0 pre-plant, and layby 90lbs N $acre^{-1}$

Herbicide:	Dual Magnum 24 oz/ac as pre-emergent on June 8, 2020, Clarity 8oz and Prowl-H_20 at 32 oz ac^{-1} on July 17
Pesticides:	Sivanto Prime 14oz ac^{-1} on August 21, August 31 and September 13
Irrigation:	Sprinklers for stand establishment, gated pipe furrow irrigation subsequent irrigations – see narrative for amounts
Silage Harvest Date:	October 13, 2021

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 50º C until dried. These sub-samples were sent to Dairyland Laboratory, Inc, Arcadia, WI for analysis.

7. **<u>Key Nutrient Analysis Definitions</u>**
    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. NDF: 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 SAS statistical package.

Results and Discussion

A series of Tables with data from the forage sorghum variety evaluations at Univ. CA Kearney REC (2 planting dates) and Univ. CA West Side REC follow this discussion, and the tables include the following:

- Table 1. Comparison of lodging, yield and some nutrition characteristics between BMR and non-BMR entries, and comparison of the same characteristics between brachytic and non-brachytic type entries.
- Table 2. Some key characteristics of entries – provided by the seed companies (maturity, BMR, SCA tolerance estimate, brachytic trait)
- Tables 3 to 6. Lodging, height and yields @ 65% moisture (Table 3-pooled data for 3 sites, Tables 4 to 6 individual site data for planting dates 1 and 2, and West Side REC, respectively)
- Tables 7 to 18. Various forage nutrition analyses for entries (Tables 7, 11 and 15 show the 3-site averages for the measured parameters, other tables are for individual sites).
- Tables 19 and 20. Summary tables (multiple measurements) for top-10 yielding entries (Table 19) and top-30 yielding entries (Table 20).

A summary of yield, agronomic traits and a selection of nutritional analysis values are reported by types of forage sorghums (BMR versus non-BMR, and Brachytic versus non-Brachytic), with the values shown representing entries that were included in plantings done at the Kearney REC site (both planting dates), plus the UC West Side REC site. When sorted according to these trait groups, the main differences seen were: (1) reduced lodging % in the non-BMR group and also in the Brachytic grouping; (2) lower lignin % in the BMR and Brachytic groupings. Lodging in general in these three tests was unusually low in the 2021 field trials at these sites, so the differences in lodging associated with the BMR trait, for instance, were less than observed in some other years. The lower average lodging values and lower lignin % in the Brachytic entries in the tests were not necessarily linked just to the brachytic trait, since the number of brachytic entries was small (five) and four of the five brachytic entries were also BMR.

Table 1. Summary of average values for some key forage cultivar characteristics associated with BMR or brachytic traits, averages across entries with those traits that were included in three trial locations in 2021 (Kearney REC – 2 planting dates, plus West Side REC). This evaluation only includes cultivars for which we were provided with information about these traits, and only those entries that were received in time to be grown at the 3 sites shown. Values shown are averages, statistics not run for these trait groups.

Type of trait	**Lodging (%)**	**Yield (T/ac @ 65% moisture**	**Crude Protein (%)**	**ADF (%)**	**NDF (%)**	**Lignin (%)**	**NDF_{d30}**	**NDF_{d240}**	**Milk (lbs/Ton)**	**RFQ**
BMR (16)	7.88	21.73	7.47	34.05	53.05	3.81	53.58	68.04	2757	122.76
Non-BMR(21)	3.81	21.81	8.05	32.85	50.79	4.29	48.94	65.26	2814	120.91
Brachytic (5)	0.00	20.84	8.19	32.84	50.53	3.59	52.69	67.19	2815	129.64
Non-Brachytic (38)	5.42	21.25	7.80	33.32	51.71	4.19	50.27	66.11	2791	120.49

[1]Number in parenthesis is the number of hybrids fitting into these trait characteristic groups.

Yields, Lodging, Plant Height

Forage yields in general were moderate in 2021 compared with a number of prior years at the same locations, with a three-site average yield (corrected to 65% moisture content) of 21.4 T/ac. Average yields were highest at

the WREC location (26.6 T/ac), followed by averages of 17.7 T/ac for the first planting date at Kearney (KARE1) and an average of 19.6 T/ac for the second planting date at Kearney (KARE2). The three highest yielding cultivars that were planted at all three sites were F72FS05 (29.06 T/ac), X54243 (28.67 T/ac) and Fullgraze II (28.47 T/ac). The highest individual entry yield was F72FS05 at the WREC site at 36.72 T/ac.

Lodging was low in all three 2021 field trial sites compared with the most recent 5-6 years in these trials, with an overall average of only 5% lodging across all entries, and a range from 0% lodging to a high of 48% lodging for a three-site average. The highest average lodging of the three sites was 9% averaged across all entries at the WREC site, versus 2% in the first planting at KARE and 4% in the second planting at KARE site. At the WREC site, there were 7 entries that had average lodging % that were ≥20%, while at KARE1 there was 1 entry with lodging % ≥20% and at KARE2 there were 4 entries with lodging ≥20%. Average plant heights calculated across all entries averaged 199 cm for the three-site average, and was greatest at the WREC site at 217 cm average height across all entries.

Nutritional Composition Data Summaries

Data from nutritional analyses done on the harvest samples from all three sites (KARE1, KARE2, and WREC) are summarized and presented in the following manner (table captions indicate 3-site averages provide as summaries, and individual site summaries of the data from the KARE1, KARE2 and WREC sites. That information is provided in Tables 7 through 18.

Summaries for Highest Yielding Entries

For many producers, yield is the greatest factor in their selection of sorghum forages. Table 19 shows the top 10 hybrids in terms of yields in this study. The entries were ranked by: (a) taking those hybrids that were included in the trials at all three locations (KARE1, KARE2, WREC) with the highest yields, and (b) eliminating those hybrids that lodged by more than 10% (Table 4). Of these hybrids, yields in T/ac adjusted to 65% moisture content ranged from 22.7 to 29.1 T/acre, with the highest three being F72FS05 from Dyna-Gro (29.1 T/ac), X54243 from Scott Seed (28.7 T/ac) and Fullgraze II from Dyna-Gro (28.5 T/ac). Table 20 shows the highest 25 yielding entries that were included at all three test sites, but for this table, we included entries that had up to 20% average lodging, with the lodging averages shown in the table. Some limited nutritional analysis data is also provided in Tables 19 and 20 for these entries.

Table 2. Characteristics of entries in the University of California sorghum forage hybrid tests for 2021.

Hybrid Information[1]						
Hybrid	**Company**	**Type**	**Maturity**	**BMR**	**SCA Tolerance**	**Brachytic**
OPAL	Mojo	F	ML	N	Y	N
PEARL	Mojo	F	MF	N	Y	Y
CP3501	Croplan	F	M	N	*	**
CP3681 AT	Croplan	F	ML	N	*	**
CP3531 BMR Leafy	Croplan	F	ML	Y	*	**
CP3731 BMR Leafy	Croplan	F	L	Y	*	**
X50315	Scott Seed	F	ML	N	*	**
X52053	Scott Seed	F	ML	N	*	N
X54243	Scott Seed	F	L	Y	*	**
X5061037	Scott Seed	F	L	Y	*	**
X5221037	Scott Seed	F	L	Y	*	**
F70FS91 BMR	Dyna-Gro	F	E	Y	N	N
F71FS72 BMR	Dyna-Gro	F	E	Y	N	N
5 Star	Dyna-Gro	F	ME	N	N	N
F72FS05	Dyna-Gro	F	ME	N	Y	N
FX21815	Dyna-Gro	F	ME	N	N	N
Super Sile 30	Dyna-Gro	F	ME	N	N	N
F72FS25 BMR	Dyna-Gro	F	M	Y	N	Y
F74FS23 BMR	Dyna-Gro	F	ML	Y	N	N
F74FS72 BMR	Dyna-Gro	F	ML	Y	N	Y
Sweet Ton MS	Dyna-Gro	F	ML	N	N	N
Super Sile 20	Dyna-Gro	F	ML	N	N	N
FX21865	Dyna-Gro	F	ML	N	N	N
FX21842	Dyna-Gro	F	ML	N	Y	N
Danny Boy II BMR	Dyna-Gro	F	PS	Y	*	N
First Graze	Dyna-Gro	F	ME	N	*	**
Super Sweet 10	Dyna-Gro	F	ME	N	*	N
Dynagraze II	Dyna-Gro	F	ME	N	N	N
Dynagraze II BMR	Dyna-Gro	F	ME	Y	N	N
Fullgraze II	Dyna-Gro	F	ML	N	N	N
Fullgraze II BM	Dyna-Gro	F	PS	Y	N	N
NK300	Sorghum Partners	F	ME	N	N	N
SP 3904 BD BMR	Sorghum Partners	F	M	Y	N	Y
SP 3905 BD BMR	Sorghum Partners	F	ME	Y	N	Y
SWFS8802	Sorghum Partners	F	ME	N	N	N
18096	Gayland Ward	F	**	**	*	**
19038	Gayland Ward	F	ML	N	*	**
19040	Gayland Ward	F	ME	N	*	**
19042	Gayland Ward	F	ML	N	*	**
19181	Gayland Ward	F	ML	Y	*	**
20163	Gayland Ward	F	**	**	*	**
20251	Gayland Ward	F	**	**	*	**

1 Most information (Type, Maturity, BMR, Brachytic characteristics) provided by seed companies. Type: F (forage sorghum);
Maturity classes include: E=early, ME=medium-early, M=medium, MF=medium full, ML=medium late, L=late,
PS=photoperiod sensistive. For "BMR", "Brachytic" and "SCA Tolerance (Sugar Cane Aphid)", Y = yes, N=no. SCA tolerance based on company information plus field observations at WREC test site.
"*" signifies no information provided by seed company and/or inconclusive information on SCA Tolerance from the field in 2021
"**" signifies information not provided by seed company.

Table 3. 2021 comparisons of sorghum forage hybrids and locations for agronomic characteristics and yield at KARE1, KARE2, and WREC. Values shown are averages across three sites (1st and 2nd plantings at KARE (KARE1, KARE2) and WREC, sorted by seed company.

Hybrid Information[1]					Agronomic Measurements[2]		
Hybrid	**Company**	**Type**	**Maturity**	**BMR**	**% Lodging**	**Height (cm)**	**Ton ac-1 65% Moist**
OPAL	Mojo	F	ML	N	1 e,f	176 l-q	19.36 f-m
PEARL	Mojo	F	ML	N	0 f	169 m-r	22.13 c-k
CP3501	Croplan	F	M	N	0 f	186 k-n	22.09 c-k
CP3681 AT	Croplan	F	ML	N	0 f	186 k-n	25.12 a-d
CP3531 BMR Leafy	Croplan	F	ML	Y	0 f	165 m-s	19.34 f-m
CP3731 BMR Leafy	Croplan	F	L	Y	0 f	160 p-t	23.45 c-h
X50315	Scott Seed	F	ML	N	0 f	131 u	17.19 l-o
X52053	Scott Seed	F	ML	N	0 f	164 n-s	21.44 d-m
X54243	Scott Seed	F	L	Y	0 f	327 b	28.67 a,b
X5061037	Scott Seed	F	L	Y	0 f	149 r-u	23.14 c-i
X5221037	Scott Seed	F	L	Y	0 f	145 s-u	23.72 c-f
F70FS91 BMR	Dyna-Gro	F	E	Y	13 b,c	234 f,g	20.62 d-m
F71FS72 BMR	Dyna-Gro	F	E	Y	0 f	179 l-q	20.28 e-m
5 Star	Dyna-Gro	F	ME	N	1 e,f	249 e,f	25.05 a-d
F72FS05	Dyna-Gro	F	ME	N	0 f	179 l-q	29.06 a
FX21815	Dyna-Gro	F	ME	N	1 e	129 u	20.91 d-m
Super Sile 30	Dyna-Gro	F	ME	N	7 b-f	228 f-h	22.57 c-j
F72FS25 BMR	Dyna-Gro	F	M	Y	0 f	183 k-o	22.31 c-j
F74FS23 BMR	Dyna-Gro	F	M	Y	48 a	219 g-j	21.73 c-l
F74FS72 BMR	Dyna-Gro	F	M	Y	0 f	163 o-s	19.95 e-m
Sweet Ton MS	Dyna-Gro	F	MF	N	2 e	223 g-i	20.03 e-m
Super Sile 20	Dyna-Gro	F	MF	N	12 b-d	266 d,e	26.12 a-c
FX21865	Dyna-Gro	F	MF	N	0 f	159 q-t	20.90 d-m
FX21842	Dyna-Gro	F	MF	N	16 b	204 i-k	19.26 f-m
Danny Boy II BMR	Dyna-Gro	F	M	Y	16 b	288 c,d	23.54 c-g
First Graze	Dyna-Gro	F	ME	N	2 e	222 g-i	17.08 m-o
Super Sweet 10	Dyna-Gro	F	ME	N	12 b-e	230 f-h	19.75 e-m
Dynagraze II	Dyna-Gro	F	ME	N	3 d-f	237 f,g	18.84 i-m
Dynagraze II BMR	Dyna-Gro	F	ME	Y	5 c-f	235 f,g	22.72 c-j
Fullgraze II	Dyna-Gro	F	MF	N	0 f	352 a	28.47 a,b
Fullgraze II BM	Dyna-Gro	F	MF	Y	39 a	307 b,c	19.74 e-m
NK300	Sorghum Partners	F	ME	N	9 b-f	166 m-s	24.14 b-e
SP 3904 BD BMR	Sorghum Partners	F	M	Y	0 f	187 k-m	20.85 d-m
SP 3905 BD BMR	Sorghum Partners	F	ME	Y	0 f	178 l-q	18.98 g-m
SWFS8802	Sorghum Partners	F	ME	N	0 f	147 s-u	18.93 h-m
18096	Gayland Ward	F	*			*Not included since*	*not at all 3 sites*
19038	Gayland Ward	F	*			*Not included since*	*not at all 3 sites*
19040	Gayland Ward	F	*			*Not included since*	*not at all 3 sites*
19042	Gayland Ward	F	*			*Not included since*	*not at all 3 sites*
19181	Gayland Ward	F	*			*Not included since*	*not at all 3 sites*
20163	Gayland Ward	F	*			*Not included since*	*not at all 3 sites*
20251	Gayland Ward	F	*			*Not included since*	*not at all 3 sites*
Means					**5**	**203.5**	**21.86**
C.V. (Coefficient of Variation)					**199.9**	**11.7**	**22.08**
Location							
KARE1					**2 b**	**175.40 c**	**17.68 c**
KARE2					**4 b**	**206.70 b**	**19.64 b**
WREC					**9 a**	**216.71 a**	**26.60 a**

[1]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. [2]Means followed by the same letter do not significantly differ using LSD (P=0.05)

Table 4. 2021 comparisons of sorghum forage hybrids and locations for agronomic characteristics and yield at KARE1 by seed company.

Hybrid Information[1]					Agronomic Measurements[2]		
Hybrid	**Company**	**Type**	**Maturity**	**BMR**	**% Lodging**	**Height (cm)**	**Ton ac-1 65% Moist**
OPAL	Mojo	F	ML	N	0 d	161 k-o	17.27 b-d
PEARL	Mojo	F	ML	N	0 d	146 o-r	17.10 b-d
CP3501	Croplan	F	M	N	0 d	180 i-k	20.97 b,c
CP3681 AT	Croplan	F	ML	N	0 d	159 k-p	19.31 b-d
CP3531 BMR Leafy	Croplan	F	ML	Y	0 d	148 o-r	16.66 b-d
CP3731 BMR Leafy	Croplan	F	L	Y	0 d	148 o-r	17.30 b-d
X50315	Scott Seed	F	ML	N	0 d	115 t,u	16.29 b-d
X52053	Scott Seed	F	ML	N	0 d	152 m-q	17.14 b-d
X54243	Scott Seed	F	L	Y	0 d	314 a	23.15 a,b
X5061037	Scott Seed	F	L	Y	0 d	109 t,u	15.29 b-d
X5221037	Scott Seed	F	L	Y	0 d	119 s-u	18.09 b-d
F70FS91 BMR	Dyna-Gro	F	E	Y	0 d	216 f,g	16.48 b-d
F71FS72 BMR	Dyna-Gro	F	E	Y	0 d	166 j-o	17.05 b-d
5 Star	Dyna-Gro	F	ME	N	0 d	231 e,f	23.12 a,b
F72FS05	Dyna-Gro	F	ME	N	0 d	151 n-q	19.56 b-d
FX21815	Dyna-Gro	F	ME	N	0 d	104 u	29.76 a
Super Sile 30	Dyna-Gro	F	ME	N	0 d	203 g,h	21.17 b,c
F72FS25 BMR	Dyna-Gro	F	M	Y	0 d	171 j-n	16.92 b-d
F74FS23 BMR	Dyna-Gro	F	M	Y	15 b	172 j-n	15.94 b-d
F74FS72 BMR	Dyna-Gro	F	M	Y	0 d	155 l-q	16.10 b-d
Sweet Ton MS	Dyna-Gro	F	MF	N	0 d	199 g-i	17.96 b-d
Super Sile 20	Dyna-Gro	F	MF	N	0 d	244 d,e	23.09 a,b
FX21865	Dyna-Gro	F	MF	N	0 d	146 o-r	16.51 b-d
FX21842	Dyna-Gro	F	MF	N	0 d	174 j-l	17.56 b-d
Danny Boy II BMR	Dyna-Gro	F	M	Y	7 c	265 c,d	17.39 b-d
First Graze	Dyna-Gro	F	ME	N	3 c,d	212 f,g	14.70 c,d
Super Sweet 10	Dyna-Gro	F	ME	N	0 d	197 g-i	16.00 b-d
Dynagraze II	Dyna-Gro	F	ME	N	3 c,d	204 g,h	16.64 b-d
Dynagraze II BMR	Dyna-Gro	F	ME	Y	7 c	215 f,g	21.14 b,c
Fullgraze II	Dyna-Gro	F	MF	N	0 d	297 a,b	23.00 a,b
Fullgraze II BM	Dyna-Gro	F	MF	Y	70 a	278 b,c	13.11 c,d
NK300	Sorghum Partners	F	ME	N	0 d	137 q-s	19.49 b-d
SP 3904 BD BMR	Sorghum Partners	F	M	Y	0 d	174 j-l	17.32 b-d
SP 3905 BD BMR	Sorghum Partners	F	ME	Y	0 d	162 k-o	18.24 b-d
SWFS8802	Sorghum Partners	F	ME	N	0 d	118 s-u	16.19 b-d
18096	Gayland Ward	F			0 d	121 s-u	13.87 c,d
19038	Gayland Ward	F			0 d	163 j-o	16.99 b-d
19040	Gayland Ward	F			0 d	127 r-t	11.41 d
19042	Gayland Ward	F			0 d	173 j-m	15.70 b-d
19181	Gayland Ward	F			0 d	183 h-j	16.41 b-d
20163	Gayland Ward	F			0 d	120 s-u	14.26 c,d
20251	Gayland Ward	F			0 d	138 p-s	12.08 d
FX21851	Dyna-Gro	F	ME	N	0 d	175 j-l	16.46 b-d
Means					**2**	**175.40**	**17.68**
C.V. (Coefficient of Variation)					**155.2**	**7.44**	**28.57**

[1]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.

[2]Means followed by the same letter do not significantly differ using LSD (P=0.05)

Table 5. 2021 comparisons of sorghum forage hybrids and locations for agronomic characteristics and yield at KARE2 by seed company.

Hybrid Information[1]					Agronomic Measurements[2]		
Hybrid	**Company**	**Type**	**Maturity**	**BMR**	**% Lodging**	**Height (cm)**	**Ton ac-[1] 65% Moist**
OPAL	Mojo	F	ML	N	0 d	177 h-n	12.91 g
PEARL	Mojo	F	ML	N	0 d	173 j-n	19.26 c-g
CP3501	Croplan	F	M	N	0 d	180 g-n	21.17 c-f
CP3681 AT	Croplan	F	ML	N	0 d	191 e-n	21.12 c-f
CP3531 BMR Leafy	Croplan	F	ML	Y	0 d	169 k-n	15.88 e-g
CP3731 BMR Leafy	Croplan	F	L	Y	0 d	158 l-n	19.84 c-g
X50315	Scott Seed	F	ML	N	0 d	141 n	15.84 e-g
X52053	Scott Seed	F	ML	N	0 d	162 k-n	20.04 c-g
X54243	Scott Seed	F	L	Y	0 d	311 b	29.62 a,b
X5061037	Scott Seed	F	L	Y	0 d	162 k-n	19.74 c-g
X5221037	Scott Seed	F	L	Y	0 d	151 m,n	22.16 b-f
F70FS91 BMR	Dyna-Gro	F	E	Y	0 d	226 c-j	19.92 c-g
F71FS72 BMR	Dyna-Gro	F	E	Y	0 d	181 g-n	20.88 c-g
5 Star	Dyna-Gro	F	ME	N	0 d	246 c,d	24.10 a-d
F72FS05	Dyna-Gro	F	ME	N	0 d	181 g-n	30.89 a
FX21815	Dyna-Gro	F	ME	N	2 c,d	161 k-n	15.55 e-g
Super Sile 30	Dyna-Gro	F	ME	N	0 d	232 c-h	22.55 b-f
F72FS25 BMR	Dyna-Gro	F	M	Y	0 d	183 f-n	16.57 d-g
F74FS23 BMR	Dyna-Gro	F	M	Y	35 a	230 c-i	14.56 f,g
F74FS72 BMR	Dyna-Gro	F	M	Y	0 d	153 m,n	15.71 e-g
Sweet Ton MS	Dyna-Gro	F	MF	N	0 d	234 c-g	19.25 c-g
Super Sile 20	Dyna-Gro	F	MF	N	3 c,d	267 b,c	23.23 a-e
FX21865	Dyna-Gro	F	MF	N	0 d	156 m,n	18.67 c-g
FX21842	Dyna-Gro	F	MF	N	0 d	211 d-l	17.03 d-g
Danny Boy II BMR	Dyna-Gro	F	M	Y	20 a-c	308 b	22.54 b-f
First Graze	Dyna-Gro	F	ME	N	3 c,d	215 c-k	18.72 c-g
Super Sweet 10	Dyna-Gro	F	ME	N	25 a,b	238 c-f	17.12 d-g
Dynagraze II	Dyna-Gro	F	ME	N	5 c,d	243 c-e	21.05 c-f
Dynagraze II BMR	Dyna-Gro	F	ME	Y	8 b-d	225 c-j	24.03 a-d
Fullgraze II	Dyna-Gro	F	MF	N	0 d	373 a	26.53 a-c
Fullgraze II BM	Dyna-Gro	F	MF	Y	32 a	304 b	14.79 f,g
NK300	Sorghum Partners	F	ME	N	0 d	176 i-n	20.24 c-g
SP 3904 BD BMR	Sorghum Partners	F	M	Y	0 d	192 d-n	18.34 d-g
SP 3905 BD BMR	Sorghum Partners	F	ME	Y	0 d	180 g-n	17.04 d-g
SWFS8802	Sorghum Partners	F	ME	N	0 d	152 m,n	15.15 f,g
18096	Gayland Ward	F				*Not entered this site*	
19038	Gayland Ward	F				*Not entered this site*	
19040	Gayland Ward	F				*Not entered this site*	
19042	Gayland Ward	F				*Not entered this site*	
19181	Gayland Ward	F				*Not entered this site*	
20163	Gayland Ward	F				*Not entered this site*	
20251	Gayland Ward	F				*Not entered this site*	
FX21851	Dyna-Gro	F	ME	N	0 d	199 d-m	14.93 f,g
Means					**4**	**206.7**	**19.64**
C.V. (Coefficient of Variation)					**278.8**	**16.41**	**25.12**

[1]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.

[2]Means followed by the same letter do not significantly differ using LSD (P=0.05)

Table 6. 2021 comparisons of sorghum forage hybrids and locations for agronomic characteristics and yield at WREC by seed company.

Hybrid Information[1]					Agronomic Measurements[2]		
Hybrid	**Company**	**Type**	**Maturity**	**BMR**	**% Lodging**	**Height (cm)**	**Ton ac^{-1} 65% Moist**
OPAL	Mojo	F	ML	N	3 e,f	189 k-n	27.89 d-i
PEARL	Mojo	F	ML	N	0 f	189 k-n	30.04 b-h
CP3501	Croplan	F	M	N	0 f	198 j-m	24.13 h-m
CP3681 AT	Croplan	F	ML	N	0 f	208 h-k	34.93 a,b
CP3531 BMR Leafy	Croplan	F	ML	Y	0 f	177 k-p	25.47 g-l
CP3731 BMR Leafy	Croplan	F	L	Y	0 f	173 m-p	33.21 a-e
X50315	Scott Seed	F	ML	N	0 f	138 q,r	19.45 l-p
X52053	Scott Seed	F	ML	N	0 f	179 k-p	27.13 d-k
X54243	Scott Seed	F	L	Y	0 f	357 a,b	33.25 a-e
X5061037	Scott Seed	F	L	Y	0 f	177 l-p	34.49 a-c
X5221037	Scott Seed	F	L	Y	0 f	164 n-q	30.92 a-g
F70FS91 BMR	Dyna-Gro	F	E	Y	40 b,c	260 c-e	25.45 g-l
F71FS72 BMR	Dyna-Gro	F	E	Y	0 f	189 k-n	22.91 i-o
5 Star	Dyna-Gro	F	ME	N	3 e,f	269 c,d	27.92 d-i
F72FS05	Dyna-Gro	F	ME	N	0 f	205 i-l	36.72 a
FX21815	Dyna-Gro	F	ME	N	0 f	123 r	17.42 n-p
Super Sile 30	Dyna-Gro	F	ME	N	20 c-f	250 d-g	24.01 h-m
F72FS25 BMR	Dyna-Gro	F	M	Y	0 f	194 k-n	33.43 a-d
F74FS23 BMR	Dyna-Gro	F	M	Y	95 a	256 d-g	34.70 a,b
F74FS72 BMR	Dyna-Gro	F	M	Y	0 f	181 k-o	28.05 c-i
Sweet Ton MS	Dyna-Gro	F	MF	N	7 e,f	236 e-i	22.89 i-o
Super Sile 20	Dyna-Gro	F	MF	N	3 b-d	287 c	32.05 a-f
FX21865	Dyna-Gro	F	MF	N	0 f	176 l-p	27.51 d-j
FX21842	Dyna-Gro	F	MF	N	48 b	228 g-j	23.20 i-n
Danny Boy II BMR	Dyna-Gro	F	M	Y	20 c-f	290 c	30.70 a-g
First Graze	Dyna-Gro	F	ME	N	0 f	238 e-h	17.82 m-p
Super Sweet 10	Dyna-Gro	F	ME	N	10 e,f	255 d-g	26.14 f-k
Dynagraze II	Dyna-Gro	F	ME	N	0 f	264 c-e	18.83 m-p
Dynagraze II BMR	Dyna-Gro	F	ME	Y	0 f	265 c-e	23.00 i-o
Fullgraze II	Dyna-Gro	F	MF	N	0 f	386 a	35.87 a,b
Fullgraze II BM	Dyna-Gro	F	MF	Y	17 d-f	339 b	31.32 a-g
NK300	Sorghum Partners	F	ME	N	27 b-e	186 k-o	32.69 a-e
SP 3904 BD BMR	Sorghum Partners	F	M	Y	0 f	194 k-n	26.90 e-k
SP 3905 BD BMR	Sorghum Partners	F	ME	Y	0 f	193 k-n	21.66 i-o
SWFS8802	Sorghum Partners	F	ME	N	0 f	170 m-p	25.44 g-l
18096	Gayland Ward	F			0 f	155 o-q	20.87 k-p
19038	Gayland Ward	F			0 f	232 f-i	27.50 d-j
19040	Gayland Ward	F			0 f	150 p-r	16.63 o,p
19042	Gayland Ward	F			0 f	249 d-g	27.55 d-j
19181	Gayland Ward	F			10 e,f	181 k-o	20.76 k-p
20163	Gayland Ward	F			0 f	168 m-q	21.16 j-o
20251	Gayland Ward	F			0 f	164 n-q	14.50 p
FX21851	Dyna-Gro	F	ME	N	42 b,c	238 e-h	27.16 d-k
Means					**9.0**	**216.71**	**26.60**
C.V. (Coefficient of Variation)					**163.0**	**8.76**	**15.02**

[1]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.

[2]Means followed by the same letter do not significantly differ using LSD (P=0.05)

Table 7. 2021 comparisons of sorghum forage hybrids and locations for nutrional characteristic's crude protein, ADF, NDF, lignin, starch and fat content. Values shown are averages across three sites (1st and 2nd plantings at KARE (KARE1, KARE2) and WREC, sorted by seed company.

Hybrid Information[1]					Nutrient Composition & Calculations[2]					
Hybrid	**Company**	**Type**	**Maturity**	**BMR**	**% Crude Protein**	**% ADF**	**% NDF**	**% Lignin**	**% Starch**	**% Fat**
OPAL	Mojo	F	ML	N	8.92 a-d	34.11 h-m	52.73 g-l	4.44 b-i	12.35 l-p	2.49 d-j
PEARL	Mojo	F	ML	N	8.43 a-h	27.46 u-w	40.29 w,x	4.12 g-l	29.69 a,b	2.59 c-g
CP3501	Croplan	F	M	N	8.20 b-i	29.94 p-u	45.77 q-v	3.49 p-t	16.93 g-l	2.88 a,b
CP3681 AT	Croplan	F	ML	N	7.39 h-m	34.28 g-m	55.30 d-i	4.78 b-d	14.50 k-o	2.31 j-p
CP3531 BMR Leafy	Croplan	F	ML	Y	7.77 e-j	36.12 f-h	56.50 d-g	3.47 q-t	6.64 q-v	2.56 c-i
CP3731 BMR Leafy	Croplan	F	L	Y	7.80 e-j	32.14 l-q	49.54 l-q	3.81 l-r	18.98 f-k	2.49 d-j
X50315	Scott Seed	F	ML	N	9.10 a,b	25.35 w	37.35 x	4.04 i-n	32.97 a	2.63 c-e
X52053	Scott Seed	F	ML	N	8.35 a-h	31.26 n-s	49.30 l-q	4.54 b-h	21.90 d-g	2.40 e-l
X54243	Scott Seed	F	L	Y	5.53 o	42.85 a	68.63 a	5.48 a	1.13 w	2.00 q
X5061037	Scott Seed	F	L	Y	8.06 b-i	29.38 r-v	45.72 q-v	3.58 o-s	23.99 c-f	2.33 i-o
X5221037	Scott Seed	F	L	Y	8.48 a-h	28.42 t-v	44.22 t-w	4.27 e-k	26.88 b-d	2.45 e-k
F70FS91 BMR	Dyna-Gro	F	E	Y	7.60 e-l	30.61 o-t	47.64 o-u	3.41 r-t	17.16 g-l	2.69 b-d
F71FS72 BMR	Dyna-Gro	F	E	Y	7.74 e-k	28.44 t-v	43.83 t-w	3.24 s,t	21.63 e-h	2.87 a,b
5 Star	Dyna-Gro	F	ME	N	7.17 i-m	30.72 o-t	47.84 n-t	3.95 j-o	16.47 h-m	2.57 c-h
F72FS05	Dyna-Gro	F	ME	N	7.49 g-m	34.10 h-m	54.90 d-j	4.85 b,c	15.16 k-n	2.22 l-q
FX21815	Dyna-Gro	F	ME	N	9.14 a,b	28.51 t-v	43.42 v,w	3.81 l-r	25.57 b-e	2.55 c-i
Super Sile 30	Dyna-Gro	F	ME	N	7.43 h-m	35.87 f-i	55.93 d-h	4.56 b-g	10.55 n-s	2.16 m-q
F72FS25 BMR	Dyna-Gro	F	M	Y	8.59 a-e	37.30 d-f	57.82 c-e	3.42 r-t	3.67 u-w	2.41 e-l
F74FS23 BMR	Dyna-Gro	F	M	Y	6.57 l-o	32.13 l-q	49.04 l-r	3.07 t	13.68 l-o	2.68 b-d
F74FS72 BMR	Dyna-Gro	F	M	Y	8.58 a-g	34.38 g-l	53.82 e-k	3.65 m-s	10.47 n-s	2.58 c-g
Sweet Ton MS	Dyna-Gro	F	MF	N	7.49 f-m	32.19 l-p	50.89 j-o	3.93 k-p	11.36 m-q	2.69 b-d
Super Sile 20	Dyna-Gro	F	MF	N	7.49 e-m	36.24 f-h	57.63 c-e	4.59 b-f	8.41 p-u	2.08 p,q
FX21865	Dyna-Gro	F	MF	N	7.69 e-k	33.30 j-n	52.31 h-m	3.73 l-r	15.28 k-n	2.37 g-m
FX21842	Dyna-Gro	F	MF	N	8.18 b-i	33.52 i-n	52.94 g-l	4.39 d-j	15.53 j-n	2.20 l-q
Danny Boy II BMR	Dyna-Gro	F	M	Y	6.65 k-n	38.39 c-e	58.49 b-d	4.06 i-n	6.24 q-w	2.20 l-q
First Graze	Dyna-Gro	F	ME	N	7.77 e-j	33.09 k-o	49.91 k-p	4.31 e-k	16.19 i-m	2.38 f-m
Super Sweet 10	Dyna-Gro	F	ME	N	7.39 h-m	31.75 m-r	48.41 m-s	4.67 b-e	20.55 e-j	2.61 c-f
Dynagraze II	Dyna-Gro	F	ME	N	7.38 h-m	33.75 h-n	50.38 k-p	4.68 b-e	17.26 g-l	2.35 h-n
Dynagraze II BMR	Dyna-Gro	F	ME	Y	6.96 j-m	35.83 f-j	57.52 c-e	4.62 b-e	10.94 n-r	2.30 j-p
Fullgraze II	Dyna-Gro	F	MF	N	5.69 n,o	41.56 a,b	67.18 a	5.46 a	1.89 v,w	2.00 q
Fullgraze II BM	Dyna-Gro	F	MF	Y	6.43 m-o	39.74 b-d	62.19 b	4.28 e-k	2.04 v,w	2.18 m-q
NK300	Sorghum Partners	F	ME	N	7.77 e-j	28.78 s-v	44.79 s-v	4.14 f-l	27.36 b,c	2.34 h-o
SP 3904 BD BMR	Sorghum Partners	F	M	Y	7.44 h-m	36.72 e-g	57.09 d-f	3.51 o-t	5.77 r-w	2.56 c-i
SP 3905 BD BMR	Sorghum Partners	F	ME	Y	7.91 c-j	28.36 t-v	43.65 u-w	3.25 s,t	21.27 e-i	2.94 a
SWFS8802	Sorghum Partners	F	ME	N	8.59 a-f	26.99 v,w	40.37 w,x	3.61 n-s	27.35 b,c	2.75 a-c
18096	Gayland Ward	F		N	*Not at all 3*	*sites*				
19038	Gayland Ward	F		N	"	"				
19040	Gayland Ward	F		N	"	"				
19042	Gayland Ward	F		N	"	"				
19181	Gayland Ward	F		N	"	"				
20163	Gayland Ward	F		N	"	"				
20251	Gayland Ward	F		N	"	"				
FX21851	Dyna-Gro	F	ME	N	8.26 b-i	32.97 k-o	51.24 i-o	3.81 l-r	14.60 k-n	2.49 d-j
Means					**7.71**	**32.96**	**51.24**	**4.08**	**15.62**	**2.45**
C.V.					**10.88**	**12.43**	**13.93**	**14.57**	**52.72**	**9.69**
Location										
KARE1					**6.98 b**	**34.35 a**	**54.85 a**	**4.33 a**	**12.69 b**	**2.38 b**
KARE2					**8.27 a**	**32.48 b**	**51.12 b**	**4.01 b**	**15.85 a**	**2.46 a**
WREC					**8.25 a**	**32.54 b**	**48.40 c**	**3.98 b**	**16.98 a**	**2.51 a**

[1]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 8. 2021 comparisons of sorghum forage hybrids and locations for nutrional characteristic's crude protein, ADF, NDF, lignin, starch and fat at **KARE1** trial (1st planting date at KARE location), sorted by seed company.

Hybrid Information[1]					Nutrient Composition & Calculations[2]					
Hybrid	**Company**	**Type**	**Maturity**	**BMR**	**% Crude Protein**	**% ADF**	**% NDF**	**% Lignin**	**% Starch**	**% Fat**
OPAL	Mojo	F	ML	N	7.46 a-g	37.58 c-h	59.44 d-g	4.77 b-j	6.67 n-t	2.46 c-l
PEARL	Mojo	F	ML	N	7.85 a-e	28.99 q-t	45.10 q-t	3.96 l-r	25.61 b-d	2.42 d-n
CP3501	Croplan	F	M	N	7.49 a-f	32.57 l-o	50.13 m-q	6.60 p-s	10.46 l-p	2.89 a,b
CP3681 AT	Croplan	F	ML	N	6.60 b-j	35.55 f-l	58.59 d-h	4.93 a-g	10.47 l-p	2.21 i-p
CP3531 BMR Leafy	Croplan	F	ML	Y	5.89 d-j	37.63 c-h	60.40 d-g	3.45 q-s	2.63 s-v	2.62 b-g
CP3731 BMR Leafy	Croplan	F	L	Y	6.63 b-j	36.28 f-i	57.85 e-i	3.87 m-r	9.22 l-q	2.36 e-o
X50315	Scott Seed	F	ML	N	8.10 a-c	26.08 t	39.21 u	4.11 i-q	32.29 a	2.46 c-l
X52053	Scott Seed	F	ML	N	7.86 a-e	35.99 f-k	57.33 e-j	5.11 a-e	11.56 j-o	2.08 n-q
X54243	Scott Seed	F	L	Y	4.71 j	41.95 a	69.68 a	5.38 a-c	1.34 t-v	2.02 o-p
X5061037	Scott Seed	F	L	Y	7.95 a-d	28.09 r-t	43.53 s-u	3.56 p-s	25.08 b-d	2.32 e-o
X5221037	Scott Seed	F	L	Y	8.86 a	28.90 q-t	45.93 p-t	4.40 f-n	24.59 b-e	2.26 h-p
F70FS91 BMR	Dyna-Gro	F	E	Y	5.37 f-j	33.11 j-o	53.56 h-n	3.36 r,s	11.16 k-o	2.63 b-g
F71FS72 BMR	Dyna-Gro	F	E	Y	6.73 a-j	30.24 o-r	47.92 o-s	3.67 o-s	18.09 f-i	2.77 a-c
5 Star	Dyna-Gro	F	ME	N	5.03 i,j	32.96 k-o	52.14 j-o	3.80 n-r	10.87 k-o	2.62 b-g
F72FS05	Dyna-Gro	F	ME	N	6.27 c-j	33.59 i-n	53.62 h-n	5.12 a-e	16.06 h-k	2.20 j-p
FX21815	Dyna-Gro	F	ME	N	8.22 a-c	28.01 r-t	45.88 p-t	4.10 j-q	28.35 a,b	2.41 d-n
Super Sile 30	Dyna-Gro	F	ME	N	6.33 c-j	37.49 d-h	59.95 d-g	5.04 a-f	7.15 n-s	2.17 k-p
F72FS25 BMR	Dyna-Gro	F	M	Y	7.44 a-h	38.45 b-f	60.75 c-f	3.85 m-r	2.38 s	2.44 c-m
F74FS23 BMR	Dyna-Gro	F	M	Y	5.31 g-j	32.20 m-p	51.04 l-p	3.00 s	14.35 h-l	2.64 b-f
F74FS72 BMR	Dyna-Gro	F	M	Y	7.21 a-h	37.81 c-g	61.05 c-e	3.63 o-s	2.57 s	2.58 b-h
Sweet Ton MS	Dyna-Gro	F	MF	N	6.75 a-j	35.09 g-m	56.78 e-k	4.45 e-n	6.95 n-s	2.52 c-j
Super Sile 20	Dyna-Gro	F	MF	N	6.92 a-i	37.70 c-g	61.97 c-e	4.81 a-i	6.11 o-u	1.97 p,q
FX21865	Dyna-Gro	F	MF	N	6.99 a-i	34.56 h-m	55.33 g-m	3.95 l-r	12.75 i-m	2.18 j-p
FX21842	Dyna-Gro	F	MF	N	6.97 a-i	32.65 l-o	53.13 i-o	4.54 e-m	17.00 g-j	2.17 k-p
Danny Boy II BMR	Dyna-Gro	F	M	Y	6.23 c-j	39.47 a-e	61.79 c-e	4.33 g-o	3.31 r-v	2.20 j-p
First Graze	Dyna-Gro	F	ME	N	6.58 b-j	33.14 j-o	51.60 k-o	4.72 c-k	18.27 f-h	2.29 g-p
Super Sweet 10	Dyna-Gro	F	ME	N	5.76 e-j	31.45 n-q	48.76 n-s	4.62 d-l	22.03 d-g	2.60 b-h
Dynagraze II	Dyna-Gro	F	ME	N	6.26 c-j	32.50 l-o	51.16 l-p	4.60 d-l	19.35 e-h	2.50 c-k
Dynagraze II BMR	Dyna-Gro	F	ME	Y	6.37 c-j	36.84 e-h	60.90 c-f	4.97 a-g	8.13 m-r	2.38 d-n
Fullgraze II	Dyna-Gro	F	MF	N	5.27 h-j	41.07 a,b	67.78 a,b	5.39 a-c	1.83 s	2.10 m-q
Fullgraze II BM	Dyna-Gro	F	MF	Y	5.76 e-j	39.97 a-d	63.15 b-d	4.48 e-n	2.95 r-v	2.14 l-q
NK300	Sorghum Partners	F	ME	N	7.22 a-h	28.35 q-t	44.80 r-t	4.21 h-p	27.97 a-c	2.30 f-p
SP 3904 BD BMR	Sorghum Partners	F	M	Y	6.19 c-j	37.12 d-h	61.47 c-e	3.56 p-s	3.55 r-v	2.71 a-d
SP 3905 BD BMR	Sorghum Partners	F	ME	Y	7.41 a-h	27.59 r-t	44.06 r-u	3.48 q-s	22.53 c-f	3.02 a
SWFS8802	Sorghum Partners	F	ME	N	7.86 a-e	26.74 s,t	41.60 t,u	3.57 p-s	27.78 a-c	2.50 c-k
18096	Gayland Ward	F		N	7.46 a-g	29.27 p-s	48.93 n-r	4.31 g-o	24.08 b-e	2.61 b-g
19038	Gayland Ward	F		N	7.81 a-e	40.00 a-d	63.81 b-d	5.25 a-d	0.35 v	2.11 m-q
19040	Gayland Ward	F		N	8.58 a,b	39.51 a-e	61.79 c-e	5.43 a,b	3.89 q-v	1.81 q
19042	Gayland Ward	F		N	8.62 a,b	40.62 a-c	64.03 b,c	5.50 a	1.06 u,v	2.12 l-q
19181	Gayland Ward	F		N	7.40 a-h	36.17 f-j	57.56 e-i	3.99 l-r	5.24 p-v	2.65 b-e
20163	Gayland Ward	F		N	8.65 a,b	35.85 f-k	55.76 f-l	4.87 a-h	11.60 j-o	2.11 m-q
20251	Gayland Ward	F		N	8.12 a-c	33.03 k-o	53.57 h-n	4.51 e-n	16.01 h-k	2.55 b-i
FX21851	Dyna-Gro	F	ME	N	7.49 a-f	34.76 g-m	55.71 f-l	4.03 k-r	11.94 j-n	2.40 d-n
Means					**6.98**	**34.35**	**54.85**	**4.33**	**12.69**	**2.38**
CV					**19.23**	**5.57**	**5.93**	**10.08**	**26.67**	**9.04**

[1]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 9. 2021 comparisons of sorghum forage hybrids and locations for nutrional characteristic's crude protein, ADF, NDF, lignin, starch and fat at **KARE2** trial (2nd planting date at KARE location), sorted by seed company.

Hybrid Information[1]					Nutrient Composition & Calculations[2]					
Hybrid	**Company**	**Type**	**Maturity**	**BMR**	**% Crude Protein**	**% ADF**	**% NDF**	**% Lignin**	**% Starch**	**% Fat**
OPAL	Mojo	F	ML	N	9.69 a,b	35.87 b-h	57.84 b-f	4.40 b-g	3.85 m-p	2.44 d-l
PEARL	Mojo	F	ML	N	8.00 c-h	28.35 l-o	41.64 j-k	4.71 a-d	30.48 a,b	2.64 a-i
CP3501	Croplan	F	M	N	8.75 a-f	28.20 l-o	44.65 h-l	3.81 e-n	21.15 b-j	2.97 a
CP3681 AT	Croplan	F	ML	N	7.95 c-h	35.07 b-i	57.40 b-f	4.61 a-f	11.25 h-p	2.32 g-n
CP3531 BMR Leafy	Croplan	F	ML	Y	8.81 a-f	34.92 b-j	57.41 b-f	3.16 l-n	8.66 j-p	2.50 b-k
CP3731 BMR Leafy	Croplan	F	L	Y	8.39 a-g	31.21 g-n	47.07 g-k	3.71 g-n	20.98 b-j	2.39 e-m
X50315	Scott Seed	F	ML	N	8.84 a-f	23.54 o	35.35 l	4.18 b-j	37.31 a	2.87 a-c
X52053	Scott Seed	F	ML	N	8.49 a-g	29.33 i-o	46.85 g-k	4.74 a-c	28.78 a-c	2.62 a-i
X54243	Scott Seed	F	L	Y	6.06 i	42.84 a	68.04 a	5.26 a	1.45 p	1.97 n,o
X5061037	Scott Seed	F	L	Y	8.78 a-f	32.74 c-m	52.58 c-h	3.33 k-n	15.85 d-m	2.28 i-o
X5221037	Scott Seed	F	L	Y	7.96 c-h	29.14 j-o	46.19 g-k	4.25 b-h	25.92 a-f	2.48 c-k
F70FS91 BMR	Dyna-Gro	F	E	Y	8.88 a-f	25.62 n,o	40.40 k,l	3.53 h-n	28.11 a-d	2.82 a-d
F71FS72 BMR	Dyna-Gro	F	E	Y	8.20 b-h	27.18 m-o	42.21 j-k	3.36 j-n	26.98 a-e	2.76 a-f
5 Star	Dyna-Gro	F	ME	N	8.17 b-h	28.60 k-o	44.54 h-l	3.90 d-l	20.48 b-k	2.46 d-k
F72FS05	Dyna-Gro	F	ME	N	8.08 b-h	37.35 a-f	59.53 a-d	4.77 a-c	7.97 k-p	2.05 l-o
FX21815	Dyna-Gro	F	ME	N	9.50 a-c	28.68 k-o	42.98 i-l	3.77 f-n	25.02 a-g	2.68 a-h
Super Sile 30	Dyna-Gro	F	ME	N	7.81 d-h	37.90 a-d	59.58 a-d	4.25 b-h	5.16 l-p	1.89 o
F72FS25 BMR	Dyna-Gro	F	M	Y	9.92 a	37.00 a-g	57.35 b-f	3.01 m,n	3.70 m-p	2.31 h-n
F74FS23 BMR	Dyna-Gro	F	M	Y	6.82 g-i	32.87 c-m	51.03 d-j	3.00 n	9.72 i-p	2.75 a-f
F74FS72 BMR	Dyna-Gro	F	M	Y	9.22 a-d	31.87 e-m	49.91 e-k	3.76 g-n	14.40 e-o	2.70 a-h
Sweet Ton MS	Dyna-Gro	F	MF	N	8.60 a-f	29.06 j-o	47.53 g-k	3.71 g-n	14.97 e-n	2.88 a,b
Super Sile 20	Dyna-Gro	F	MF	N	8.17 b-h	35.66 b-h	58.96 a-e	4.52 a-g	5.19 l-p	2.27 i-o
FX21865	Dyna-Gro	F	MF	N	7.47 e-i	32.27 d-m	50.14 d-j	3.38 i-n	15.11 e-n	2.54 b-j
FX21842	Dyna-Gro	F	MF	N	9.01 a-e	36.53 b-g	59.55 a-d	4.20 b-i	5.65 l-p	1.97 n,o
Danny Boy II BMR	Dyna-Gro	F	M	Y	7.46 e-i	34.43 b-k	52.05 c-i	3.82 e-n	14.08 f-p	2.21 j-o
First Graze	Dyna-Gro	F	ME	N	9.24 a-d	30.46 h-n	46.12 g-k	3.89 d-l	19.69 b-k	2.49 b-k
Super Sweet 10	Dyna-Gro	F	ME	N	8.27 a-h	31.57 f-m	49.25 f-k	4.91 a,b	21.94 b-i	2.72 a-g
Dynagraze II	Dyna-Gro	F	ME	N	7.95 c-h	30.36 h-n	45.10 g-k	4.63 a-e	23.65 b-h	2.48 c-k
Dynagraze II BMR	Dyna-Gro	F	ME	Y	7.26 f-i	32.69 c-m	54.52 c-g	4.32 b-h	16.84 c-l	2.36 f-n
Fullgraze II	Dyna-Gro	F	MF	N	6.69 h,i	39.03 a,b	65.50 a,b	4.75 a-c	2.37 n-p	2.03 m-o
Fullgraze II BM	Dyna-Gro	F	MF	Y	7.52 e-i	38.44 a-c	61.24 a-c	3.85 e-m	2.03 o,p	2.13 k-o
NK300	Sorghum Partners	F	ME	N	7.80 d-h	31.35 g-n	48.84 f-k	4.03 c-k	21.48 b-i	2.33 g-n
SP 3904 BD BMR	Sorghum Partners	F	M	Y	7.53 e-i	37.70 a-e	57.37 b-f	3.50 h-n	4.38 l-p	2.49 b-k
SP 3905 BD BMR	Sorghum Partners	F	ME	Y	8.23 b-h	28.87 k-o	46.03 g-k	3.18 l-n	20.39 b-k	2.71 a-g
SWFS8802	Sorghum Partners	F	ME	N	9.14 a-e	28.68 k-o	42.95 i-l	3.72 g-n	23.44 b-h	2.77 a-e
18096	Gayland Ward	F		N	*Not at*	*this site*				
19038	Gayland Ward	F		N	"	"				
19040	Gayland Ward	F		N	"	"				
19042	Gayland Ward	F		N	"	"				
19181	Gayland Ward	F		N	"	"				
20163	Gayland Ward	F		N	"	"				
20251	Gayland Ward	F		N	"	"				
FX21851	Dyna-Gro	F	ME	N	9.07 a-e	34.07 b-l	52.78 c-h	4.26 b-h	12.37 g-p	2.38 e-m
Means					**8.27**	**32.54**	**48.40**	**3.98**	**16.98**	**2.51**
CV					**6.75**	**6.66**	**6.59**	**10.86**	**23.76**	**8.07**

[1]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 10. 2021 comparisons of sorghum forage hybrids and locations for nutrional characteristic's crude protein, ADF, NDF, lignin, starch and fat at **WREC** trial site, sorted by seed company.

Hybrid Information[1]					Nutrient Composition & Calculations[2]					
Hybrid	**Company**	**Type**	**Maturity**	**BMR**	**% Crude Protein**	**% ADF**	**% NDF**	**% Lignin**	**% Starch**	**% Fat**
OPAL	Mojo	F	ML	N	9.61 a-d	28.87 l-q	40.90 n-q	4.14 b-l	26.54 a-e	2.56 d-i
PEARL	Mojo	F	ML	N	9.44 b-e	25.02 r	34.11 r	3.69 h-q	32.94 a	2.70 c-g
CP3501	Croplan	F	M	N	8.35 g-l	29.05 k-q	42.52 l-p	3.05 q-s	19.18 g-l	2.78 b-e
CP3681 AT	Croplan	F	ML	N	7.62 i-o	32.24 h-l	49.91 f-j	4.81 b	21.78 e-i	2.39 g-m
CP3531 BMR Leafy	Croplan	F	ML	Y	8.59 e-h	35.82 e-g	51.68 e-h	3.80 f-p	8.62 o-r	2.56 d-i
CP3731 BMR Leafy	Croplan	F	L	Y	8.39 g-k	28.93 k-q	43.68 k-o	3.85 e-p	26.74 a-e	2.73 c-f
X50315	Scott Seed	F	ML	N	10.37 a	26.42 q,r	37.48 p-r	3.82 e-p	29.40 a-d	2.55 d-i
X52053	Scott Seed	F	ML	N	8.70 e-h	28.47 m-r	43.72 k-o	3.78 g-p	25.37 b-g	2.51 d-j
X54243	Scott Seed	F	L	Y	5.81 q,r	43.75 a,b	68.16 a	5.80 a	0.60 u	2.03 n,o
X5061037	Scott Seed	F	L	Y	7.45 l-o	27.32 n-r	41.04 m-q	3.86 e-o	31.06 a,b	2.39 g-m
X5221037	Scott Seed	F	L	Y	8.61 e-h	27.22 o-r	40.53 n-q	4.17 b-k	30.12 a-c	2.60 d-h
F70FS91 BMR	Dyna-Gro	F	E	Y	8.56 e-h	33.10 f-j	48.96 g-j	3.33 m-s	12.21 m-p	2.61 d-h
F71FS72 BMR	Dyna-Gro	F	E	Y	8.28 h-m	27.90 m-r	41.36 m-q	2.70 s	19.83 f-l	3.08 a,b
5 Star	Dyna-Gro	F	ME	N	8.31 g-l	30.61 i-o	46.84 h-l	4.14 b-l	18.05 h-m	2.62 d-h
F72FS05	Dyna-Gro	F	ME	N	8.11 h-n	31.36 i-m	51.55 e-h	4.65 b,c	21.44 e-j	2.40 g-m
FX21815	Dyna-Gro	F	ME	N	9.70 a-c	28.83 l-q	41.39 m-q	3.55 k-r	23.32 d-i	2.54 d-i
Super Sile 30	Dyna-Gro	F	ME	N	8.13 h-n	32.23 h-l	48.28 g-k	4.38 b-h	19.35 g-l	2.42 f-l
F72FS25 BMR	Dyna-Gro	F	M	Y	8.42 g-j	36.44 d-f	55.29 c-e	3.41 m-r	4.93 q-u	2.48 e-k
F74FS23 BMR	Dyna-Gro	F	M	Y	7.56 j-o	31.32 i-m	45.06 j-n	3.21 o-s	16.97 i-n	2.65 c-h
F74FS72 BMR	Dyna-Gro	F	M	Y	9.33 b-f	33.46 f-j	50.49 e-i	3.57 j-r	14.44 k-o	2.46 e-l
Sweet Ton MS	Dyna-Gro	F	MF	N	7.12 o,p	32.41 g-k	48.36 g-k	3.63 i-r	12.15 m-p	2.65 c-h
Super Sile 20	Dyna-Gro	F	MF	N	7.38 m-o	35.37 e-h	51.94 e-h	4.44 b-g	13.94 l-p	2.01 n,o
FX21865	Dyna-Gro	F	MF	N	8.61 e-h	33.09 f-j	51.47 e-h	3.87 d-o	17.97 h-m	2.39 g-m
FX21842	Dyna-Gro	F	MF	N	8.55 e-h	31.38 i-m	46.13 i-m	4.43 b-g	23.95 c-h	2.45 e-l
Danny Boy II BMR	Dyna-Gro	F	M	Y	6.26 p,q	41.27 a-c	61.62 b	4.03 c-m	1.35 s-u	2.19 j-n
First Graze	Dyna-Gro	F	ME	N	7.48 k-o	35.68 e-h	52.01 d-h	4.30 b-i	10.62 n-q	2.37 h-m
Super Sweet 10	Dyna-Gro	F	ME	N	8.14 h-n	32.22 h-l	47.22 h-l	4.49 b-f	17.68 h-m	2.51 d-j
Dynagraze II	Dyna-Gro	F	ME	N	7.93 h-o	38.38 c-e	54.88 c-f	4.80 b	8.76 o-r	2.07 m-o
Dynagraze II BMR	Dyna-Gro	F	ME	Y	7.24 n-o	37.95 c-e	57.15 b-d	4.57 b-d	7.86 p-s	2.15 k-o
Fullgraze II	Dyna-Gro	F	MF	N	5.10 r	44.59 a	68.26 a	6.25 a	1.48 s-u	1.86 o
Fullgraze II BM	Dyna-Gro	F	MF	Y	6.01 q	40.80 b,c	62.20 b	4.52 b-e	1.14 t,u	2.26 i-n
NK300	Sorghum Partners	F	ME	N	8.30 h-l	26.65 p-r	40.73 n-q	4.17 b-k	32.64 a	2.40 g-m
SP 3904 BD BMR	Sorghum Partners	F	M	Y	8.59 e-h	35.33 e-h	52.43 d-g	3.46 l-r	9.384 q	2.47 e-k
SP 3905 BD BMR	Sorghum Partners	F	ME	Y	8.09 h-n	28.63 m-q	40.87 n-q	3.07 q-s	20.87 e-k	3.10 a,b
SWFS8802	Sorghum Partners	F	ME	N	8.76 d-h	25.54 q,r	36.55 q,r	3.54 k-r	30.81 a,b	2.97 a-c
18096	Gayland Ward	F		N	9.68 a-c	29.06 k-q	41.30 m-q	3.88 d-o	23.44 d-i	2.75 c-f
19038	Gayland Ward	F		N	8.00 h-o	35.87 e-g	53.35 d-g	3.98 c-m	9.254 q	2.43 f-l
19040	Gayland Ward	F		N	10.18 a,b	36.22 d-f	51.67 e-h	4.27 b-j	7.44 p-t	2.43 f-l
19042	Gayland Ward	F		N	8.12 h-n	39.57 c,d	58.67 b,c	4.23 b-k	2.38 r-u	2.13 l-o
19181	Gayland Ward	F		N	8.50 f-i	30.75 i-n	46.13 i-m	2.95 r,s	13.57 l-p	2.83 b-d
20163	Gayland Ward	F		N	9.21 c-g	33.83 f-i	50.24 e-j	3.94 d-n	14.98 j-o	2.38 g-m
20251	Gayland Ward	F		N	9.88 a-c	26.13 q,r	39.71 o-q	3.27 n-s	25.98 b-f	3.16 a
FX21851	Dyna-Gro	F	ME	N	8.21 h-m	30.08 j-p	45.23 j-n	3.16 p-s	19.50 f-l	2.70 c-g
Means					**8.25**	**32.54**	**48.40**	**3.98**	**16.98**	**2.51**
CV					**6.75**	**6.66**	**6.59**	**10.86**	**23.76**	**8.07**

[1]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 11 . 2021 comparisons of sorghum forage hybrids and locations for nutrional characteristic's NDFd30, NDFd240, uNDFom240, Mill lbs ton^{-1} and RFQ. Values shown are averages across three sites (1st and 2nd plantings at KARE (KARE1, KARE2) and WREC, sorted by seed company.

Hybrid Information[1]					**Nutrient Composition & Calculations**[2]				
Hybrid	**Company**	**Type**	**Maturity**	**BMR**	**NDFd30**	**NDFd240**	**UNDFom 240**	**Milk Lbs ton-1**	**Rel. Forage Quality**
OPAL	Mojo	F	ML	N	48.36 n-s	64.96 i-o	17.52 d-g	2765.56 k-q	115.57 i-p
PEARL	Mojo	F	ML	N	43.01 u,v	60.17 r,s	15.38 m-p	3223.33 a,b	152.53 b
CP3501	Croplan	F	M	N	45.07 s-u	63.22 o-q	16.20 i-m	2947.56 d-j	127.30 e-j
CP3681 AT	Croplan	F	ML	N	51.68 e-n	68.70 b-h	16.65 g-j	2734.00 l-q	110.01 m-r
CP3531 BMR Leafy	Croplan	F	ML	Y	58.82 a	71.63 a,b	15.44 m-p	2642.56 n-s	119.69 h-n
CP3731 BMR Leafy	Croplan	F	L	Y	54.48 c-f	68.45 c-h	14.84 p.q	2876.67 g-m	133.28 c-g
X50315	Scott Seed	F	ML	N	41.60 v	58.18 s	14.84 p.q	3312.78 a	166.77 a
X52053	Scott Seed	F	ML	N	50.35 g-o	66.19 h-n	15.93 j-o	2932.44 e-k	128.77 d-i
X54243	Scott Seed	F	L	Y	49.04 l-q	66.22 g-n	22.57 a	2216.44 v	75.15 u
X5061037	Scott Seed	F	L	Y	53.01 d-i	67.09 e-l	14.29 q	3051.67 b-g	145.95 b,c
X5221037	Scott Seed	F	L	Y	48.58 m-r	64.29 l-o	15.11 o-q	3110.89 b-d	141.47 b-d
F70FS91 BMR	Dyna-Gro	F	E	Y	53.32 c-g	67.52 d-j	15.02 o-q	3012.33 c-h	140.57 b-d
F71FS72 BMR	Dyna-Gro	F	E	Y	49.91 h-p	63.95 n-p	15.18 o-q	3084.00 b-e	145.51 b,c
5 Star	Dyna-Gro	F	ME	N	46.88 p-t	64.57 k-o	16.48 h-l	2967.67 c-i	124.64 f-l
F72FS05	Dyna-Gro	F	ME	N	52.54 d-k	68.73 b-h	16.55 h-k	2779.22 j-o	113.42 k-q
FX21815	Dyna-Gro	F	ME	N	47.69 o-t	62.52 o-r	15.41 m-p	3057.22 b-f	145.46 b,c
Super Sile 30	Dyna-Gro	F	ME	N	49.56 j-p	66.46 f-n	17.99 c-e	2591.56 p-t	103.42 p-s
F72FS25 BMR	Dyna-Gro	F	M	Y	58.78 a	72.23 a	15.51 m-p	2480.00 s-u	112.81 k-q
F74FS23 BMR	Dyna-Gro	F	M	Y	52.83 d-j	67.79 d-j	15.23 n-q	2835.22 i-m	128.85 d-h
F74FS72 BMR	Dyna-Gro	F	M	Y	55.48 a-d	69.31 a-f	15.64 k-p	2714.78 m-r	123.42 g-l
Sweet Ton MS	Dyna-Gro	F	MF	N	48.30 n-s	66.35 g-n	16.55 h-k	2851.33 h-m	116.34 h-p
Super Sile 20	Dyna-Gro	F	MF	N	49.62 j-p	66.94 e-m	18.31 c-e	2557.11 r-t	98.50 r,s
FX21865	Dyna-Gro	F	MF	N	56.41 a-c	70.06 a-d	15.06 o-q	2766.33 k-p	125.71 f-k
FX21842	Dyna-Gro	F	MF	N	52.10 d-l	69.12 b-g	15.56 l-p	2793.67 i-n	117.69 h-o
Danny Boy II BMR	Dyna-Gro	F	M	Y	53.64 c-g	68.69 c-h	17.64 d-f	2458.22 t,u	104.71 o-s
First Graze	Dyna-Gro	F	ME	N	47.95 o-s	63.73 n-q	17.53 d-g	2781.78 j-o	117.99 h-n
Super Sweet 10	Dyna-Gro	F	ME	N	45.70 q-u	62.81 o-r	17.41 e-h	2901.89 f-l	119.58 h-n
Dynagraze II	Dyna-Gro	F	ME	N	45.72 q-u	62.86 o-r	18.04 c-e	2745.11 l-q	111.45 l-r
Dynagraze II BMR	Dyna-Gro	F	ME	Y	54.49 b-f	69.61 a-e	16.99 f-i	2747.56 l-q	111.65 l-r
Fullgraze II	Dyna-Gro	F	MF	N	50.38 g-o	67.81 d-i	21.07 b	2345.00 u,v	81.18 t,u
Fullgraze II BM	Dyna-Gro	F	MF	Y	55.06 b-e	69.67 a-e	18.37 c-e	2463.33 t,u	98.70 r,s
NK300	Sorghum Partners	F	ME	N	47.58 o-t	64.02 m-p	15.54 l-p	3058.78 b-f	137.87 c-f
SP 3904 BD BMR	Sorghum Partners	F	M	Y	57.87 a,b	71.32 a-c	15.72 j-p	2590.89 q-t	115.33 j-p
SP 3905 BD BMR	Sorghum Partners	F	ME	Y	48.33 n-s	62.94 o-r	15.44 m-p	3068.33 b-f	144.22 b,c
SWFS8802	Sorghum Partners	F	ME	N	44.33 t-v	61.27 p-r	15.01 o-q	3130.78 b,c	151.31 b
18096	Gayland Ward	F		N	*Not at all*	*3 sites*			
19038	Gayland Ward	F		N	"	"			
19040	Gayland Ward	F		N	"	"			
19042	Gayland Ward	F		N	"	"			
19181	Gayland Ward	F		N	"	"			
20163	Gayland Ward	F		N	"	"			
20251	Gayland Ward	F		N	"	"			
FX21851	Dyna-Gro	F	ME	N	53.52 c-g	68.93 b-h	15.33 m-p	2784.44 j-o	123.97 g-l
Means					**50.61**	**66.34**	**16.43**	**2816.12**	**123.08**
CV					**8.56**	**5.05**	**10.60**	**8.89**	**15.93**
Location									
KARE1					**51.66 b**	**67.38 b**	**17.14 a**	**2750.37 b**	**114.03 c**
KARE2					**52.68 a**	**68.61 a**	**15.27 b**	**2903.26 a**	**129.55 a**
WREC					**47.71 c**	**63.20 c**	**17.02 a**	**2764.51 b**	**123.65 b**

[1]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.

[2]Means followed by the same letter do not significantly differ using LSD (P=0.05)

Table 12. 2021 comparisons of sorghum forage hybrids and locations for nutrional characteristic's NDFd30, NDFd240, uNDFom240, Mill lbs ton^{-1} and RFQ at **KARE1** trial (at KARE Site), sorted by seed company.

Hybrid Information[1]					**Nutrient Composition & Calculations**[2]				
Hybrid	**Company**	**Type**	**Maturity**	**BMR**	**NDFd30**	**NDFd240**	**UNDFom 240**	**Milk Lbs ton-1**	**Rel. Forage Quality**
OPAL	Mojo	F	ML	N	50.71 f-m	67.33 e-k	18.93 c,d	2555.00 j-m	97.02 o-r
PEARL	Mojo	F	ML	N	46.04 n-q	63.30 m-q	16.14 l-r	3058.00 b-d	133.52 c-g
CP3501	Croplan	F	M	N	45.41 o-q	63.55 l-q	17.65 e-j	2815.70 e-h	111.68 i-o
CP3681 AT	Croplan	F	ML	N	52.53 c-k	69.15 c-h	17.55 e-k	2687.00 f-k	103.98 l-q
CP3531 BMR Leafy	Croplan	F	ML	Y	59.89 a	72.80 a,b	15.97 l-s	2601.00 i-m	113.50 h-n
CP3731 BMR Leafy	Croplan	F	L	Y	59.57 a	73.17 a	14.99 q-s	2685.30 f-l	118.41 g-l
X50315	Scott Seed	F	ML	N	42.45 q	60.38 q	14.75 s	3281.30 a	157.98 a
X52053	Scott Seed	F	ML	N	51.54 e-l	68.15 e-i	17.64 e-j	2622.30 h-l	102.76 m-q
X54243	Scott Seed	F	L	Y	49.97 h-n	66.10 h-n	23.06 a	2290.30 p	76.86 s
X5061037	Scott Seed	F	L	Y	50.11 h-n	64.26 j-p	14.89 r,s	3152.30 a,b	149.64 a,b
X5221037	Scott Seed	F	L	Y	48.58 k-o	64.00 k-p	15.83 l-s	3114.00 a,b	135.38 b-f
F70FS91 BMR	Dyna-Gro	F	E	Y	54.11 c-h	68.53 e-h	16.42 j-p	2825.00 e-g	119.91 g-j
F71FS72 BMR	Dyna-Gro	F	E	Y	52.76 c-k	67.09 f-k	15.22 o-s	3079.30 b,c	137.20 b-e
5 Star	Dyna-Gro	F	ME	N	47.62 l-p	64.98 i-o	17.76 d-i	2844.00 e-g	111.72 i-o
F72FS05	Dyna-Gro	F	ME	N	50.17 h-n	67.55 e-j	16.83 h-n	2863.70 d-g	112.68 h-n
FX21815	Dyna-Gro	F	ME	N	49.55 i-o	64.98 i-o	15.40 o-s	3121.30 a,b	138.08 b-e
Super Sile 30	Dyna-Gro	F	ME	N	51.26 f-m	68.84 c-h	18.10 d-h	2568.70 i-m	96.60 o-r
F72FS25 BMR	Dyna-Gro	F	M	Y	60.01 a	73.30 a	15.71 m-s	2539.70 j-m	111.46 i-o
F74FS23 BMR	Dyna-Gro	F	M	Y	53.66 c-i	67.36 e-k	16.20 l-q	2812.30 e-h	124.29 e-i
F74FS72 BMR	Dyna-Gro	F	M	Y	58.84 a,b	72.12 a-c	16.50 i-o	2518.00 j-n	108.71 j-q
Sweet Ton MS	Dyna-Gro	F	MF	N	49.28 j-o	66.50 h-m	18.31 c-f	2679.70 f-l	101.33 n-r
Super Sile 20	Dyna-Gro	F	MF	N	52.97 c-j	68.71 c-h	18.69 c-e	2498.30 k-o	95.48 q,r
FX21865	Dyna-Gro	F	MF	N	56.84 a-c	70.76 a-e	15.62 n-s	2759.30 e-i	119.60 g-k
FX21842	Dyna-Gro	F	MF	N	52.72 c-k	69.52 b-h	15.52 o-s	2889.30 c-e	118.63 g-l
Danny Boy II BMR	Dyna-Gro	F	M	Y	55.79 a-e	70.49 a-f	17.74 d-i	2407.70 m-p	99.29 n-r
First Graze	Dyna-Gro	F	ME	N	47.55 l-p	63.37 m-q	18.43 c-e	2767.70 e-i	110.96 i-p
Super Sweet 10	Dyna-Gro	F	ME	N	43.59 p,q	60.99 p,q	18.55 c-e	2864.70 d-f	114.15 h-n
Dynagraze II	Dyna-Gro	F	ME	N	45.28 o-q	62.09 o-q	18.48 c-e	2675.70 f-l	105.69 j-q
Dynagraze II BMR	Dyna-Gro	F	ME	Y	54.95 b-f	70.18 a-g	17.72 e-j	2678.00 f-l	105.20 j-q
Fullgraze II	Dyna-Gro	F	MF	N	49.86 h-n	67.25 e-k	21.68 b	2303.00 o,p	79.03 s
Fullgraze II BM	Dyna-Gro	F	MF	Y	55.96 a-d	70.03 a-g	18.52 c-e	2490.30 k-p	99.80 n-r
NK300	Sorghum Partners	F	ME	N	47.05 m-p	64.34 j-p	15.45 o-s	3095.00 a,b	136.06 b-e
SP 3904 BD BMR	Sorghum Partners	F	M	Y	59.72 a	72.81 a,b	16.05 l-s	2606.70 i-m	111.74 i-o
SP 3905 BD BMR	Sorghum Partners	F	ME	Y	48.65 k-o	62.72 n-q	15.70 m-s	3163.70 a,b	145.52 a-c
SWFS8802	Sorghum Partners	F	ME	N	43.72 p,q	60.91 p,q	15.79 l-s	3102.00 a,b	141.32 b-d
18096	Gayland Ward	F		N	49.25 j-o	63.99 k-p	17.08 f-l	3057.70 b-d	127.82 d-h
19038	Gayland Ward	F		N	54.75 b-g	70.72 a-e	18.16 c-g	2492.00 k-o	96.19 p-r
19040	Gayland Ward	F		N	53.65 c-i	69.39 b-h	18.28 c-f	2485.70 l-p	96.61 o-r
19042	Gayland Ward	F		N	51.54 e-l	68.59 d-h	19.43 c	2338.30 n-p	87.05 r,s
19181	Gayland Ward	F		N	54.72 b-g	69.57 b-h	16.98 g-m	2663.30 g-l	109.85 i-q
20163	Gayland Ward	F		N	50.60 g-m	66.94 g-l	17.66 e-j	2617.70 h-l	104.49 k-q
20251	Gayland Ward	F		N	52.16 d-k	68.28 e-i	16.33 k-p	2890.70 c-e	120.37 f-j
FX21851	Dyna-Gro	F	ME	N	55.93 a-d	72.07 a-d	15.13 p-s	2705.30 e-j	115.56 h-m
Means					**51.66**	**67.38**	**17.14**	**2750.37**	**114.03**
CV					**51.42**	**3.21**	**4.68**	**4.49**	**8.24**

[1]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.

[2]Means followed by the same letter do not significantly differ using LSD (P=0.05)

Table 13. 2021 comparisons of sorghum forage hybrids and locations for nutrional characteristic's NDFd30, NDFd240, uNDFom240, Mill lbs ton^{-1} and RFQ at **KARE2** trial (at KARE site), sorted by seed company.

Hybrid Information[1]					Nutrient Composition & Calculations[2]				
Hybrid	**Company**	**Type**	**Maturity**	**BMR**	**NDFd30**	**NDFd240**	**UNDFom 240**	**Milk Lbs ton-1**	**Rel. Forage Quality**
OPAL	Mojo	F	ML	N	53.56 b-h	71.64 a-f	16.08 c-g	2633.30 h-l	106.33 i-m
PEARL	Mojo	F	ML	N	44.90 j,k	62.66 k,l	14.92 e-l	3296.70 a-c	150.54 b-e
CP3501	Croplan	F	M	N	48.44 g-j	67.21 c-k	14.09 i-m	3209.00 a-d	143.03 b-f
CP3681 AT	Croplan	F	ML	N	53.87 b-h	71.73 a-f	15.60 d-i	2686.30 f-l	108.04 h-l
CP3531 BMR Leafy	Croplan	F	ML	Y	61.50 a	74.55 a,b	14.04 i-m	2651.00 g-l	123.06 e-k
CP3731 BMR Leafy	Croplan	F	L	Y	53.11 b-i	66.55 d-k	15.15 d-l	2961.30 c-i	138.10 c-h
X50315	Scott Seed	F	ML	N	41.28 k	58.48 l	13.86 j-m	3504.70 a	185.08 a
X52053	Scott Seed	F	ML	N	53.45 b-i	68.48 b-k	14.25 h-m	3276.70 a-c	151.01 b-e
X54243	Scott Seed	F	L	Y	49.74 e-j	67.35 c-k	21.67 a	2199.70 m	76.58 m
X5061037	Scott Seed	F	L	Y	59.23 a,b	73.13 a-c	13.62 k-m	2839.30 d-j	132.43 c-i
X5221037	Scott Seed	F	L	Y	51.24 c-j	67.13 c-k	14.62 f-m	3073.30 b-f	138.65 c-h
F70FS91 BMR	Dyna-Gro	F	E	Y	52.78 b-i	66.86 c-k	12.99 m	3456.30 a,b	173.33 a,b
F71FS72 BMR	Dyna-Gro	F	E	Y	51.21 d-j	63.77 i-l	14.80 e-l	3272.70 a-c	158.45 a-d
5 Star	Dyna-Gro	F	ME	N	47.68 h-k	66.14 e-k	14.65 f-m	3178.70 a-e	140.36 c-g
F72FS05	Dyna-Gro	F	ME	N	55.45 a-f	72.36 a-e	16.06 c-g	2616.70 i-l	105.99 i-m
FX21815	Dyna-Gro	F	ME	N	51.09 d-j	65.03 g-k	14.08 i-m	3180.00 a-e	161.76 a-c
Super Sile 30	Dyna-Gro	F	ME	N	52.24 c-i	69.21 a-j	17.78 b,c	2426.00 k-m	96.64 k-m
F72FS25 BMR	Dyna-Gro	F	M	Y	57.73 a-d	71.84 a-e	15.47 d-j	2361.00 l,m	108.66 h-l
F74FS23 BMR	Dyna-Gro	F	M	Y	57.66 a-d	72.81 a-d	13.47 l,m	2909.00 c-i	133.83 c-i
F74FS72 BMR	Dyna-Gro	F	M	Y	54.90 a-g	69.98 a-i	13.90 i-m	2996.30 c-i	142.54 b-f
Sweet Ton MS	Dyna-Gro	F	MF	N	49.34 e-j	68.66 b-k	14.45 g-m	3118.70 a-e	131.87 c-i
Super Sile 20	Dyna-Gro	F	MF	N	52.30 c-i	71.18 a-g	16.49 c-e	2611.00 i-m	100.79 j-m
FX21865	Dyna-Gro	F	MF	N	57.27 a-d	71.24 a-g	13.88 i-m	2894.00 c-i	135.45 c-i
FX21842	Dyna-Gro	F	MF	N	58.14 a-c	75.54 a	14.24 h-m	2586.70 i-m	109.95 g-l
Danny Boy II BMR	Dyna-Gro	F	M	Y	52.83 b-i	68.81 b-k	15.32 d-k	2795.00 e-k	125.12 e-k
First Graze	Dyna-Gro	F	ME	N	49.93 e-j	64.50 h-l	15.57 d-j	3062.70 b-g	140.13 c-g
Super Sweet 10	Dyna-Gro	F	ME	N	48.98 f-j	65.41 f-k	16.33 c-f	3037.00 c-h	127.00 e-k
Dynagraze II	Dyna-Gro	F	ME	N	46.63 i-k	63.57 j-l	15.88 d-h	3173.70 a-e	136.13 c-i
Dynagraze II BMR	Dyna-Gro	F	ME	Y	56.13 a-e	71.11 a-g	15.23 d-k	2988.70 c-i	125.84 e-k
Fullgraze II	Dyna-Gro	F	MF	N	52.79 b-i	69.63 a-j	19.38 b	2447.70 j-m	89.39 l,m
Fullgraze II BM	Dyna-Gro	F	MF	Y	57.32 a-d	71.82 a-e	16.76 c,d	2601.70 i-m	106.84 i-m
NK300	Sorghum Partners	F	ME	N	51.20 d-j	67.71 c-k	15.31 d-k	2912.70 c-i	129.15 d-j
SP 3904 BD BMR	Sorghum Partners	F	M	Y	59.24 a,b	72.76 a-d	15.25 d-k	2605.70 i-m	117.40 f-l
SP 3905 BD BMR	Sorghum Partners	F	ME	Y	51.55 c-j	66.08 e-k	14.77 e-l	3047.30 b-g	142.13 c-f
SWFS8802	Sorghum Partners	F	ME	N	47.76 h-k	64.49 h-l	14.62 f-m	3106.30 a-e	150.66 b-e
18096	Gayland Ward	F		N	*Not at*	*this site*			
19038	Gayland Ward	F		N	"	"			
19040	Gayland Ward	F		N	"	"			
19042	Gayland Ward	F		N	"	"			
19181	Gayland Ward	F		N	"	"			
20163	Gayland Ward	F		N	"	"			
20251	Gayland Ward	F		N	"	"			
FX21851	Dyna-Gro	F	ME	N	54.18 b-h	70.48 a-h	15.09 d-l	2800.70 d-k	121.46 e-k
Means					**52.68**	**68.61**	**15.27**	**2903.26**	**129.55**
CV					**8.05**	**5.68**	**6.99**	**8.74**	**14.69**

[1]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.

[2]Means followed by the same letter do not significantly differ using LSD (P=0.05)

Table 14. 2021 comparisons of sorghum forage hybrids and locations for nutrional characteristic's NDFd30, NDFd240, uNDFom240, Mill lbs ton^{-1} and RFQ at **WREC** site, sorted by seed company.

Hybrid Information[1]					**Nutrient Composition & Calculations**[2]				
Hybrid	**Company**	**Type**	**Maturity**	**BMR**	**NDFd30**	**NDFd240**	**UNDFom 240**	**Milk Lbs ton-1**	**Rel. Forage Quality**
OPAL	Mojo	F	ML	N	40.80 q,r	55.91 r,s	17.56 d-j	3108.30 a-e	143.35 b-f
PEARL	Mojo	F	ML	N	38.10 r	54.54 s	15.08 m-p	3315.30 a	173.54 a
CP3501	Croplan	F	M	N	41.36 o-r	58.91 n-r	16.84 f-l	2818.00 f-j	127.18 f-l
CP3681 AT	Croplan	F	ML	N	48.65 c-k	65.23 b-k	16.80 f-l	2828.70 f-i	118.01 i-n
CP3531 BMR Leafy	Croplan	F	ML	Y	55.07 a,b	67.53 b-d	16.31 i-o	2675.70 g-o	122.50 g-m
CP3731 BMR Leafy	Croplan	F	L	Y	50.75 b-h	65.62 b-j	14.38 p	2983.30 b-f	143.34 b-f
X50315	Scott Seed	F	ML	N	41.07 p-r	55.67 r,s	15.92 j-p	3152.30 a-c	157.24 a-c
X52053	Scott Seed	F	ML	N	46.06 h-o	61.94 j-o	15.92 j-p	2898.30 d-g	132.53 e-k
X54243	Scott Seed	F	L	Y	47.40 f-l	65.22 b-k	23.00 a	2159.30 t	72.00 s
X5061037	Scott Seed	F	L	Y	49.69 c-j	63.88 d-l	14.34 p	3163.30 a,b	155.76 a-d
X5221037	Scott Seed	F	L	Y	45.91 i-o	61.73 k-o	14.87 n-p	3145.30 a-d	150.39 b-e
F70FS91 BMR	Dyna-Gro	F	E	Y	53.06 b,c	67.18 b-e	15.66 k-p	2755.70 f-n	128.48 f-l
F71FS72 BMR	Dyna-Gro	F	E	Y	45.77 i-p	61.00 l-q	15.52 l-p	2900.00 d-g	140.87 c-g
5 Star	Dyna-Gro	F	ME	N	45.35 j-q	62.59 h-n	17.03 e-l	2880.30 e-h	121.84 h-m
F72FS05	Dyna-Gro	F	ME	N	51.99 b-f	66.27 b-h	16.76 g-m	2857.30 f-h	121.58 h-m
FX21815	Dyna-Gro	F	ME	N	42.44 m-r	57.56 q-s	16.75 g-m	2870.30 e-h	136.54 e-i
Super Sile 30	Dyna-Gro	F	ME	N	45.19 j-q	61.34 l-p	18.10 c-h	2780.00 f-m	117.01 j-o
F72FS25 BMR	Dyna-Gro	F	M	Y	58.59 a	71.56 a	15.36 l-p	2539.30 l-r	118.31 i-n
F74FS23 BMR	Dyna-Gro	F	M	Y	47.17 g-m	63.19 f-m	16.02 j-p	2784.30 f-l	128.43 f-l
F74FS72 BMR	Dyna-Gro	F	M	Y	52.69 b-d	65.82 b-i	16.52 h-n	2630.00 h-p	119.03 i-n
Sweet Ton MS	Dyna-Gro	F	MF	N	46.29 h-n	63.90 c-l	16.89 f-l	2755.70 f-n	115.83 k-o
Super Sile 20	Dyna-Gro	F	MF	N	43.60 l-q	60.93 l-q	19.74 b,c	2562.00 k-q	99.24 o-q
FX21865	Dyna-Gro	F	MF	N	55.13 a,b	68.18 a,b	15.69 k-p	2645.70 h-o	122.07 h-m
FX21842	Dyna-Gro	F	MF	N	45.44 j-q	62.29 i-n	16.94 e-l	2905.00 c-g	124.50 g-l
Danny Boy II BMR	Dyna-Gro	F	M	Y	52.29 b-e	66.79 b-f	19.86 b	2172.00 t	89.73 q-s
First Graze	Dyna-Gro	F	ME	N	46.38 h-n	63.33 f-m	18.58 b-e	2515.00 n-s	102.88 n-q
Super Sweet 10	Dyna-Gro	F	ME	N	44.53 k-q	62.04 j-o	17.35 d-k	2804.00 f-k	117.60 j-o
Dynagraze II	Dyna-Gro	F	ME	N	45.27 j-q	62.92 g-m	19.75 b,c	2386.00 p-t	92.53 q,r
Dynagraze II BMR	Dyna-Gro	F	ME	Y	52.41 b-e	67.54 b-d	18.03 d-h	2576.00 j-q	103.93 m-q
Fullgraze II	Dyna-Gro	F	MF	N	48.48 c-k	66.54 b-g	22.14 a	2284.30 s,t	75.12 r,s
Fullgraze II BM	Dyna-Gro	F	MF	Y	51.90 b-g	67.16 b-e	19.83 b	2298.00 r-t	89.47 q-s
NK300	Sorghum Partners	F	ME	N	44.47 k-q	60.00 m-q	15.89 k-p	3168.70 a,b	148.38 b-e
SP 3904 BD BMR	Sorghum Partners	F	M	Y	54.66 a,b	68.39 a,b	15.87 j-p	2560.30 k-q	116.84 j-o
SP 3905 BD BMR	Sorghum Partners	F	ME	Y	44.78 k-q	60.01 m-q	15.84 k-p	2994.00 b-f	145.00 b-f
SWFS8802	Sorghum Partners	F	ME	N	41.50 o-r	58.42 o-r	14.63 o,p	3184.00 a,b	161.93 a,b
18096	Gayland Ward	F		N	41.77 n-r	57.68 p-s	16.72 h-m	2989.30 b-f	138.13 d-h
19038	Gayland Ward	F		N	48.06 d-l	63.71 e-m	18.77 b-d	2463.70 o-s	101.31 n-q
19040	Gayland Ward	F		N	47.82 e-l	63.74 e-m	17.84 d-i	2531.00 m-s	105.82 m-q
19042	Gayland Ward	F		N	52.34 b-e	67.65 b,c	18.48 b-f	2346.30 q-t	97.04 p,q
19181	Gayland Ward	F		N	51.85 b-g	65.69 b-j	15.35 l-p	2847.70 f-i	135.45 e-j
20163	Gayland Ward	F		N	47.89 e-l	62.10 j-o	18.42 b-g	2606.30 i-p	111.95 l-p
20251	Gayland Ward	F		N	47.26 f-l	61.45 l-o	14.76 o,p	3186.30 a,b	159.54 a,b
FX21851	Dyna-Gro	F	ME	N	50.45 b-i	64.23 c-l	15.76 k-p	2847.30 f-i	134.89 e-j
Means					**47.71**	**63.20**	**17.02**	**2764.51**	**123.65**
CV					**6.14**	**3.67**	**6.13**	**5.58**	**9.29**

1Hybrid 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.

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

Table 15. 2021 comparisons of sorghum forage hybrids and locations for nutrional characteristic's NFC, ESC Sugar, WSC Sugar, Milk lbs ton^{-1}, and RFQ. Values shown are averages across three sites (1st and 2nd plantings at KARE (KARE1, KARE2) and WREC, sorted by seed company.

Hybrid Information[1]					**Nutrient Composition & Calculations**[2]				
Hybrid	**Company**	**Type**	**Maturity**	**BMR**	**NFC**	**ESC Sugar**	**WSC Sugar**	**Milk Lbs per ton-1**	**Rel. Forage Quality**
OPAL	Mojo	F	ML	N	33.15 i-m	1.65 f-m	4.24 g-j	2765.56 k-q	115.57 i-p
PEARL	Mojo	F	ML	N	45.61 a,b	0.67 o,p	0.79 n	3223.33 a,b	152.53 b
CP3501	Croplan	F	M	N	40.28 c-f	2.51 a-e	5.31 f-i	2947.56 d-j	127.30 e-j
CP3681 AT	Croplan	F	ML	N	32.11 k-p	1.43 j-m	3.26 j-m	2734.00 l-q	110.01 m-r
CP3531 BMR Leafy	Croplan	F	ML	Y	28.44 n-s	2.56 a-d	7.64 b,c	2642.56 n-s	119.69 h-n
CP3731 BMR Leafy	Croplan	F	L	Y	35.38 h-l	1.66 f-m	3.23 j-m	2876.67 g-m	133.28 c-g
X50315	Scott Seed	F	ML	N	47.69 a	0.46 p	0.51 n	3312.78 a	166.77 a
X52053	Scott Seed	F	ML	N	36.55 f-j	1.01 m-p	1.69 l-n	2932.44 e-k	128.77 d-i
X54243	Scott Seed	F	L	Y	22.61 u	0.61 p	7.42 b-d	2216.44 v	75.15 u
X5061037	Scott Seed	F	L	Y	39.19 d-h	1.55 g-m	1.86 k-n	3051.67 b-g	145.95 b,c
X5221037	Scott Seed	F	L	Y	41.45 b-d	0.53 p	0.59 n	3110.89 b-d	141.47 b-d
F70FS91 BMR	Dyna-Gro	F	E	Y	38.15 d-h	2.25 a-h	5.37 f-i	3012.33 c-h	140.57 b-d
F71FS72 BMR	Dyna-Gro	F	E	Y	41.63 b-d	2.36 a-f	4.44 g-j	3084.00 b-e	145.51 b,c
5 Star	Dyna-Gro	F	ME	N	39.94 d-g	2.41 a-f	6.66 b-f	2967.67 c-i	124.64 f-l
F72FS05	Dyna-Gro	F	ME	N	32.43 j-o	1.86 c-l	3.54 i-l	2779.22 j-o	113.42 k-q
FX21815	Dyna-Gro	F	ME	N	40.78 c-e	0.95 m-p	1.40 m,n	3057.22 b-f	145.46 b,c
Super Sile 30	Dyna-Gro	F	ME	N	30.93 m-q	1.16 k-p	5.19 f-i	2591.56 p-t	103.42 p-s
F72FS25 BMR	Dyna-Gro	F	M	Y	25.35 s-u	2.84 a	7.62 b-d	2480.00 s-u	112.81 k-q
F74FS23 BMR	Dyna-Gro	F	M	Y	36.84 e-i	2.74 a,b	6.93 b-f	2835.22 i-m	128.85 d-h
F74FS72 BMR	Dyna-Gro	F	M	Y	30.69 m-q	1.95 b-k	5.45 e-h	2714.78 m-r	123.42 g-l
Sweet Ton MS	Dyna-Gro	F	MF	N	36.74 e-i	2.19 a-i	7.50 b-d	2851.33 h-m	116.34 h-p
Super Sile 20	Dyna-Gro	F	MF	N	29.88 m-r	1.99 b-j	6.64 b-f	2557.11 r-t	98.50 r,s
FX21865	Dyna-Gro	F	MF	N	32.52 j-n	2.33 a-g	4.28 g-j	2766.33 k-p	125.71 f-k
FX21842	Dyna-Gro	F	MF	N	33.12 i-m	1.71 e-m	3.68 h-k	2793.67 i-n	117.69 h-o
Danny Boy II BMR	Dyna-Gro	F	M	Y	27.64 q-t	1.45 i-m	8.26 a,b	2458.22 t,u	104.71 o-s
First Graze	Dyna-Gro	F	ME	N	35.92 g-k	2.50 a-e	5.28 f-i	2781.78 j-o	117.99 h-n
Super Sweet 10	Dyna-Gro	F	ME	N	38.75 d-h	2.37 a-f	3.68 h-k	2901.89 f-l	119.58 h-n
Dynagraze II	Dyna-Gro	F	ME	N	36.44 f-j	2.16 a-i	4.20 g-j	2745.11 l-q	111.45 l-r
Dynagraze II BMR	Dyna-Gro	F	ME	Y	30.59 m-q	1.94 b-k	5.85 c-g	2747.56 l-q	111.65 l-r
Fullgraze II	Dyna-Gro	F	MF	N	24.09 t,u	0.76 n-p	7.63 b,c	2345.00 u,v	81.18 t,u
Fullgraze II BM	Dyna-Gro	F	MF	Y	25.89 r-u	1.53 h-m	9.55 a	2463.33 t,u	98.70 r,s
NK300	Sorghum Partners	F	ME	N	41.29 c,d	0.98 m-p	1.13 n	3058.78 b-f	137.87 c-f
SP 3904 BD BMR	Sorghum Partners	F	M	Y	28.26 o-t	2.36 a-f	7.31 b-e	2590.89 q-t	115.33 j-p
SP 3905 BD BMR	Sorghum Partners	F	ME	Y	41.81 b-d	2.22 a-i	4.41 g-j	3068.33 b-f	144.22 b,c
SWFS8802	Sorghum Partners	F	ME	N	44.19 a-c	1.09 l-p	1.84 k-n	3130.78 b,c	151.31 b
18096	Gayland Ward	F		N	*Not at all*	*3 sites*			
19038	Gayland Ward	F		N	"	"			
19040	Gayland Ward	F		N	"	"			
19042	Gayland Ward	F		N	"	"			
19181	Gayland Ward	F		N	"	"			
20163	Gayland Ward	F		N	"	"			
20251	Gayland Ward	F		N	"	"			
FX21851	Dyna-Gro	F	ME	N	33.26 i-m	2.65 a-c	4.15 g-j	2784.44 j-o	123.97 g-l
Means					**34.99**	**1.76**	**4.68**	**2816.12**	**123.08**
CV					**17.89**	**39.71**	**51.98**	**8.89**	**15.93**
Location									
KARE1					**32.90 c**	**1.50 b**	**5.57 a**	**2750.37 b**	**114.03 c**
KARE2					**34.93 b**	**2.34 a**	**4.88 b**	**2903.26 a**	**129.55 a**
WREC					**36.11 a**	**1.49 b**	**3.56 c**	**2764.51 b**	**123.65 b**

[1]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.

[2]Means followed by the same letter do not significantly differ using LSD (P=0.05)

Table 16. 2021 comparisons of sorghum forage hybrids and locations for nutrional characteristic's NFC, ESC Sugar, WSC Sugar, Milk lbs ton^{-1}, and RFQ at **KARE1** trial (at KARE site), sorted by seed company.

Hybrid Information[1]					Nutrient Composition & Calculations[2]				
Hybrid	**Company**	**Type**	**Maturity**	**BMR**	**NFC**	**ESC Sugar**	**WSC Sugar**	**Milk Lbs per ton-1**	**Rel. Forage Quality**
OPAL	Mojo	F	ML	N	28.42 l-q	1.83 a-i	5.04 g-m	2555.00 j-m	97.02 o-r
PEARL	Mojo	F	ML	N	41.26 b-e	1.22 g-m	1.53 n-p	3058.00 b-d	133.52 c-g
CP3501	Croplan	F	M	N	37.60 d-h	1.43 d-m	7.49 b-g	2815.70 e-h	111.68 i-o
CP3681 AT	Croplan	F	ML	N	30.44 j-n	1.76 a-j	5.65 f-l	2687.00 f-k	103.98 l-q
CP3531 BMR Leafy	Croplan	F	ML	Y	27.35 m-r	1.49 c-m	10.71 a	2601.00 i-m	113.50 h-n
CP3731 BMR Leafy	Croplan	F	L	Y	29.02 k-p	2.36 a-e	6.41 d-k	2685.30 f-l	118.41 g-l
X50315	Scott Seed	F	ML	N	47.17 a	0.58 l-n	0.67 p	3281.30 a	157.98 a
X52053	Scott Seed	F	ML	N	29.68 k-o	2.20 a-g	4.18 i-n	2622.30 h-l	102.76 m-q
X54243	Scott Seed	F	L	Y	23.26 r	0.04 n	8.05 a-f	2290.30 p	76.86 s
X5061037	Scott Seed	F	L	Y	42.28 a-d	1.53 c-m	1.94 n-p	3152.30 a,b	149.64 a,b
X5221037	Scott Seed	F	L	Y	40.59 b-f	0.60 l-n	0.69 p	3114.00 a,b	135.38 b-f
F70FS91 BMR	Dyna-Gro	F	E	Y	35.03 g-j	2.18 a-g	9.15 a-c	2825.00 e-g	119.91 g-j
F71FS72 BMR	Dyna-Gro	F	E	Y	39.81 b-g	2.56 a-c	6.45 d-j	3079.30 b,c	137.20 b-e
5 Star	Dyna-Gro	F	ME	N	38.42 c-h	0.69 j-n	10.05 a,b	2844.00 e-g	111.72 i-o
F72FS05	Dyna-Gro	F	ME	N	35.90 f-i	2.10 a-h	4.06 j-n	2863.70 d-g	112.68 h-n
FX21815	Dyna-Gro	F	ME	N	40.41 b-f	0.49 m,n	0.55 p	3121.30 a,b	138.08 b-e
Super Sile 30	Dyna-Gro	F	ME	N	29.43 k-o	0.71 j-n	6.56 c-j	2568.70 i-m	96.60 o-r
F72FS25 BMR	Dyna-Gro	F	M	Y	25.22 o-r	1.71 b-j	8.34 a-e	2539.70 j-m	111.46 i-o
F74FS23 BMR	Dyna-Gro	F	M	Y	36.34 e-i	2.43 a-d	6.78 c-i	2812.30 e-h	124.29 e-i
F74FS72 BMR	Dyna-Gro	F	M	Y	25.19 o-r	1.38 d-m	8.30 a-f	2518.00 j-n	108.71 j-q
Sweet Ton MS	Dyna-Gro	F	MF	N	32.46 i-j	0.62 k-n	8.06 a-f	2679.70 f-l	101.33 n-r
Super Sile 20	Dyna-Gro	F	MF	N	26.85 m-r	0.97 i-n	7.11 c-h	2498.30 k-o	95.48 q,r
FX21865	Dyna-Gro	F	MF	N	31.58 i-m	2.81 a	4.99 g-m	2759.30 e-i	119.60 g-k
FX21842	Dyna-Gro	F	MF	N	35.29 g-j	1.64 b-l	3.78 k-o	2889.30 c-e	118.63 g-l
Danny Boy II BMR	Dyna-Gro	F	M	Y	25.43 n-r	1.32 e-m	8.28 a-f	2407.70 m-p	99.29 n-r
First Graze	Dyna-Gro	F	ME	N	35.88 f-i	2.23 a-g	4.82 g-m	2767.70 e-i	110.96 i-p
Super Sweet 10	Dyna-Gro	F	ME	N	39.99 b-g	2.57 a-c	4.07 j-n	2864.70 d-f	114.15 h-n
Dynagraze II	Dyna-Gro	F	ME	N	36.40 e-i	1.91 a-i	4.67 h-m	2675.70 f-l	105.69 j-q
Dynagraze II BMR	Dyna-Gro	F	ME	Y	28.35 l-q	1.22 g-m	6.15 e-k	2678.00 f-l	105.20 j-q
Fullgraze II	Dyna-Gro	F	MF	N	23.72 q,r	0.01 n	7.88 b-f	2303.00 o,p	79.03 s
Fullgraze II BM	Dyna-Gro	F	MF	Y	25.82 n-r	1.07 h-n	9.01 a-d	2490.30 k-p	99.80 n-r
NK300	Sorghum Partners	F	ME	N	42.36 a-d	0.99 i-n	1.22 o,p	3095.00 a,b	136.06 b-e
SP 3904 BD BMR	Sorghum Partners	F	M	Y	26.73 m-r	1.51 c-m	9.93 a,b	2606.70 i-m	111.74 i-o
SP 3905 BD BMR	Sorghum Partners	F	ME	Y	43.02 a-c	2.31 a-f	4.99 g-m	3163.70 a,b	145.52 a-c
SWFS8802	Sorghum Partners	F	ME	N	44.07 a,b	1.42 d-m	1.80 n-p	3102.00 a,b	141.32 b-d
18096	Gayland Ward	F		N	38.73 c-g	2.64 a,b	3.45 l-o	3057.70 b-d	127.82 d-h
19038	Gayland Ward	F		N	24.30 p-r	1.43 d-m	7.16 c-h	2492.00 k-o	96.19 p-r
19040	Gayland Ward	F		N	24.97 o-r	1.62 b-l	5.67 e-l	2485.70 l-p	96.61 o-r
19042	Gayland Ward	F		N	22.79 r	0.88 i-n	6.18 e-k	2338.30 n-p	87.05 r,s
19181	Gayland Ward	F		N	29.54 k-o	1.27 f-m	7.13 c-h	2663.30 g-l	109.85 i-q
20163	Gayland Ward	F		N	29.96 k-o	1.68 b-k	2.87 m-p	2617.70 h-l	104.49 k-q
20251	Gayland Ward	F		N	33.54 h-j	0.48 m,n	2.70 m-p	2890.70 c-e	120.37 f-j
FX21851	Dyna-Gro	F	ME	N	30.27 j-n	2.66 a,b	4.89 g-m	2705.30 e-j	115.56 h-m
Means					**32.90**	**1.50**	**5.57**	**2750.37**	**114.03**
CV					**9.42**	**44.06**	**29.57**	**4.49**	**8.24**

[1]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.

[2]Means followed by the same letter do not significantly differ using LSD (P=0.05).

Table 17. 2021 comparisons of sorghum forage hybrids and locations for nutrional characteristic's NFC, ESC Sugar, WSC Sugar, Milk lbs ton^{-1}, and RFQ at **KARE2** trial (at KARE Site), sorted by seed company.

Hybrid Information[1]					**Nutrient Composition & Calculations**[2]				
Hybrid	**Company**	**Type**	**Maturity**	**BMR**	**NFC**	**ESC Sugar**	**WSC Sugar**	**Milk Lbs per ton-1**	**Rel. Forage Quality**
OPAL	Mojo	F	ML	N	27.32 i-m	2.92 a-f	7.51 a-f	2633.30 h-l	106.33 i-m
PEARL	Mojo	F	ML	N	45.73 a,b	0.58 i,j	0.67 l,m	3296.70 a-c	150.54 b-e
CP3501	Croplan	F	M	N	42.05 a-e	2.56 a-h	3.27 g-m	3209.00 a-d	143.03 b-f
CP3681 AT	Croplan	F	ML	N	29.69 g-m	2.44 a-i	4.11 e-m	2686.30 f-l	108.04 h-l
CP3531 BMR Leafy	Croplan	F	ML	Y	26.41 k-m	3.67 a,b	7.56 a-e	2651.00 g-l	123.06 e-k
CP3731 BMR Leafy	Croplan	F	L	Y	37.38 b-i	2.51 a-h	3.28 g-m	2961.30 c-i	138.10 c-h
X50315	Scott Seed	F	ML	N	50.71 a	0.71 h-j	0.84 l,m	3504.70 a	185.08 a
X52053	Scott Seed	F	ML	N	40.08 b-f	0.48 j	0.54 m	3276.70 a-c	151.01 b-e
X54243	Scott Seed	F	L	Y	22.11 m	1.13 f-j	6.98 a-g	2199.70 m	76.58 m
X5061037	Scott Seed	F	L	Y	31.33 f-m	3.03 a-e	3.63 f-m	2839.30 d-j	132.43 c-i
X5221037	Scott Seed	F	L	Y	39.71 b-g	0.88 g-j	1.08 k-m	3073.30 b-f	138.65 c-h
F70FS91 BMR	Dyna-Gro	F	E	Y	45.36 a-c	1.55 d-j	1.74 i-m	3456.30 a,b	173.33 a,b
F71FS72 BMR	Dyna-Gro	F	E	Y	43.51 a-d	1.34 e-j	1.70 j-m	3272.70 a-c	158.45 a-d
5 Star	Dyna-Gro	F	ME	N	42.71 a-d	4.00 a	5.60 b-i	3178.70 a-e	140.36 c-g
F72FS05	Dyna-Gro	F	ME	N	27.11 j-m	2.60 a-g	5.08 c-j	2616.70 i-l	105.99 i-m
FX21815	Dyna-Gro	F	ME	N	40.93 a-f	1.37 e-j	2.41 i-m	3180.00 a-e	161.76 a-c
Super Sile 30	Dyna-Gro	F	ME	N	26.37 k-m	2.04 b-j	7.30 a-f	2426.00 k-m	96.64 k-m
F72FS25 BMR	Dyna-Gro	F	M	Y	23.74 l,m	3.96 a	7.72 a-e	2361.00 l,m	108.66 h-l
F74FS23 BMR	Dyna-Gro	F	M	Y	35.39 c-k	3.30 a-d	9.03 a,b	2909.00 c-i	133.83 c-i
F74FS72 BMR	Dyna-Gro	F	M	Y	35.11 d-k	2.64 a-g	5.35 b-j	2996.30 c-i	142.54 b-f
Sweet Ton MS	Dyna-Gro	F	MF	N	39.94 b-f	3.58 a-c	6.37 a-h	3118.70 a-e	131.87 c-i
Super Sile 20	Dyna-Gro	F	MF	N	28.48 h-m	2.94 a-f	8.53 a-c	2611.00 i-m	100.79 j-m
FX21865	Dyna-Gro	F	MF	N	34.91 d-k	2.43 a-i	5.58 b-j	2894.00 c-i	135.45 c-i
FX21842	Dyna-Gro	F	MF	N	25.32 k-m	3.40 a-d	7.24 a-f	2586.70 i-m	109.95 g-l
Danny Boy II BMR	Dyna-Gro	F	M	Y	33.93 d-l	1.78 c-j	6.48 a-h	2795.00 e-k	125.12 e-k
First Graze	Dyna-Gro	F	ME	N	39.04 b-g	2.89 a-f	4.47 d-l	3062.70 b-g	140.13 c-g
Super Sweet 10	Dyna-Gro	F	ME	N	38.11 b-h	2.28 a-j	2.87 h-m	3037.00 c-h	127.00 e-k
Dynagraze II	Dyna-Gro	F	ME	N	42.74 a-d	2.46 a-h	3.28 g-m	3173.70 a-e	136.13 c-i
Dynagraze II BMR	Dyna-Gro	F	ME	Y	33.86 d-l	2.87 a-f	5.00 c-j	2988.70 c-i	125.84 e-k
Fullgraze II	Dyna-Gro	F	MF	N	24.42 l,m	2.05 b-j	8.62 a-c	2447.70 j-m	89.39 l,m
Fullgraze II BM	Dyna-Gro	F	MF	Y	26.52 k-m	2.56 a-h	9.92 a	2601.70 i-m	106.84 i-m
NK300	Sorghum Partners	F	ME	N	37.04 b-j	1.87 b-j	2.17 i-m	2912.70 c-i	129.15 d-j
SP 3904 BD BMR	Sorghum Partners	F	M	Y	27.59 i-m	3.20 a-e	8.03 a-d	2605.70 i-m	117.40 f-l
SP 3905 BD BMR	Sorghum Partners	F	ME	Y	39.39 b-g	2.05 b-j	4.09 e-m	3047.30 b-g	142.13 c-f
SWFS8802	Sorghum Partners	F	ME	N	41.39 a-f	1.00 g-j	2.69 h-m	3106.30 a-e	150.66 b-e
18096	Gayland Ward	F		N	*Not at*	*this site*			
19038	Gayland Ward	F		N	"	"			
19040	Gayland Ward	F		N	"	"			
19042	Gayland Ward	F		N	"	"			
19181	Gayland Ward	F		N	"	"			
20163	Gayland Ward	F		N	"	"			
20251	Gayland Ward	F		N	"	"			
FX21851	Dyna-Gro	F	ME	N	31.92 e-m	3.19 a-e	4.88 d-k	2800.70 d-k	121.46 e-k
Means					**34.93**	**2.34**	**4.88**	**2903.26**	**129.55**
CV					**18.00**	**48.82**	**49.04**	**8.74**	**14.69**

[1]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.

[2]Means followed by the same letter do not significantly differ using LSD (P=0.05)

Table 18. 2021 comparisons of sorghum forage hybrids and locations for nutrional characteristic's NFC, ESC Sugar, WSC Sugar, Milk bs ton^{-1}, and RFQ at **WREC** site, sorted by seed company.

Hybrid Information[1]					Nutrient Composition & Calculations[2]				
Hybrid	**Company**	**Type**	**Maturity**	**BMR**	**NFC**	**ESC Sugar**	**WSC Sugar**	**Milk Lbs per ton-1**	**Rel. Forage Quality**
OPAL	Mojo	F	ML	N	43.71 b-f	0.21 l	0.16 n,o	3108.30 a-e	143.35 b-f
PEARL	Mojo	F	ML	N	49.83 a	0.20 l	0.15 n,o	3315.30 a	173.54 a
CP3501	Croplan	F	M	N	41.18 c-k	3.54 a	5.15 d-i	2818.00 f-j	127.18 f-l
CP3681 AT	Croplan	F	ML	N	36.19 k-p	0.09 l	0.01 o	2828.70 f-i	118.01 i-n
CP3531 BMR Leafy	Croplan	F	ML	Y	31.57 p-r	2.53 b-d	4.65 d-j	2675.70 g-o	122.50 g-m
CP3731 BMR Leafy	Croplan	F	L	Y	39.73 d-k	0.09 l	0.01 o	2983.30 b-f	143.34 b-f
X50315	Scott Seed	F	ML	N	45.18 a-c	0.09 l	0.01 o	3152.30 a-c	157.24 a-c
X52053	Scott Seed	F	ML	N	39.90 d-k	0.35 k,l	0.36 n,o	2898.30 d-g	132.53 e-k
X54243	Scott Seed	F	L	Y	22.46 u	0.66 j-l	7.23 b-d	2159.30 t	72.00 s
X5061037	Scott Seed	F	L	Y	43.97 b-e	0.09 l	0.01 o	3163.30 a,b	155.76 a-d
X5221037	Scott Seed	F	L	Y	44.04 b-d	0.09 l	0.01 o	3145.30 a-d	150.39 b-e
F70FS91 BMR	Dyna-Gro	F	E	Y	34.05 l-q	3.03 b-c	5.22 d-i	2755.70 f-n	128.48 f-l
F71FS72 BMR	Dyna-Gro	F	E	Y	41.57 c-j	3.19 a,b	5.18 d-i	2900.00 d-g	140.87 c-g
5 Star	Dyna-Gro	F	ME	N	38.68 f-l	2.54 b-d	4.34 e-j	2880.30 e-h	121.84 h-m
F72FS05	Dyna-Gro	F	ME	N	34.27 l-q	0.87 i-l	1.49 l-o	2857.30 f-h	121.58 h-m
FX21815	Dyna-Gro	F	ME	N	41.00 c-k	1.00 h-l	1.23 m-o	2870.30 e-h	136.54 e-i
Super Sile 30	Dyna-Gro	F	ME	N	36.98 i-o	0.74 j-l	1.72 k-o	2780.00 f-m	117.01 j-o
F72FS25 BMR	Dyna-Gro	F	M	Y	27.11 r-u	2.86 b-d	6.79 c-f	2539.30 l-r	118.31 i-n
F74FS23 BMR	Dyna-Gro	F	M	Y	38.78 e-l	2.48 b-d	4.98 d-i	2784.30 f-l	128.43 f-l
F74FS72 BMR	Dyna-Gro	F	M	Y	31.77 o-r	1.84 e-h	2.70 i-n	2630.00 h-p	119.03 i-n
Sweet Ton MS	Dyna-Gro	F	MF	N	37.83 h-m	2.38 b-f	8.08 a-c	2755.70 f-n	115.83 k-o
Super Sile 20	Dyna-Gro	F	MF	N	34.31 l-q	2.06 d-g	4.29 f-k	2562.00 k-q	99.24 o-q
FX21865	Dyna-Gro	F	MF	N	31.06 p-r	1.76 e-i	2.27 j-o	2645.70 h-o	122.07 h-m
FX21842	Dyna-Gro	F	MF	N	38.75 e-l	0.09 l	0.01 o	2905.00 c-g	124.50 g-l
Danny Boy II BMR	Dyna-Gro	F	M	Y	23.57 u	1.24 g-k	10.03 a	2172.00 t	89.73 q-s
First Graze	Dyna-Gro	F	ME	N	32.84 m-q	2.38 b-f	6.53 c-g	2515.00 n-s	102.88 n-q
Super Sweet 10	Dyna-Gro	F	ME	N	38.14 g-l	2.27 b-f	4.12 g-k	2804.00 f-k	117.60 j-o
Dynagraze II	Dyna-Gro	F	ME	N	30.17 q-t	2.13 c-g	4.66 d-j	2386.00 p-t	92.53 q,r
Dynagraze II BMR	Dyna-Gro	F	ME	Y	29.55 q-t	1.73 e-i	6.42 c-g	2576.00 j-q	103.93 m-q
Fullgraze II	Dyna-Gro	F	MF	N	24.14 u	0.23 l	6.39 c-g	2284.30 s,t	75.12 r,s
Fullgraze II BM	Dyna-Gro	F	MF	Y	25.33 t,u	0.97 h-l	9.71 a,b	2298.00 r-t	89.47 q-s
NK300	Sorghum Partners	F	ME	N	44.48 b-d	0.09 l	0.01 o	3168.70 a,b	148.38 b-e
SP 3904 BD BMR	Sorghum Partners	F	M	Y	30.46 q-t	2.35 b-f	3.98 g-l	2560.30 k-q	116.84 j-o
SP 3905 BD BMR	Sorghum Partners	F	ME	Y	43.02 b-h	2.29 b-f	4.16 g-k	2994.00 b-f	145.00 b-f
SWFS8802	Sorghum Partners	F	ME	N	47.10 a,b	0.85 i-l	1.03 n,o	3184.00 a,b	161.93 a,b
18096	Gayland Ward	F		N	42.22 b-i	0.73 j-l	0.87 n,o	2989.30 b-f	138.13 d-h
19038	Gayland Ward	F		N	30.83 q-s	2.19 c-f	4.34 e-j	2463.70 o-s	101.31 n-q
19040	Gayland Ward	F		N	31.11 p-r	2.33 b-f	4.52 e-j	2531.00 m-s	105.82 m-q
19042	Gayland Ward	F		N	25.60 s-u	1.54 f-j	6.93 c-e	2346.30 q-t	97.04 p,q
19181	Gayland Ward	F		N	36.93 j-o	2.77 b-d	6.19 c-h	2847.70 f-i	135.45 e-j
20163	Gayland Ward	F		N	32.58 n-q	2.34 b-f	3.69 h-m	2606.30 i-p	111.95 l-p
20251	Gayland Ward	F		N	43.17 b-g	0.65 j-l	0.76 n,o	3186.30 a,b	159.54 a,b
FX21851	Dyna-Gro	F	ME	N	37.59 i-n	2.11 c-g	2.68 i-n	2847.30 f-i	134.89 e-j
Means					**36.11**	**1.49**	**3.56**	**2764.51**	**123.65**
CV					**8.94**	**38.31**	**45.20**	**5.58**	**9.29**

[1]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.

[2]Means followed by the same letter do not significantly differ using LSD (P=0.05)

Table 19. Top 10 hybrids in the 2021 UC Sorghum Forage Trials based on yield and lodging[1] , with averages shown across three sites (KARE1, KARE2 and WREC). Entries were only included in this table if they had lodging of less than 10% when averaged across the three sites).

Hybrid	Company	Type	Maturity	BMR	% Lodging	Ton ac^{-1} 65% Moist	% Crude Protein	240 hr NDFd	Milk Lbs ton-1	Rel. Forage Quality
F72FS05	Dyna-Gro	F	ME	N	0	29.06 a	7.49 g-m	68.73 b-h	2779.22 j-o	113.42 k-q
X54243	Scott Seed	F	L	Y	0	28.67 a,b	5.53 o	66.22 g-n	2216.44 v	75.15 u
Fullgraze II	Dyna-Gro	F	MF	N	0	28.47 a,b	5.69 n,o	67.81 d-i	2345.00 u,v	81.18 t,u
CP3681 AT	Croplan	F	ML	N	0	25.12 a-d	7.39 h-m	68.70 b-h	2734.00 l-q	110.01 m-r
5 Star	Dyna-Gro	F	ME	N	1	25.05 a-d	7.17 i-m	64.57 k-o	2967.67 c-i	124.64 f-l
NK300	Sorghum Partners	F	ME	N	9	24.14 b-e	7.77 e-j	64.02 m-p	3058.78 b-f	137.87 c-f
X5221037	Scott Seed	F	L	Y	0	23.72 c-f	8.48 a-h	64.29 l-o	3110.89 b-d	141.47 b-d
CP3731 BMR Leafy	Croplan	F	L	Y	0	23.45 c-h	7.80 e-j	68.45 c-h	2876.67 g-m	133.28 c-g
X5061037	Scott Seed	F	L	Y	0	23.14 c-i	8.06 b-i	67.09 e-l	3051.67 b-g	145.95 b,c
Dynagraze II BMR	Dyna-Gro	F	ME	Y	5	22.72 c-j	6.96 j-m	69.61 a-e	2747.56 l-q	111.65 l-r

[1]The top hybrid list was derived by taking those hybrids with the highest yields and eliminating those hybrids that lodged (averaged across 3 sites) by more than 10%.

Table 20. Top 25 yielding hybrids that had average yields (across 3 sites, KARE 1, KARE 2, WREC) of over 20.0 tons acre^{-1} in forage sorghum variety trials in 2021 (only includes entries that had lodging of less than 20% when averaged across the three sites).

Hybrid	Company	Type	Maturity	BMR	% Lodging	Ton ac^{-1} 65% Moist	240 hr NDFd	Milk Lbs ton-1	Rel. Forage Quality
F72FS05	Dyna-Gro	F	ME	N	0 f	29.06 a	68.73 b-h	2779.22 j-o	113.42 k-q
X54243	Scott Seed	F	L	Y	0 f	28.67 a,b	66.22 g-n	2216.44 v	75.15 u
Fullgraze II	Dyna-Gro	F	MF	N	0 f	28.47 a,b	67.81 d-i	2345.00 u,v	81.18 t,u
Super Sile 20	Dyna-Gro	F	MF	N	12 b-d	26.12 a-c	66.94 e-,	2557.11 r-t	98.50 r-s
CP3681 AT	Croplan	F	ML	N	0 f	25.12 a-d	68.70 b-h	2734.00 l-q	110.01 m-r
5 Star	Dyna-Gro	F	ME	N	1 f	25.05 a-d	64.57 k-o	2967.67 c-i	124.64 f-l
NK300	Sorghum Partners	F	ME	N	9 b-f	24.14 b-e	64.02 m-p	3058.78 b-f	137.87 c-f
X5221037	Scott Seed	F	L	Y	0 f	23.72 c-f	64.29 l-o	3110.89 b-d	141.47 b-d
Danny Boy II BMR	Dyna-Gro	F	M	Y	16 b	23.54 c-g	68.69 c-h	2458.22 t-u	104.71 o-s
CP3731 BMR Leafy	Croplan	F	L	Y	0 f	23.45 c-h	68.45 c-h	2876.67 g-m	133.28 c-g
X5061037	Scott Seed	F	L	Y	0 f	23.14 c-i	67.09 e-l	3051.67 b-g	145.95 b,c
Dynagraze II BMR	Dyna-Gro	F	ME	Y	5 c-f	22.72 c-j	69.61 a-e	2747.56 l-q	111.65 l-r
Super Sile 30	Dyna-Gro	F	ME	N	7 b-f	22.57 c-j	66.46 f-n	2591.56 p-t	103.42 p-s
F72FS25 BMR	Dyna-Gro	F	M	Y	0 f	22.31 c-j	72.23 a	2480.00 s-u	112.81 k-q
19038	Gayland Ward	F		N	0 f	22.24 c-k	67.22 d-k	2477.83 s-u	98.75 r,s
PEARL	Mojo	F	ML	N	0 f	22.13 c-k	60.17 r,s	3223.33 a,b	152.53 b
CP3501	Croplan	F	M	N	0 f	22.09 c-k	63.22 o-q	2947.56 d-j	127.30 e-j
19042	Gayland Ward	F		N	0 f	21.63 c-m	68.12 d-h	2342.33 u,v	92.05 s,t
X52053	Scott Seed	F	ML	N	0 f	21.44 d-m	66.19 h-n	2932.44 e-k	128.77 d-i
FX21815	Dyna-Gro	F	ME	N	1 f	20.91 d-m	62.52 o-r	3057.22 b-f	145.46 b,c
FX21865	Dyna-Gro	F	MF	N	0 f	20.90 d-m	70.06 a-d	2766.33 k-p	125.71 f-k
SP 3904 BD BMR	Sorghum Partners	F	M	Y	0 f	20.85 d-m	71.32 a-c	2590.89 q-t	115.33 j-p
F70FS91 BMR	Dyna-Gro	F	E	Y	13 b,c	20.62 d-m	67.52 b-j	3012.33 c-h	140.57 b-d
F71FS72 BMR	Dyna-Gro	F	E	Y	0 f	20.28 e-m	63.95 n-p	3084.00 b-e	145.51 b,c
Sweet Ton MS	Dyna-Gro	F	MF	N	2 e,f	20.03 e-m	66.35 g-n	2851.33 h-m	116.34 h-p

[1]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.