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**2018 Sorghum Hybrid Performance
Trials in Eastern Colorado**

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SORGHUM HYBRID PERFORMANCE TRIALS IN EASTERN COLORADO, 2018
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This publication is a progress report of the sorghum hybrid performance trials conducted by the Department of Soil and Crop Sciences at Colorado State University, Colorado Agricultural Experiment Station (AES), and Colorado State University Extension. In 2018, the grain sorghum trials were conducted at four sites in eastern Colorado: Akron, Burlington, Sheridan Lake and Walsh. Akron was the only grain sorghum site harvested. All other grain sorghum sites failed due to poor plant stands from dry conditions at planting. Forage sorghum trials were conducted at Rocky Ford (irrigated) and at Walsh (dryland).

The 2018 Colorado grain sorghum crop is estimated at 12.71 million bushels, 38% lower than the 2017 sorghum crop of 20.52 million bushels. The 2018 sorghum crop ranked as the fourth largest crop in the last 10 years with 310,000 harvested acres. The average grain yield in 2018 was estimated at 41.0 bu/acre, the fourth lowest average yield in the last 10 years. Sorghum silage statistics are not published during the current year; however, Colorado sorghum silage statistics are available for the previous year. In 2017, 375,000 tons of sorghum silage was produced from 25,000 harvested acres, with an average yield of 15.0 tons/acre. Silage yields in 2017 rank second highest in production in the last 10 years. (USDA and National Agricultural Statistics Service, Colorado Field Office, 2018).

Tests are partially funded by entry fees paid by commercial firms. Commercial seed representatives interested in entering sorghum hybrids in any of the trials should contact Jerry Johnson, phone (970) 491-1454, email Jerry.Johnson@colostate.edu; or Kevin Larson, phone (719) 324-5643, email Kevin.Larson@colostate.edu for further details. Names and addresses of firms submitting entries in 2018 are shown in Table 1. Each firm selected entries for testing and furnished seed for the trials. AES researchers selected closed-pedigree hybrids as standards of comparison.

Summary tables for weather data (CoAgMet and NOAA, 2018), soil analysis (Soil, Plant and Water Testing Laboratory, Colorado State University), fertilization, and available soil water graphs derived from gypsum block readings are provided for certain trial locations. Other information, where available, was included: site description, irrigation, pest control, field history, and pertinent comments.

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Table 1.--Entrants in the 2018 Colorado Sorghum Performance Trials.

Brand	Entered by
AGVENTURE	AgVenture, 7300 NW 62 nd Ave., P.O. Box 7034, Johnson, IA 50131 Website: www.agventure.com
ALTA SEEDS	Advanta US, 2001 E. 1 st St., P.O. Box 2420, Hereford, TX 79045 Website: www.altaseeds.advantaus.com
B-H GENETICS	BH Genetics, 5933 FM 1157, Ganado, TX 77962 Website: www.bhgenetics.com
BROWNING SEED, INC	Browning Seed Inc., 3101 S. IH 27, Plainview, TX 79072 Website: www.browningseed.com
CHANNEL SEED	Monsanto Company, 800 N. Lindbergh Blvd., St. Louis, MO 63167 Website: www.channel.com
DEKALB	Monsanto Company, 800 N. Lindbergh Blvd., St. Louis, MO 63167 Website: www.aganytime.com/dekalb
DYNA-GRO SEED	Loveland Products Inc., 3005 Rocky Mountain Ave, Loveland, CO 80538 Website: www.dynagroseed.com
GOLDEN ACRES GENETICS/ LG SEEDS	LG Seeds, 1122 E 169 th St, Westfield, IN 46074 Website: www.lgseeds.com
S&W SEED COMPANY	S&W Seed Co, 106 K Street, Suite 300, Sacramento, CA 95814 Website: www.swseedco.com
WALTER MOSS SEED CO	Walter Moss Seed Co, 1516 Squaw Mountain Rd, Jacksboro, TX 76458 Website: www.mosseed.com

Growing Degree Days for sorghum were calculated from planting through first freeze using a maximum of 111°F and a minimum of 50°F for threshold temperatures (Peacock and Heinrich, 1984). They are calculated by averaging daily high and low temperatures and subtracting the base temperature of 50°F from the average. When daily temperatures are less than 50°F, 50°F is used, when temperatures are above 111°F a maximum temperature of 111°F is used:

$$\frac{(\text{Daily Minimum Temp.} + \text{Daily Maximum Temp.})}{2} - 50^{\circ}\text{F}$$

Experimental Methods and Evaluations

Trials at Walsh were planted with a four-row cone planter and harvested with a modified John Deere 4420 combine equipped with a four-row row-crop head to enhance harvest of lodged tillers. Trials at Akron, Burlington, and Sheridan Lake were planted with a four-row Seed Research Equipment Solutions precision planter using Monosem seed-meter plates and harvested with a four-row Case 1620 combine modified as a multiple crop plot combine equipped with a Harvest Master weighing system. Sorghum forage was cut and chopped with a single row John Deere 6 silage cutter.

Days to Emergence. Seedling emergence was determined as the number of days after planting until approximately 50% of the seedlings became visible down a planted row.

50% Bloom. Number of days after planting until 50% of the main heads had pollinating florets. Number of days to 50% bloom provided a good measure of relative maturity between hybrids.

50% Maturity. Number of days after planting until 50% of the kernels in 50% of the main heads reached physiological maturity, i.e., the black layer became visible at the base of the kernel.

Plant Height. Plant height was measured in inches from the soil to the tip of the main head.

Lodging. The percentage of tillers with broken basal stems, broken peduncles, or stems leaning more than a 45-degree angle from vertical were considered lodged. Since both combines were equipped with row crop heads, most of the leaning tillers were harvested.

Harvest Density. Plant population in plants per acre was counted prior to harvest. At Akron, all viable seed heads (tillers and main heads) were counted.

Test Weight. Test weights are typically determined using a hand-held bushel weight tester at Walsh and recorded by a Harvest Master measuring system at Akron, Burlington and Sheridan Lake. A low test weight indicates that a hybrid did not fully

mature prior to the first freeze or that it suffered environmental stress, such as a water deficiency.

Grain Yield. The grain yield in bushels per acre was adjusted to 14 percent moisture content.

Yield as a % of Test Average. Yield as a percentage of test average provided a comparison among yields within a trial and allowed comparisons among years, irrespective of annual growing conditions.

Forage Yield. Forage yield in tons per acre was adjusted to 65% moisture content. A representative sample of fresh silage was oven-dried at 167°F (75°C) until there was no more weight loss, and then yields were adjusted to 65% moisture content.

Stem Sugar. The sugar content (Brix), expressed as a percent, in the stem of forage sorghums at harvest was measured with a hand refractometer.

Available Soil Water

Available soil water was measured by placing gypsum blocks at 6, 18, 30, and 42 inches below the soil surface. Electrical resistance readings were made weekly or biweekly. Resistance readings varied with the amount of soil water present. Using resistance readings, available soil water was determined by extrapolating from soil water depletion curves for each soil type.

Statistical Method

Trials were planted in a randomized complete block design with four replications. No less than three replications were harvested. Analysis of variance was applied to the results and the least significant difference (LSD) was computed at $\alpha = 0.20$ or 0.30 for all trials. Analysis of variance and regression were performed with CoStat Statistical Software, a product of Cohort Software, Berkeley, California, and with SAS, SAS Institute, Cary, North Carolina.

Acknowledgements

We are appreciative to the staffs at the Central Great Plains Research Station at Akron, Arkansas Valley Research Center, and Plainsman Research Center at Walsh for their assistance in conducting these trials. We would like to extend a special thank you to Tim Stahlecker, grower-cooperator, for his assistance with the Burlington trial and Burl Scherler for his assistance with the Sheridan Lake trial.

References

- National Agricultural Statistics Service, Colorado Field Office. 2018. Colorado Agricultural Statistics 2018. USDA, NASS, CDA. 58p.
- NOAA, May-October, 2018. Climatological data, Colorado. vol. 122, no.5-10. NOAA, Dept. of Commerce, NWS, NESDIS, NCDC.
- Peacock, J.M. and G.M. Heinrich. 1984. Light and temperature response in sorghum. pp. 143-158. In: Agrometeorology of Sorghum and Millet in the Semi-Tropics: Proceedings of the International Symposium. November 15-20, 1982. India, ICRISAT, WMO.
- USDA, National Agricultural Statistics Service, Colorado Field Office. November 8, 2018. News release, crop production – November 2018. USDA, NASS. 2p.

Dryland Grain Sorghum Hybrid Performance Trial at Akron, 2018

COOPERATOR: USDA-ARS Central Great Plains Research Station.

PURPOSE: To identify high yielding hybrids under dryland conditions with 2800 sorghum growing degree days in a silt loam soil.

PLOT: Four rows with 30 in. row spacing, 35 ft. long.

SEEDING DENSITY: 43,600 seed/ac.

PLANTED: May 18.

HARVESTED: November 6.

PEST CONTROL:

Preemergence Herbicides: Lumax EZ at 48 oz/ac, Glyphosate at 32 oz/ac, 2.4-D LV6 at 6 oz/ac on May 18.

Post emergence herbicides: Dicamba at 8 oz/ac and Atrazine 4L at 24 oz/ac on June 14; Moxy 2E at 24 oz/ac, Dicamba at 8 oz/ac, Atrazine 4L at 24 oz/ac on July 7.

Cultivation: None.

Insecticides: None.

SOIL: Weld silt loam.

FERTILIZER: Nitrogen 53 lb/ac and P₂O₅ at 11 lb/ac.

FIELD HISTORY: Last Crop: Wheat.

FIELD PREPARATION: No-till.

COMMENTS: Planted into dry soil, received 3 inches of rain within two days of planting. Very good moisture for emergence and acceptable stand establishment. Trial received hail damage on June 24th, which caused mild-to-moderate damage by shredding leaves and bruising some stalks. Hail damage occurred again on July 29th, causing some leaf shredding to the upper leaves including the flag-leaf. Although moisture was plentiful in the spring and early summer, the trial received scant rains during the flowering and grain-fill period, which likely caused the low grain test weights.

Summary: Growing Season Precipitation and Temperature Akron, Washington County.^a

Month	Rainfall	GDD ^b	>90 F	>100 F	DAP ^c
	In		-----no. of days-----		
May	4.36	202	2	0	13
June	2.71	620	12	1	43
July	1.86	743	14	0	74
August	0.17	644	9	0	105
September	0.23	515	8	0	135
October	0.68	68	0	0	145
Total	10.01	2792	49	0	145

^aGrowing season from May 18 (planting) to October 10 (first freeze, 30F).

^bGDD: Growing Degree Days for sorghum.

^cDAP: Days After Planting.

2018 Dryland Grain Sorghum Hybrid Performance Trial at Akron

Brand	Hybrid	Grain		Test Weight	Harvest Plant Population	Plant Height	50% Bloom	Lodging	Maturity Group ^b	Grain Color
		Yield ^a	Yield							
		bu/ac	% of test avg.	lb/bu	plants/ac	in	days after planting	percent		
Dekalb	DKS28-05	106.4	126%	51.4	55,176	46	75	0	E	Bronze
Dyna-Gro Seed	GX17912	103.6	123%	51.8	51,982	47	79	6	E	Cream
BH Genetics	XPS 1712C	102.7	122%	50.4	54,014	44	80	0	E	Cream
Channel	5B27	94.5	112%	53.7	56,047	42	71	6	VE	Bronze
Dyna-Gro Seed	GX17914	93.7	111%	50.9	51,110	47	83	4	ME	Bronze
Dyna-Gro Seed	M59GB57	93.0	110%	53.6	44,722	38	76	0	E	Bronze
Alta	AG1201	92.7	110%	54.2	51,401	38	81	5	ME	Bronze/Red
Browning Seed Inc	Phoenix	92.6	110%	51.9	52,562	45	83	5	ME	Bronze
Dyna-Gro Seed	GX17210	91.2	108%	52.6	33,686	39	85	0	ME	Bronze/Red
Dekalb	DKS33-07	90.8	108%	50.6	50,239	43	88	0	ME	Bronze
Dyna-Gro Seed	GX18919	90.5	107%	50.8	56,047	44	74	0	E	Cream
Dyna-Gro Seed	GX17917	90.4	107%	54.0	43,560	44	76	48	E	Red
Alta	ADV XG629	88.2	104%	55.0	49,949	35	81	0	ME	Cream
BH Genetics	BH 3616	88.1	104%	54.6	56,918	37	79	4	E	Bronze
Dekalb	DKS29-07	87.9	104%	50.7	57,499	44	86	8	ME	Cream
Alta	AG1203	84.2	100%	50.1	41,527	47	89	0	ME	Bronze
Dyna-Gro Seed	M60GB31	82.4	98%	50.6	40,366	46	89	0	ME	Bronze
Alta	ADV G2106	79.9	95%	52.1	36,590	44	81	0	ME	Red
BH Genetics	BH 3400	79.9	95%	53.5	53,434	42	70	21	VE	Bronze
Golden Acres	5875	78.4	93%	54.6	49,078	34	75	0	E	Bronze
Dyna-Gro Seed	M60GB88	77.5	92%	52.5	46,464	46	85	0	ME	Bronze
Alta	ADV XG602	75.3	89%	47.4	49,368	42	92	0	M	Red
S & W Seed Company	SG11670	75.3	89%	53.3	38,914	43	85	0	ME	Bronze
S & W Seed Company	SG11268	73.6	87%	50.8	33,977	47	85	39	M	Red
Dyna-Gro Seed	M71GB01	69.1	82%	53.7	49,078	43	72	55	VE	Dark Bronze
S & W Seed Company	SG11668	67.0	79%	48.9	36,300	46	88	0	ME	Red
Alta	ADV XG251	31.0	37%	42.0	24,103	45	106	4	ML	Red
Average		84.4		51.7	46,819	43	82	8		

^cLSD (P<0.30)

5.4

^aYields adjusted to 14% moisture and hybrids ranked by yield.

^bMaturity group: VE=very early; E=early; ME=medium-early; M=medium; ML=medium-late.

^cIf the difference between two varieties yields equals or exceeds the LSD value, there is a 70% chance the difference is significant.

Dryland Forage Sorghum Hybrid Performance Trial at Walsh, 2018

COOPERATOR: Plainsman Agri-Search Foundation, Walsh, Colorado.

PURPOSE: To identify high yielding hybrids under dryland conditions with 3150 sorghum growing degree days in a silt loam soil.

PLOT: Four rows with 30 in. row spacing, 50 ft. long.

SEEDING DENSITY: 69,700 seed/a.

PLANTED: June 1.

HARVESTED: October 7.

PEST CONTROL:

Preemergence Herbicides: Atrazine 1 lb/ac, S-Metolachlor 24 oz/ac, Mesotrione 6.4 oz/ac, Glyphosate 32 oz/ac.

Post Emergence Herbicides: None.

Cultivation: None.

Insecticides: None.

FIELD HISTORY: Previous Crop: Grain sorghum.

FIELD PREPARATION: Strip-till.

COMMENTS: Planted in limited soil moisture. Seed germination and plant stand were poor and often non-uniform. Weed control was good, but volunteer grain sorghum was abundant. No sugarcane aphids were detected. The growing season precipitation was well above average. July and August were wet. June was hot and dry until the later part of the month. Good silage yields.

SOIL: Richfield silt loam for 0-8" and silt loam 8"-24" depths from soil analysis.

Summary: Growing Season Precipitation and Temperature Walsh, Baca County.^a

Month	Rainfall	GDD ^b	>90 F	>100 F	DAP ^c
	In		-----no. of days-----		
June	2.34	833	20	10	30
July	4.10	877	25	5	61
August	3.56	742	11	0	92
September	1.97	595	9	1	122
October	0.38	98	2	0	129
Total	12.35	3145	67	16	129

^aGrowing season from June 1 (planting) to October 7 (harvest).

^bGDD: Growing Degree Days for sorghum.

^cDAP: Days After Planting.

Summary: Soil Analysis of Plant Available Nutrients.

Depth	pH	Salts	OM	N	P	K	Zn	S
		mmhos/cm	%	-----ppm-----				
0-8" 8"-24"	8.0	0.4	1.7	5 7	5.8	435	0.5	12
Comment	Alka	VLo	Mod	Mod	Lo	VHi	Lo	Marg
Iron was low.								

Summary: Fertilization.

Fertilizer	N	P ₂ O ₅	Zn	S
	-----lb/ac-----			
Recommended	10	20	0	0
Applied	75	30	0	0
Yield Goal: 8 tons/ac. Actual Yield: 12.0 tons/ac.				

**Available Soil Water
Dryland Forage Sorghum, Walsh, 2018**

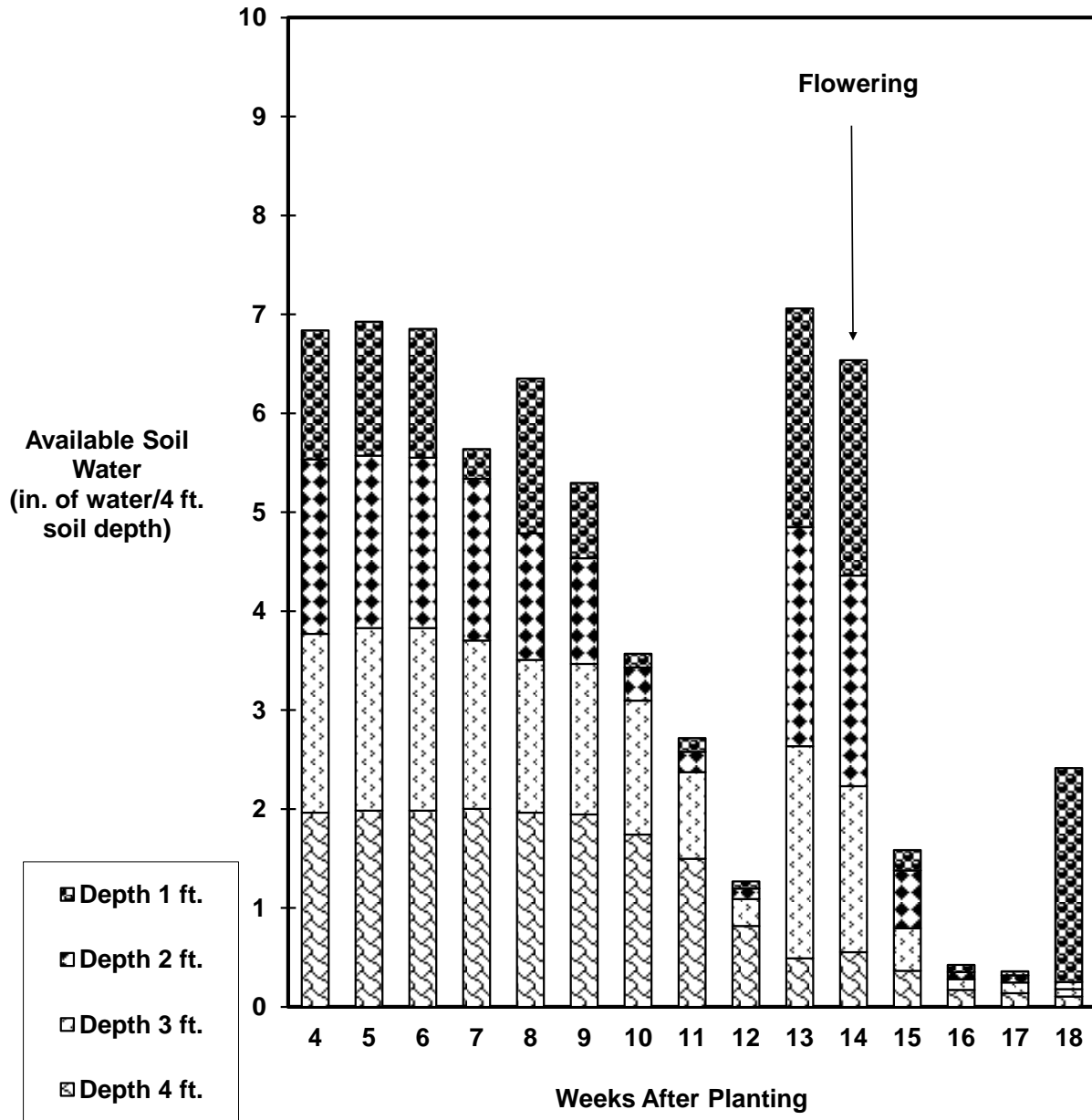


Fig. 1. Available soil water in dryland forage sorghum at Walsh. Gypsum block measurements taken to 4 ft. with 1 ft. increments. Total rainfall at Walsh from planting to harvest was 12.35 in. Any increase in available soil water between weeks is from rain.

2018 Dryland Forage Sorghum Hybrid Performance Trial at Walsh

Brand	Hybrid	Forage		Moisture	Stem Sugar	Harvest Density	Plant Height	Days to Boot	Harvest Maturity	Relative Maturity ^b	Forage Type ^c	Traits ^d
		Yield ^a	Yield									
		tons/ac	% of test avg.	% at harvest	%	plants/ac	in	days after planting				
Dyna-Gro Seed	Fullgraze II	15.3	127	64.0	17.5	21,300	124	90	Milk	M	SS	-
Dyna-Gro Seed	F76FS77 BMR	15.1	126	65.3	18.0	27,500	58	97	Blister	ML	FS	BMR, BD
Dyna-Gro Seed	Super Sile 30	14.7	123	63.1	14.7	26,700	64	92	Milk	M	FS	-
Dyna-Gro Seed	705F	14.2	118	65.6	13.1	29,000	64	92	Milk	M	FS	SS
Alta Seeds	ADV S6504	14.1	117	71.2	12.5	24,400	84	111	Flowering	PS	SS	BMR-6
Dyna-Gro Seed	FX18878 BMR	13.4	112	62.6	13.4	23,600	77	85	Soft Dough	ME	FS	BMR
Alta Seeds	AF8301	13.1	110	64.6	9.0	28,300	61	93	Milk	M	FS	SS
Dyna-Gro Seed	FX18811	13.0	108	67.6	15.4	27,100	84	98	Blister	ML	FS	-
Dyna-Gro Seed	FX18311	13.0	108	67.8	11.0	29,100	84	78	Hard Dough	E	FS	-
Dyna-Gro Seed	FX18152	12.6	105	64.4	15.1	26,800	69	81	Hard Dough	E	FS	BMR, SS
Dyna-Gro Seed	Danny Boy BMR	12.5	104	72.0	13.0	27,900	107	97	Blister	PS	SS	BMR
LG Seeds	LG 5643	12.5	104	54.1	9.3	21,700	79	72	Hard Dough	M	Corn	-
Alta Seeds	ADV XF033	12.5	104	65.8	19.5	25,600	51	98	Blister	ML	FS	SS
Dyna-Gro Seed	Super Sile 20	12.0	100	65.2	12.5	26,900	86	94	Milk	M	FS	-
Dyna-Gro Seed	FX18317	11.8	98	65.2	15.5	26,700	71	80	Hard Dough	E	FS	-
Dyna-Gro Seed	FX18130	11.7	98	63.1	15.0	23,200	80	84	Soft Dough	ME	FS	BMR
Dyna-Gro Seed	FX18851 BMR	11.2	93	66.7	15.4	19,400	66	96	Blister	ML	FS	BMR, SS
Alta Seeds	AF7401	10.4	87	70.3	15.2	29,300	55	96	Blister	ML	FS	BMR-6, BD
Alta Seeds	ADV XF372	10.4	87	68.3	18.1	24,400	47	105	Flowering	L	FS	BMR-6, BD
Dyna-Gro Seed	F74FS23 BMR	9.7	81	66.7	14.9	24,000	81	92	Milk	M	FS	BMR
Dyna-Gro Seed	Fullgraze BMR	9.3	78	65.5	16.4	18,200	86	109	Flowering	L	SS	BMR
Dyna-Gro Seed	Fullgraze II BMR	8.9	74	67.2	15.0	17,400	93	105	Flowering	L	SS	BMR
Dyna-Gro Seed	GX16921	8.9	74	66.5	13.4	24,400	46	86	Soft Dough	ME	FS	Dual Purpose, SS
Dyna-Gro Seed	FX18340	7.3	61	62.3	8.0	18,600	80	78	Hard Dough	E	FS	-
Average		12.0		65.6	14.2	24,646	75	92				

^eLSD (P<0.20)

1.85

^aYields are adjusted to 65% moisture content based on oven-dried samples.

^bRelative maturities are provided by the companies. E=early; ME=medium-early; M=medium; ML=medium-late; L=late; PS=photoperiod sensitive

^cForage Type: FS=forage sorghum; SS=sorghum sudangrass.

^dTraits are provided by the companies. Dashes mean conventional (no traits) or information isn't available. BD=brachytic dwarf; BMR=brown mid-rib; BMR-6=one of the three main brown mid-rib genes.

^eIf the difference between two varieties yields equals or exceeds the LSD value, there is an 80% chance the difference is significant.

2018 Dryland Forage Sorghum Hybrid Performance Trial Feed Quality at Walsh

Brand	Hybrid ^a	Forage Type ^b	RFQ	CP	ADF	aNDFom	NDFD		TDN	Milk/Ton		
							30hr	240hr				
							percent					
Alta Seeds	ADV XF372	FS	137	13.0	32.5	52.1	3.3	0.1	66.2	82.1	61.5	2818
Dyna-Gro Seed	Fullgraze BMR	SS	129	11.9	34.3	52.2	3.9	0.1	61.4	78.6	60.3	2816
Dyna-Gro Seed	FX18317	FS	129	13.3	34.2	52.0	3.8	1.3	60.3	75.5	60.1	2817
Dyna-Gro Seed	FX18130	FS	126	11.8	36.4	56.1	3.8	0.1	64.1	79.1	59.2	2664
Alta Seeds	AF7401	FS	126	9.9	38.3	59.3	4.1	0.1	66.0	79.3	60.6	2728
Dyna-Gro Seed	FX18152	FS	121	10.7	36.9	55.6	3.6	0.1	63.8	80.6	58.3	2589
Alta Seeds	ADV S6504	SS	121	12.1	35.5	54.0	3.6	0.1	61.7	78.3	58.1	2617
Dyna-Gro Seed	FX18340	FS	120	13.4	36.0	57.2	3.8	0.1	63.2	77.2	59.3	2688
Dyna-Gro Seed	GX16921	FS	117	11.9	34.1	54.7	3.7	0.1	58.9	77.3	58.3	2694
Dyna-Gro Seed	FX18311	FS	117	13.6	37.0	57.8	4.5	0.1	61.1	76.0	59.3	2735
Dyna-Gro Seed	Fullgraze II BMR	SS	116	12.1	37.9	58.0	3.9	0.1	62.3	77.0	58.2	2611
Alta Seeds	AF8301	FS	116	10.6	35.2	57.0	4.3	0.1	59.7	75.4	58.9	2736
Dyna-Gro Seed	FX18878 BMR	FS	112	15.4	36.1	55.9	4.5	0.1	59.6	74.8	56.4	2516
Dyna-Gro Seed	FX18811	FS	111	7.3	40.0	58.5	5.5	0.1	58.5	73.8	57.6	2654
Dyna-Gro Seed	Danny Boy BMR	SS	108	11.3	38.6	55.8	4.4	0.1	58.3	75.3	55.7	2487
Dyna-Gro Seed	F76FS77 BMR	FS	106	12.9	38.0	58.6	5.7	0.1	59.5	75.4	56.5	2533
Dyna-Gro Seed	F74FS23 BMR	FS	106	10.7	37.7	59.8	5.1	0.1	57.5	72.1	56.9	2618
Dyna-Gro Seed	FX18851 BMR	FS	105	12.7	37.8	59.6	5.2	0.1	57.3	71.5	56.4	2575
Dyna-Gro Seed	Super Sile 20	FS	103	11.5	37.9	58.8	5.1	0.1	56.0	71.1	55.8	2555
Dyna-Gro Seed	Super Sile 30	FS	103	10.1	38.8	60.4	5.3	0.1	56.8	72.6	55.9	2545
Dyna-Gro Seed	705F	FS	103	11.9	36.9	59.2	4.6	0.1	55.8	71.9	55.7	2553
Alta Seeds	ADV XF033	FS	95	12.0	37.1	55.9	4.9	0.1	51.8	69.2	52.7	2360
Dyna-Gro Seed	Fullgraze II	SS	80	7.3	42.2	64.5	6.3	0.1	48.8	69.5	52.5	2473
LG Seeds	LG 5643	Corn	N/A	12.7	35.0	59.6	4.4	0.1	58.0	73.4	58.5	2360
Average			113	11.7	36.8	57.2	4.5	0.1	59.4	75.3	57.6	2614

^aHybrids ranked according to relative forage quality score (RFQ)

^bForage Type: FS=forage sorghum; SS=sorghum sudangrass

All analyses results are dry basis values. RFQ=relative forage quality; CP=crude protein; ADF=acid detergent fiber; aNDFom=ash free neutral detergent fiber; NDFD=neutral detergent fiber digestibility; Milk/ton=Calculated using MILK2006.

Irrigated Forage Sorghum Hybrid Performance Trial at Rocky Ford, 2018

COOPERATOR: Arkansas Valley Research Center.

PURPOSE: To identify high yielding hybrids under irrigated conditions with 3100 sorghum growing degree days in a silty clay loam soil.

PLOT: Two rows with 30 in. row spacing, 35 ft. long.

SEEDING DENSITY: 113,250 seed/ac.

PLANTED: May 22.

HARVESTED: September 24.

IRRIGATION: Five furrow irrigations:
May 22, June 18, July 5, July 31, August 22.

PEST CONTROL:

Preemergence Herbicides: None.

Post Emergence Herbicides: Huskie 15 oz/ac on June 13.

Cultivation: Once.

Insecticides: None.

SOIL: Rocky Ford silty clay loam.

FERTILIZATION: N at 17 lb/ac and P₂O₅ at 78 lb/ac as 18-46-0.

FIELD HISTORY: Previous Crop: Corn.

FIELD PREPARATION: Disc-ripper, packer-mulcher, level, and furrow.

COMMENTS: Excellent plant stands and weed control. Some grasshopper damage. Adequate irrigation supply for the 2018 growing season. Precipitation was below average for the growing season. June was dry, and July was wet. Yields were very good.

Summary: Growing Season Precipitation and Temperature
Rocky Ford, Otero County.^a

Month	Rainfall	GDD ^b	>90 F	>100 F	DAP ^c
	In		-----no. of days-----		
May	0.04	230	6	0	9
June	0.27	790	20	7	39
July	2.50	848	21	4	70
August	1.05	710	13	0	101
September	0.46	501	11	0	107
Total	4.32	3079	71	11	107

^aGrowing season from May 22 (planting) to September 24. (harvest).

^bGDD: Growing Degree Days for sorghum.

^cDAP: Days After Planting.

2018 Irrigated Forage Sorghum Hybrid Performance Trial at Rocky Ford

Brand	Hybrid	Forage		Moisture	Stem		Plant	Harvest	Relative	Forage	Traits ^d
		Yield ^a	Yield		Sugar	Lodging					
		tons/ac	% of test avg.	% at harvest	%	scale 0-9 ^e	in				
Dyna-Gro Seed	FX18811	38.0	155	69	14	0	127	Soft Dough	M	FS	-
Dyna-Gro Seed	FX18311	32.5	133	62	3	0	125	Mature	ML	FS	-
Dyna-Gro Seed	FX18835SS	31.2	128	62	2	0	157	Soft Dough	ML	SS	-
Dyna-Gro Seed	FX18317	29.4	120	65	10	0	116	Mature	M	FS	-
Dyna-Gro Seed	Super Sile 20	29.1	119	69	11	0	120	Hard Dough	ML	FS	-
Dyna-Gro Seed	FX18843SS BMR	28.8	118	67	14	0	139	Soft Dough	ML	SS	BMR
Dyna-Gro Seed	Super Sile 30	28.2	115	70	10	0	104	Hard Dough	ME	FS	-
Dyna-Gro Seed	Danny Boy BMR	27.9	114	72	7	0	139	Flowering	PS	SS	BMR
American Hybrids	Eco-Sile	27.8	114	64	2	0	82	Mature	M	FS	BD
Dyna-Gro Seed	FX18340	26.8	110	62	4	0	109	Mature	ML	FS	-
Dyna-Gro Seed	705F	26.6	109	68	2	0	84	Hard Dough	ME	FS	SS
Walter Moss Seed Co.	4Ever Green	26.4	108	75	6	0	130	Boot	PS	FS	-
Alta Seeds	ADV XF033	25.8	106	71	11	0	82	Hard Dough	M	FS	SS
Dyna-Gro Seed	F74FS23 BMR	25.3	103	72	15	0	111	Hard Dough	M	FS	BMR
Alta Seeds	AF8301	25.2	103	68	7	0	85	Hard Dough	M	FS	SS
American Hybrids	Val-4	24.8	101	69	2	0	133	Hard Dough	L	FS	-
Alta Seeds	ADV S6504	24.5	100	76	6	0	138	Flowering	PS	SS	BMR-6
Walter Moss Seed Co.	Mega Green	23.6	97	72	5	0	140	Flowering	PS	SS	-
Dyna-Gro Seed	FX18130	23.5	96	61	12	0	105	Mature	E	FS	BMR
Dyna-Gro Seed	FX18152	21.7	89	66	3	0	81	Mature	E	FS	BMR, SS
Dyna-Gro Seed	FX18878 BMR	20.4	83	70	11	8	108	Mature	E	FS	BMR
Dyna-Gro Seed	Fullgraze BMR	19.2	79	71	9	0	122	Soft Dough	ML	SS	BMR
Walter Moss Seed Co.	Mega Green BMR	18.9	77	77	7	0	112	Boot	PS	SS	BMR-6
Alta Seeds	AF7401	17.2	70	74	6	0	72	Hard Dough	L	FS	BMR-6, BD
Dyna-Gro Seed	FX18851 BMR	17.1	70	74	12	0	88	Hard Dough	ML	FS	BMR, SS
Alta Seeds	ADV XF372	15.7	64	76	7	0	73	Hard Dough	M	FS	BMR-6, BD
Dyna-Gro Seed	F76FS77 BMR	15.2	62	76	14	0	78	Hard Dough	ML	FS	BMR, BD
Dyna-Gro Seed	GX16921	14.0	57	66	2	0	60	Mature	ML	FS	Dual Purpose, SS
Average		24.5		69.5	8	0	108				

^fLSD (P<0.20)

2.9

^aYields are adjusted to 65% moisture content based on oven-dried samples

^bRelative maturities are provided by the companies. E=early; ME=medium-early; M=medium; ML=medium-late; L=late; PS=photoperiod sensitive

^cForage Type: FS=forage sorghum; SS=sorghum sudangrass

^dTraits are provided by the companies. Dashes mean conventional (no traits) or information isn't available. BD=brachytic dwarf; BMR=brown mid-rib; BMR-6=one of the three main brown mid-rib genes; DS=dry stalk; MS=male sterile, SS=short stature

^eScale where 0=no lodging and 9=severe lodging

^fIf the difference between two hybrid yields equals or exceeds the LSD value, there is an 80% chance the difference is significant

2018 Irrigated Forage Sorghum Hybrid Performance Trial Feed Quality at Rocky Ford

Brand	Hybrid ^a	Forage Type ^b	RFQ	CP	ADF	aNDFom	Lignin	Starch	NDFD		TDN	Milk/Ton
									30hr	240hr		
									percent			
Dyna-Gro Seed	FX18340	FS	134	7.1	21.4	34.3	3.9	38.2	22.0	41.2	61.5	3216
American Hybrids	Eco-Sile	FS	121	7.8	24.9	34.9	5.0	35.2	21.6	40.0	58.1	2928
Dyna-Gro Seed	FX18152	FS	119	7.1	28.8	39.4	4.9	28.5	33.1	50.3	57.3	2872
Dyna-Gro Seed	F74FS23 BMR	FS	117	7.1	27.2	43.2	3.1	15.7	43.1	63.9	57.6	2838
Dyna-Gro Seed	GX16921	FS	115	8.0	26.6	41.8	4.3	31.1	34.3	52.1	58.4	2999
Dyna-Gro Seed	FX18130	FS	114	7.2	26.3	40.3	3.6	29.6	34.0	52.4	58.0	2943
Dyna-Gro Seed	FX18317	FS	114	7.6	24.2	40.0	4.2	28.9	30.6	51.7	59.3	3078
Dyna-Gro Seed	705F	FS	99	7.3	27.3	44.4	4.7	29.0	30.5	50.7	55.7	2844
Dyna-Gro Seed	FX18311	FS	99	7.4	26.8	42.2	4.5	26.6	28.4	48.5	55.3	2787
Alta Seeds	AF8301	FS	97	8.6	25.2	40.6	4.6	30.5	26.0	44.6	55.0	2753
Alta Seeds	AF7401	FS	97	7.5	33.3	53.3	3.0	8.2	49.7	70.2	52.9	2411
American Hybrids	Val-4	FS	97	6.2	32.2	47.8	5.3	17.1	36.6	55.7	54.5	2721
Dyna-Gro Seed	FX18878 BMR	FS	96	7.6	31.5	49.5	4.0	14.2	40.7	61.1	54.0	2630
Dyna-Gro Seed	FX18811	FS	94	7.9	29.3	45.9	4.6	19.1	34.9	57.1	53.6	2633
Alta Seeds	ADV XF372	FS	91	7.0	35.5	55.2	2.5	5.7	52.1	72.0	50.0	2122
Dyna-Gro Seed	FX18851 BMR	FS	91	7.8	32.7	55.2	2.0	7.1	51.8	69.9	50.8	2203
Dyna-Gro Seed	Fullgraze BMR	SS	89	7.0	33.9	55.8	3.5	4.3	47.0	69.4	52.2	2423
Dyna-Gro Seed	FX18843SS BMR	SS	89	7.0	36.7	59.7	4.4	5.2	49.2	68.7	53.2	2495
Dyna-Gro Seed	F76FS77 BMR	FS	85	7.0	35.0	58.1	2.2	6.4	52.4	68.8	48.9	2034
Alta Seeds	ADV XF033	FS	83	7.8	32.6	51.2	4.5	15.5	38.3	58.2	50.1	2355
Dyna-Gro Seed	Super Sile 20	FS	81	8.0	30.8	48.3	4.5	17.9	33.3	53.6	50.7	2437
Walter Moss Seed Co.	Mega Green BMR	SS	80	7.6	40.2	60.8	4.2	0.1	50.8	71.6	48.4	2041
Dyna-Gro Seed	FX18835SS	SS	80	6.7	36.1	57.4	4.7	8.7	42.8	65.3	51.2	2443
Dyna-Gro Seed	Super Sile 30	FS	80	8.0	33.3	53.4	4.6	15.2	38.4	60.1	50.1	2384
Dyna-Gro Seed	Danny Boy BMR	SS	73	7.7	40.4	62.7	5.7	2.2	46.6	67.3	48.6	2171
Alta Seeds	ADV S6504	SS	73	6.5	42.2	63.7	4.7	0.1	48.7	68.6	47.3	2024
Walter Moss Seed Co.	Mega Green	SS	64	7.2	41.2	63.6	5.9	0.1	41.8	65.4	45.6	2040
Walter Moss Seed Co.	4Ever Green	FS	64	7.2	42.2	64.3	5.8	0.1	42.9	63.9	45.9	2045
Average			94	7.4	32.1	50.2	4.2	15.7	39.3	59.4	53.0	2531

^aHybrids ranked according to relative forage quality score (RFQ)

^bForage Type: FS=forage sorghum; SS=sorghum sudangrass

All analyses results are dry basis values. RFQ=relative forage quality; CP=crude protein; ADF=acid detergent fiber; aNDFom=ash free neutral detergent fiber; NDFD=neutral detergent fiber digestibility; Milk/ton=Calculated using MILK2006.