



FORAGE REPORT 2020

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2020 Kansas Summer Annual Forage Hay and Silage Variety Trial

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Summary

In 2020, summer annual forage variety trials were conducted across Kansas near Garden City, Hays, and Scandia. All sites evaluated hay and silage entries. Companies were able to enter varieties into any possible combinations of research sites, so not all sites had all varieties. Across the sites, a total of 98 hay varieties, 78 sorghum silage varieties, and 11 dual-purpose sorghum silage varieties were evaluated.

Introduction

Annually, there are approximately 35,000,000 acres of hay and haylage harvested in the U.S. for a total of 96,000,000 dry matter tons of production. Yields in Kansas averaged 2.77 tons of dry matter per acre. Of this total, about 13,600,000 acres were alfalfa, which averaged 3.76 dry matter tons per acre, and all other crops averaged 2.13 dry matter tons/a.

In Kansas, there were 2,400,000 acres of hay and haylage harvested with an average yield of 2.24 dry matter tons per acre. Of this total, 650,000 acres were alfalfa with an average yield of 3.72 dry matter tons per acre, and 1,770,000 acres were crops other than alfalfa with an average yield of 1.69 dry matter tons/a. Kansas ranked 6th in the U.S. for hay and haylage production. This largely supports the state dairy (ranked 19th in the U.S. and valued at \$483,000,000) and cattle (feedlot, background, and cow/calf) industries (ranked second in the U.S. and valued at \$10,200,000,000). Dairy and beef cattle represented 58% of the total agricultural product of Kansas. Hay and grain commodities that support these two industries are critical for the state.

Study Objectives

The objectives of the Kansas Summer Annual Forage Variety Trial are to evaluate the performance of released and experimental varieties, determine where these varieties are best adapted, and increase the visibility of summer annual forages in Kansas. Breeders, marketers, and producers use data collected from the trials to make informed variety selections. The Summer Annual Forage Trial is planted at locations across Kansas based on the interest of those entering varieties into the test.

Procedures

The Summer Annual Forage Variety Test was conducted near Garden City, Hays, and Scandia, KS. All of the sites evaluated hay and silage entries. Companies were able to enter varieties into any possible combinations of research sites, so not all sites had all varieties. In the hay test, there were 34 entries at Garden City, 40 at Hays, and 24 at Scandia. In the silage test, there were 29 sorghum entries at Garden City, 24 sorghum at Hays, and 25 sorghum at Scandia (Table 1). Information on the varieties is shown in Tables 2 and 3.

Management guidelines were provided to cooperators; however, previous growing experience influenced final management decisions. All trials were planted in small research plots (approximately 225 ft²) with three replications. Cultural practices (Table 5), growing season temperature, and precipitation (Figures 1, 2, and 3) are provided for each site. Results are listed alphabetically by seed supplier. Forage samples were dried, ground, and analyzed for nutrient contents using NIR (near infrared reflectance) by Sevitech Laboratories in Dodge City, KS. Nutrient contents measured were crude protein (CP), adjusted crude protein (Adj_CP), nitrogen free neutral detergent fiber (NDFn), acid detergent fiber (ADF), neutral detergent fiber organic matter basis (aNDFom), lignin, undigested aNDFom remaining after in vitro digestion at 240 hr (uNDFom240), neutral detergent fiber-digestible at 240 hr (NDFD240), water soluble carbohydrates (WSC), starch, total fatty acids (TFA), ash, calcium (Ca), phosphorus (P), magnesium (Mg), potassium (K), sulfur (S), non-fiber carbohydrates (NFC), total digestible nutrients using Ohio Agricultural Research and Development Center (OARDC) calculation (TDN_OARDC), net energy for lactation 3x intake using OARDC (NEL3x_OARDC), net energy for gain using OARDC (NEG_OARDC), net energy for maintenance using OARDC (NEM_OARDC), and relative feed value (RFV).

2020 Growing Conditions

Temperature and precipitation (Figures 1, 2, and 3) for each site is shown. Thick black lines on the temperature graphs represent long-term average high and low temperatures (°F) for the location. The upper thin line represents actual daily high temperatures, and the lower thin line represents actual daily low temperatures. On the precipitation graph, the line labeled “normal” represents long-term average precipitation (1980–2020), and the line labeled “2020” represents actual precipitation.

In general, the 2020 growing season saw near normal temperatures across all locations. Precipitation was near normal at Scandia, above average at Hays, and below average at Garden City. However, Garden City was irrigated so moisture was not limiting.

Results and Discussion

Since all entries were not evaluated across all sites, data were analyzed by location. All locations had a control entry of Rox Orange (Waconia) and Sumac for the hay test, and a control entry of Kansas Orange for the silage test.

Hay Test

Top performing varieties varied by cutting and when comparing a single cutting compared to total yield. These results indicate performance evaluation needs to consider single or multiple cuttings, and the regrowth potential of varieties.

At Garden City, Qualimax, Fullgraze II, Excel II, and 18180 were in the top LSD (least significant difference at $P \leq 0.05$) group in the first cutting (Table 5). In the second cutting, more separation occurred between entries; F75FS13, ADV XS167, Cadan 99 B WMR, Sweet Sioux BMR, Dynagraze II, Super Sweet 10, 18179, 18182, and Three Little Indians were in the highest yielding LSD group. Combined across cuttings, F75FS13, ADV XS167, AS6401, Cadan 99 B WMR, Headless Wonder, Qualimax,

Dynagraze II, Fullgraze II, Super Sweet 10, Excel II, 18180, 18182, 19102, 19186 were in the top LSD group.

At Hays, Magnum Ultra BMR, ADV S6504, ADV XS007, Headless Wonder, Qualimax, Excell II, 10459, and 12003 had the greatest yield in the top LSD group in the first cutting (Table 6). There was no second cutting due to little regrowth and frost in early October.

At Scandia, Fullgraze II was in the top LSD group in the first cutting (Table 7). Only a subset of entries had regrowth and ADV XS167, Dynagraze II, Super Sweet 10, 18179, and 19011 were in the highest yielding LSD group. Combined across cuttings, Fullgraze II had the greatest yield.

Sorghum Silage Test

At Garden City, ADV F8322, F72FS05, Super Sile 20, Super Sile 30, Top Ton, Magnum Ultra BMR, Packer, 19038, 19040, and 19042 were in the top LSD group for silage (Table 8).

At Hays, ADV F7232, AF7201, F72FS05, F74FS23 BMR, F75FS13, Super Sile 30, TopTon, KS Orange, Magnum Ultra BMR, Packer, and 18096 were in the top LSD group for silage (Table 9).

At Scandia, ADV F7232, ADV F8322, F71FS72 BMR, F72FS05, F74FS23 BMR, TopTon, Packer, 20163, 18072, 18087, 18096, 18153, and 18567 were in the top LSD group for silage (Table 10).

Dual-Purpose Grain Yield

Similar varieties were tested at Garden City and Hays and some minor differences occurred across locations for the varieties. At Garden City, all the varieties were in the top LSD group except 20277 which yielded less (Table 11). At Hays, 18567 was in the top LSD group and 18087 and 18096 were in the lowest LSD group (Table 12).

Recommendation

Inestimable differences in soil type, weather, and environmental conditions play a part in increasing experimental error, therefore one should use more than one location and year to make an informed variety selection decision. Please refer to previous years' forage reports to see how a variety performed across years (https://newprairiepress.org/kaesrr/all_issues.html).

Acknowledgments

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Brand names appearing in this publication are for product identification purposes only. No endorsement is intended, nor is criticism implied of similar products not mentioned. Persons using such products assume responsibility for their use in accordance with current label directions of the manufacturer.

Table 1. Number of hay and silage entries for each location

Location	Hay	Silage	Grain
Garden City	34	29	6
Hays	40	24	5
Scandia	24	25	0
Total	98	78	11

Table 2. 2020 Hay entries

Company	Variety/Entry	Type	BMR	Dwarf	Male Sterile	Dry Stalk	Photo-period Sensitive	Aphid Resistance	Maturity
Alta Seeds	ADV S6504	SS	Y	N	N	N	Y	N	PPS
Alta Seeds	ADV XS007	SS	Y	N	N	N	N	N	ML
Alta Seeds	ADV XS008	SS	Y	Y	N	N	N	N	ML
Alta Seeds	ADV XS167	SS	Y	N	N	N	Y	N	PPS
Alta Seeds	AS6401	SS	Y	N	N	N	N	N	ML
Alta Seeds	AS6402	SS	Y	Y	N	N	N	N	ML
Browning Seed	CADAN 99 B WMR	SS	N	N	N	Y	N	M	M
Browning Seed	HEADLESS WONDER	SS	N	N	N	N	Y	N	PPS
Browning Seed	MAXI PEARL MT	MT	N	N	N	n	N	Y	M
Browning Seed	SWEET SIOUX BMR	SS	Y	N	N	N	N	N	M
Browning Seed	Three Little Indians	SS, FS & S blend (45/45/10)	N	N	N	N	N	N	ML
Browning Seed	TIFF LEAF 3	MT	N	N	N	N	N	Y	M

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Table 2. 2020 Hay entries

Company	Variety/Entry	Type	BMR	Dwarf	Male Sterile	Dry Stalk	Photo-period Sensitive	Aphid Resistance	Maturity
Channel Seed	Qualimax	SS	N	N	N	N	N	NA	ML
Dyna-Gro Seed	Danny Boy II BMR	SS	Y	N	N	N	Y	N	PPS
Dyna-Gro Seed	Dynagraze II	SS	N	N	N	N	N	N	EM
Dyna-Gro Seed	F75FS13	FS	N	N	N	N	N	N	M
Dyna-Gro Seed	Fullgraze II	SS	N	N	N	N	N	N	MF
Dyna-Gro Seed	Fullgraze II BMR	SS	Y	N	N	N	N	N	MF
Dyna-Gro Seed	PearlMil	MT	N	N	N	N	N	N	EM
Dyna-Gro Seed	Super Sweet 10	SS	N	N	N	N	N	N	EM
KSU (check)	Early Sumac	FS	N	N	N	N	N	N	M
KSU (check)	Rox Orange	FS	N	N	N	N	N	N	M
S & W Seed Co	Sordan 79	SS	N	N	N	N	Y	NA	M
S & W Seed Co	SP4555	SS	Y	N	N	N	N	N	M
S & W Seed Co	SPX8001	SS	Y	N	N	N	N	N	M
S & W Seed Co	SPX8002	FS	N	N	N	N	N	N	M
Star Seed	Drylander BMR	SS	Y	N	N	N	Y	NA	PPS
Star Seed	Excel II	SS	N	N	N	N	N	NA	L
Star Seed	Magnum Ultra BMR	FS	Y	N	Y	N	N	NA	L
Star Seed	Nutrimaxx BMR	SS	Y	N	N	N	N	NA	L
Ward Seed	18119	FS	Y	N	Y	N	N	NA	ME
Ward Seed	18164	FS	N	N	Y	N	N	NA	M
Ward Seed	18177	FS	Y	N	Y	Y	N	NA	M
Ward Seed	18179	SS	-	-	-	-	-	-	-
Ward Seed	18180	SS	-	-	-	-	-	-	-
Ward Seed	18182	SS	-	-	-	-	-	-	-
Ward Seed	19011	SS	-	-	-	-	-	-	-
Ward Seed	19055	FS	N	N	Y	N	N	NA	EM
Ward Seed	19102	SS	-	-	-	-	-	-	-
Ward Seed	19186	SS	-	-	-	-	-	-	-
Ward Seed	20263	SS	-	-	-	-	-	-	-
Ward Seed	20480	SS	-	-	-	-	-	-	-
Ward Seed	Tifleaf III	MT	-	-	-	-	-	-	-

Hybrid information was provided by seed companies.

Abbreviations: Forage sorghum (FS), sorghum sudan (SS), sorghum (S), dual-purpose (DP), brown mid-rib (BMR), photoperiod sensitive (PS), not applicable (NA). Maturity groups: Early (E), medium early (ME), medium (M), medium late (ML), late (L), and full (F).

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Table 3. 2020 Silage entries

Company	Variety/Entry	Type	BMR	Dwarf	Male sterile	Dry stalk	Photo-period sensitive	Aphid resistance	Maturity	Grams /1000 seeds
Alta Seeds	ADV F7232	FS	Y	Y	N	N	N	NA	M	26.98
Alta Seeds	ADV F8322	FS	N	N	N	N	N	N	M	34.52
Alta Seeds	ADV XF025	FS	Y	N	N	Y	N	N	M	27.60
Alta Seeds	AF7201	FS	Y	N	N	Y	N	N	ME	31.30
Browning Seed	BROWNING 300	FS	Y	N	N	Y	N	N	ME	31.30
Dyna-Gro Seed	F70FS91 BMR	FS	Y	N	N	Y	N	N	E	37.81
Dyna-Gro Seed	F71FS72 BMR	FS	Y	N	N	Y	N	N	E	24.38
Dyna-Gro Seed	F72FS05	FS	N	N	N	N	N	N	EM	35.56
Dyna-Gro Seed	F74FS23 BMR	FS	Y	N	N	N	N	N	M	33.67
Dyna-Gro Seed	F74FS72 BMR	FS	Y	Y	N	Y	N	N	M	33.67
Dyna-Gro Seed	F75FS13	FS	N	N	N	N	N	N	M	23.42
Dyna-Gro Seed	Super Sile 20	FS	N	N	N	N	N	N	ML	28.42
Dyna-Gro Seed	Super Sile 30	FS	N	N	N	N	N	N	M	29.10
Dyna-Gro Seed	TopTon	FS	N	N	N	N	N	N	L	34.86
Fontanelle	Nutri-Chomp	FS	Y	N	N	N	N	NA	ML	29.50
KSU (check)	KS Orange	FS	N	N	N	N	N	N	M	20.58
Star Seed	Magnum Ultra BMR	FS	Y	N	Y	N	N	NA	L	29.30
Star Seed	Packer	FS	N	N	N	N	N	NA	ML	32.90
Ward Seed	18072	DP	-	-	-	-	-	-	-	28.41
Ward Seed	18087	DP	-	-	-	-	-	-	-	33.47
Ward Seed	18096	DP	-	-	-	-	-	-	-	26.61
Ward Seed	18153	DP	-	-	-	-	-	-	-	32.38
Ward Seed	18567	DP	-	-	-	-	-	-	-	27.33
Ward Seed	19038	FS	-	-	-	-	-	-	-	38.94
Ward Seed	19040	FS	-	-	-	-	-	-	-	32.68
Ward Seed	19042	FS	-	-	-	-	-	-	-	32.04
Ward Seed	19156	FS	-	-	-	-	-	-	-	29.90
Ward Seed	19181	FS	-	-	-	-	-	-	-	32.65
Ward Seed	20163	FS	-	-	-	-	-	-	-	29.22
Ward Seed	20277	DP	-	-	-	-	-	-	-	34.79

Hybrid information was provided by seed companies.

Abbreviations: Forage sorghum (FS), sorghum sudan (SS), sorghum (S), dual-purpose (DP), brown mid-rib (BMR), photoperiod sensitive (PS), not applicable (NA). Maturity groups: Early (E), medium early (ME), medium (M), medium late (ML), late (L), and full (F).

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Table 4. Irrigation, plant, harvest, and fertilizer details for hay and silage variety tests near Garden City, Hays, and Scandia, KS, in 2019

Location	Irrigation (in.)	Planting date	1st Harvest date	2nd Harvest date	Seeding rate	Harvest area (ft ²)	N Fertilizer (lb N/a)	P Fertilizer (lb P ₂ O ₅ /a)
Hay Test								
Garden City	12.77	11-Jun	13-Aug 3-Sep	4-Nov	20 (lb/acre)	360 /150	160	0
Hays	-	2-Jun	19-Aug 4-Sep	-	15 (lb/acre)	60 /45	50	0
Scandia	-	12-Jun	12-Aug 17-Aug 26-Aug 4-Sep 15-Sep	23-Oct	20 (lb/acre)	60	50	0
Silage Test								
Garden City	12.77	11-Jun	21-Sep 10-Oct 16-Oct	-	80000 (seeds/acre)	225	160	0
Hays	-	2-Jun	16-Sep 12-Oct	-	50000 (seeds/acre)	25	50	0
Scandia	-	12-Jun	4-Sep 15-Sep 22-Sep 29-Sep 6-Oct	-	50000 (seeds/acre)	50	50	0

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Table 5. Hay performance test near Garden City

Brand	Name	Performance					
		1st Cutting	2nd Cutting	Total yield	1st Cutting	2nd Cutting	1st Height
		----- lb DM/a -----			----- % moisture -----	in.	
Forage Sorghum							
Dyna-Gro Seed	F75FS13	7188	4944	12132	0.85	0.47	96
KSU (check)	Early Sumac	5745	3824	9569	0.86	0.42	93
KSU (check)	Rox Orange	6243	3654	9897	0.86	0.36	91
Star Seed	Magnum Ultra BMR	9395	555	9950	0.84	0.16	94
Millet							
Browning Seed	MAXI PEARL MILLET	7181	2649	9830	0.84	0.24	99
Browning Seed	TIFF LEAF 3	6558	3625	10183	0.85	0.28	74
Dyna-Gro Seed	PearlMil	6125	3552	9677	0.85	0.28	78
Sorghum Sudan							
Alta Seeds	ADV S6504	8615	1846	10462	0.85	0.19	89
Alta Seeds	ADV XS007	8725	1814	10539	0.81	0.16	97
Alta Seeds	ADV XS008	8484	1218	9702	0.80	0.14	71
Alta Seeds	ADV XS167	6460	4787	11247	0.87	0.40	96
Alta Seeds	AS6401	8598	2640	11237	0.82	0.16	97
Alta Seeds	AS6402	7848	1449	9296	0.79	0.20	69
Browning Seed	CADAN 99 B WMR	6061	6130	12190	0.84	0.44	101
Browning Seed	HEADLESS WONDER	9272	1965	11237	0.84	0.16	97
Browning Seed	SWEET SIOUX BMR	5361	4264	9626	0.85	0.46	94
Channel Seed	Qualimax	10892	2705	13598	0.82	0.21	106

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Table 5. Hay performance test near Garden City

Brand	Name	Performance					
		1st Cutting	2nd Cutting	Total yield	1st Cutting	2nd Cutting	1st Height
Dyna-Gro Seed	Danny Boy II BMR	8595	1363	9959	0.85	0.23	94
Dyna-Gro Seed	Dynagraze II	6782	4668	11450	0.83	0.46	100
Dyna-Gro Seed	Fullgraze II	11653	931	12585	0.79	0.16	111
Dyna-Gro Seed	Fullgraze II BMR	8668	2010	10678	0.83	0.25	93
Dyna-Gro Seed	Super Sweet 10	6586	5121	11707	0.83	0.44	102
Star Seed	Drylander BMR	8900	767	9667	0.84	0.15	88
Star Seed	Excel II	10410	1749	12159	0.81	0.20	106
Star Seed	Nutrimaxx BMR	9355	839	10194	0.83	0.12	92
Ward Seed	18179	6187	4662	10849	0.83	0.47	104
Ward Seed	18180	10707	2844	13552	0.81	0.19	106
Ward Seed	18182	7266	4729	11995	0.82	0.45	101
Ward Seed	19011	6246	2153	8399	0.83	0.33	79
Ward Seed	19102	9976	1793	11769	0.84	0.18	97
Ward Seed	19186	9942	1578	11520	0.83	0.25	101
Ward Seed	20263	5392	2460	7853	0.83	0.37	89
Ward Seed	20480	6860	3891	10751	0.86	0.40	92
Sorghum sudan and forage sorghum blend							
Browning Seed	Three Little Indians	6785	4168	10954	0.84	0.44	112
	Average	7914	2863	10777	0.83	0.29	94
	LSD (0.05)	1437	2070	2462			
Plant date: 6/11/2020							
Days to harvest:*		63,83	146				

Values in bold are in the top LSD group.

*See Table 4 for dates.

Abbreviations for this table and following tables: Crude protein (CP), adjusted crude protein (Adj_CP), nitrogen free neutral detergent fiber (NDFn), acid detergent fiber (ADF), neutral detergent fiber organic matter basis (aNDFom), lignin, undigested aNDFom remaining after in vitro digestion at 240 hr (uNDFom240), neutral detergent fiber-digestible at 240 hr (NDFD240), water soluble carbohydrates (WSC), starch, total fatty acids (TFA), ash, calcium (Ca), phosphorus (P), magnesium (Mg), potassium (K), sulfur (S), non-fiber carbohydrates (NFC), total digestible nutrients (TDN), net energy for lactation (NEL), net energy for gain (NEG), net energy for maintenance (NEM), and relative feed value (RFV).

Table 5b. 2020 Garden City, Kansas Hay Performance Test, Finney County

Brand	Name	Nutritive value											
		CP	ADF	aNDF	aNDFom	Lignin	NDFD-240	uND-Fom240	Starch	ESC (Sugar)	WSC (Sugar)	EE (Fat)	TFA
Forage sorghum													
Dyna-Gro Seed	F75FS13	11.22	40.78	63.27	60.74	4.04	71.15	17.52	4.99	2.66	3.48	2.58	0.81
KSU (check)	Early Sumac	12.12	39.81	61.97	58.40	4.04	71.77	16.48	4.47	3.09	4.06	2.91	0.97
KSU (check)	Rox Orange	13.29	38.04	58.65	55.66	3.78	71.45	15.90	5.14	3.07	4.03	2.91	0.95
Star Seed	Magnum Ultra BMR	8.55	40.08	60.84	58.46	3.78	72.99	15.82	4.82	4.91	5.56	2.36	0.72
Millet													
Browning Seed	MAXI PEARL MILLET	14.21	39.56	59.48	56.29	4.42	72.71	15.35	6.07	1.99	2.58	2.49	0.93
Browning Seed	TIFF LEAF 3	14.65	39.41	59.39	56.69	4.01	75.83	13.68	5.67	1.94	2.50	2.53	0.92
Dyna-Gro Seed	PearlMil	15.03	38.82	58.30	56.08	4.12	74.99	14.01	5.66	2.08	2.69	2.55	0.98
Sorghum sudan													
Alta Seeds	ADV S6504	11.12	41.49	61.25	58.78	3.85	68.96	18.25	3.70	2.15	2.78	2.51	0.65
Alta Seeds	ADV XS007	10.91	40.53	60.51	57.74	4.07	70.62	16.97	3.83	2.92	3.82	2.49	0.75
Alta Seeds	ADV XS008	10.98	40.46	60.20	57.58	4.05	71.99	16.13	4.34	2.95	3.86	2.51	0.80
Alta Seeds	ADV XS167	13.04	40.33	59.14	56.92	3.60	74.25	14.67	4.46	1.98	2.56	2.66	0.82
Alta Seeds	AS6401	10.46	40.32	59.73	56.38	4.04	69.41	17.27	4.55	3.04	3.99	2.39	0.67
Alta Seeds	AS6402	11.49	38.51	60.05	56.72	3.86	71.23	16.32	4.70	3.61	4.75	2.69	0.87
Browning Seed	CADAN 99 B WMR	12.49	41.05	61.65	58.08	4.38	70.98	16.85	4.83	2.11	2.73	2.68	0.87
Browning Seed	HEADLESS WONDER	10.95	42.77	62.58	60.02	4.71	68.66	18.81	3.88	1.97	2.54	2.42	0.67
Browning Seed	SWEET SIOUX BMR	12.08	39.49	59.82	56.43	3.75	72.65	15.43	5.21	2.72	3.56	2.81	0.89
Channel Seed	Qualimax	9.61	44.03	63.66	60.94	5.14	67.20	20.00	4.56	2.59	3.38	2.05	0.61

continued

Table 5b. 2020 Garden City, Kansas Hay Performance Test, Finney County

Brand	Name	Nutritive value											
		CP	ADF	aNDF	aNDFom	Lignin	NDFD-240	uND-Fom240	Starch	ESC (Sugar)	WSC (Sugar)	EE (Fat)	TFA
Dyna-Gro Seed	Danny Boy II BMR	11.26	41.51	59.94	57.82	3.95	71.05	16.74	3.66	1.97	2.54	2.43	0.61
Dyna-Gro Seed	Dynagraze II	12.52	40.17	61.12	58.49	4.27	69.24	18.01	4.43	2.71	3.55	2.80	0.98
Dyna-Gro Seed	Fullgraze II	9.27	43.09	67.58	64.86	4.85	65.98	22.07	3.57	2.09	2.71	2.44	0.55
Dyna-Gro Seed	Fullgraze II BMR	10.87	41.07	62.44	60.04	4.02	71.04	17.38	3.82	2.07	2.68	2.52	0.64
Dyna-Gro Seed	Super Sweet 10	12.36	40.97	62.13	59.02	4.40	71.45	16.85	4.63	2.45	3.19	2.65	0.90
Star Seed	Drylander BMR	10.16	41.35	63.92	61.76	3.89	72.36	17.07	4.77	2.00	2.58	2.41	0.70
Star Seed	Excel II	9.91	43.12	63.37	61.34	4.90	68.06	19.59	4.51	2.99	3.93	2.12	0.66
Star Seed	Nutrimaxx BMR	10.07	40.74	61.69	59.43	3.87	73.61	15.69	4.55	3.10	4.06	2.38	0.73
Ward Seed	18179	12.56	40.86	62.62	60.01	4.42	70.02	17.99	4.80	2.39	3.11	2.63	0.92
Ward Seed	18180	10.07	41.38	62.20	59.25	4.88	68.99	18.36	4.52	3.28	4.32	2.16	0.71
Ward Seed	18182	12.37	39.66	60.40	57.95	3.64	73.02	15.63	4.58	2.43	3.17	2.70	0.88
Ward Seed	19011	12.86	37.86	58.48	55.67	3.53	73.48	14.76	4.30	2.96	3.89	2.85	0.95
Ward Seed	19102	9.73	43.75	65.80	62.67	4.96	69.03	19.41	4.04	1.94	2.50	2.18	0.59
Ward Seed	19186	9.88	44.37	65.19	62.18	5.03	67.68	20.09	4.44	1.94	2.50	2.06	0.58
Ward Seed	20263	12.84	40.41	61.72	58.95	4.09	72.13	16.43	4.52	2.24	2.92	2.61	0.90
Ward Seed	20480	12.88	38.64	59.86	57.41	3.39	74.35	14.72	4.51	2.47	3.21	2.96	0.97
Sorghum sudan and forage sorghum blend													
Browning Seed	Three Little Indians	12.56	45.18	66.46	65.00	6.46	68.76	20.31	4.94	2.08	2.69	2.55	0.78
	Average	11.60	40.87	61.63	58.93	4.24	71.09	17.08	4.57	2.56	3.31	2.53	0.79

Table 5b, continued. 2020 Garden City, Kansas Hay Performance Test, Finney County

Brand	Name	Nutritive value											
		Ash	Ca	P	Mg	K	S	NFC	RFV	TDN	NEG	NEM	NEL
Forage sorghum													
Dyna-Gro Seed	F75FS13	10.76	0.41	0.32	0.24	2.05	0.27	18.16	84.03	57.14	25.81	51.14	58.25
KSU (check)	Early Sumac	10.08	0.44	0.34	0.26	1.94	0.28	20.10	86.79	57.89	26.64	52.04	59.09
KSU (check)	Rox Orange	10.72	0.59	0.34	0.28	2.11	0.31	21.16	94.02	59.26	28.38	53.93	60.62
Star Seed	Magnum Ultra BMR	10.27	0.33	0.30	0.23	2.00	0.20	24.00	88.47	57.68	25.89	51.22	58.85
Millet													
Browning Seed	MAXI PEARL MILLET	11.61	0.59	0.37	0.36	2.57	0.32	18.96	90.81	58.08	28.35	53.89	59.30
Browning Seed	TIFF LEAF 3	11.90	0.64	0.39	0.34	2.81	0.31	18.29	91.13	58.20	28.53	54.09	59.44
Dyna-Gro Seed	PearlMil	11.63	0.67	0.40	0.36	2.82	0.31	18.65	93.51	58.66	29.10	54.71	59.95
Sorghum sudan													
Alta Seeds	ADV S6504	13.33	0.50	0.34	0.26	2.35	0.27	18.20	85.96	56.58	26.60	51.99	57.63
Alta Seeds	ADV XS007	12.27	0.44	0.34	0.25	2.21	0.24	20.64	88.35	57.33	26.82	52.24	58.46
Alta Seeds	ADV XS008	12.18	0.49	0.32	0.26	1.92	0.25	20.74	88.68	57.39	26.98	52.41	58.53
Alta Seeds	ADV XS167	13.15	0.56	0.35	0.28	2.29	0.29	18.45	90.45	57.48	28.10	53.62	58.64
Alta Seeds	AS6401	12.08	0.46	0.33	0.22	2.16	0.23	22.62	89.65	57.49	26.99	52.42	58.64
Alta Seeds	AS6402	11.57	0.44	0.33	0.24	1.98	0.26	21.41	91.33	58.90	27.20	52.65	60.22
Browning Seed	CADAN 99 B WMR	11.11	0.42	0.35	0.23	2.27	0.27	19.26	85.92	56.93	26.89	52.31	58.01
Browning Seed	HEADLESS WONDER	11.41	0.42	0.32	0.23	2.31	0.26	18.71	82.59	55.58	25.99	51.34	56.52
Browning Seed	SWEET SIOUX BMR	11.55	0.43	0.35	0.23	2.17	0.26	20.75	90.46	58.14	27.50	52.97	59.37
Channel Seed	Qualimax	10.67	0.35	0.28	0.22	2.07	0.23	20.02	79.87	54.60	25.10	50.37	55.42

continued

Table 5b, continued. 2020 Garden City, Kansas Hay Performance Test, Finney County

Brand	Name	Nutritive value											
		Ash	Ca	P	Mg	K	S	NFC	RFV	TDN	NEG	NEM	NEL
Dyna-Gro Seed	Danny Boy II BMR	13.19	0.50	0.34	0.26	2.34	0.27	19.32	87.70	56.56	27.18	52.62	57.61
Dyna-Gro Seed	Dynagraze II	10.42	0.46	0.33	0.24	2.11	0.28	19.25	87.76	57.61	27.12	52.56	58.77
Dyna-Gro Seed	Fullgraze II	9.91	0.26	0.30	0.18	2.23	0.27	16.73	76.08	55.33	23.39	48.53	56.24
Dyna-Gro Seed	Fullgraze II BMR	12.01	0.48	0.33	0.23	2.11	0.26	18.48	84.84	56.91	26.03	51.38	58.00
Dyna-Gro Seed	Super Sweet 10	10.53	0.46	0.33	0.24	2.07	0.28	18.94	85.41	56.98	26.66	52.06	58.08
Star Seed	Drylander BMR	11.48	0.33	0.34	0.25	2.35	0.25	17.87	82.62	56.69	25.19	50.47	57.75
Star Seed	Excel II	10.55	0.39	0.28	0.22	1.97	0.23	19.32	81.18	55.31	25.32	50.62	56.21
Star Seed	Nutrimaxx BMR	11.17	0.39	0.31	0.24	2.15	0.25	20.66	86.12	57.17	26.06	51.41	58.28
Ward Seed	18179	10.37	0.42	0.32	0.24	2.10	0.28	17.83	84.80	57.07	26.52	51.91	58.17
Ward Seed	18180	10.16	0.35	0.30	0.21	2.14	0.23	21.67	84.77	56.66	25.86	51.19	57.72
Ward Seed	18182	12.24	0.45	0.34	0.25	2.08	0.27	18.48	89.34	58.01	27.36	52.82	59.22
Ward Seed	19011	12.04	0.52	0.36	0.27	2.13	0.27	20.64	94.56	59.41	28.30	53.84	60.78
Ward Seed	19102	11.07	0.34	0.31	0.23	2.37	0.25	17.62	77.63	54.82	24.28	49.48	55.67
Ward Seed	19186	11.21	0.32	0.31	0.22	2.32	0.24	17.94	77.69	54.34	24.57	49.80	55.13
Ward Seed	20263	11.30	0.44	0.33	0.25	2.04	0.28	17.91	86.65	57.42	26.98	52.41	58.57
Ward Seed	20480	12.14	0.54	0.36	0.27	2.12	0.28	18.55	91.48	58.80	27.75	53.25	60.11
Sorghum sudan and forage sorghum blend													
Browning Seed	Three Little Indians	10.60	0.44	0.33	0.22	2.20	0.28	12.81	75.36	53.70	21.11	46.07	54.43
	Average	11.37	0.45	0.33	0.25	2.20	0.27	19.24	86.35	57.06	26.49	51.88	58.17

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Table 6. Hay performance test near Hays

Brand	Name	Performance		
		1st Cutting lb DM/a	1st Cutting % moisture	1st Height in.
Forage sorghum				
Dyna-Gro Seed	F75FS13	8057	0.69	91
KSU (check)	Early Sumac	7333	0.69	95
KSU (check)	Rox Orange	8192	0.72	89
S & W Seed Co	SPX8002	7407	0.64	72
Star Seed	Magnum Ultra BMR	11722	0.68	89
Millet				
Browning Seed	MAXI PEARL MILLET	4388	0.62	103
Browning Seed	TIFF LEAF 3	5991	0.69	77
Dyna-Gro Seed	PearlMil	4796	0.65	72
Sorghum sudan				
Alta Seeds	ADV S6504	11021	0.69	96
Alta Seeds	ADV XS007	9987	0.66	110
Alta Seeds	ADV XS008	7867	0.68	86
Alta Seeds	ADV XS167	9619	0.68	89
Alta Seeds	AS6401	9081	0.69	109
Alta Seeds	AS6402	8239	0.67	88
Browning Seed	CADAN 99 B WMR	7501	0.65	109
Browning Seed	HEADLESS WONDER	10042	0.70	99
Browning Seed	SWEET SIOUX BMR	8527	0.67	101
Channel Seed	Qualimax	11859	0.65	112
Dyna-Gro Seed	Danny Boy II BMR	9058	0.71	99
Dyna-Gro Seed	Dynagraze II	7013	0.63	104
Dyna-Gro Seed	Fullgraze II	8464	0.66	112
Dyna-Gro Seed	Fullgraze II BMR	9532	0.68	100
Dyna-Gro Seed	Super Sweet 10	8132	0.62	95

continued

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Table 6. Hay performance test near Hays

Brand	Name	Performance		
		1st Cutting	1st Cutting	1st Height
S & W Seed Co	Sordan 79	9084	0.66	110
S & W Seed Co	SP4555	7839	0.68	109
S & W Seed Co	SPX8001	6067	0.66	85
Star Seed	Drylander BMR	9784	0.69	87
Star Seed	Excel II	10019	0.65	111
Star Seed	Nutrimaxx BMR	9136	0.70	103
Ward Seed	18119	7535	0.65	88
Ward Seed	18164	7881	0.69	98
Ward Seed	18177	7822	0.67	84
Ward Seed	18179	6858	0.63	87
Ward Seed	18180	9432	0.67	114
Ward Seed	18182	8705	0.64	105
Ward Seed	19011	7700	0.64	104
Ward Seed	19055	10459	0.63	90
Ward Seed	19102	9636	0.69	105
Ward Seed	19186	12003	0.67	113
Sorghum sudan and forage sorghum blend				
Browning Seed	Three Little Indians	7334	0.64	115
	Average	8528	0.67	98
	LSD (0.05)	2060		
Plant date: 6/2/2020				
Days to harvest:*		78,94		

Values in bold are in the top LSD group.

*See Table 4 for dates.

Table 6b. 2020 Hays, Kansas Forage Hay Performance Test, Ellis County

Brand	Name	Nutritive value											
		CP	ADF	aNDF	aNDFom	Lignin	NDFD-240	uNDFom-240	Starch	ESC (Sugar)	WSC (Sugar)	EE (Fat)	TFA
Forage sorghum													
Dyna-Gro Seed	F75FS13	6.18	36.03	55.19	53.12	3.24	72.26	14.73	5.72	10.84	11.77	2.63	0.98
KSU (check)	Early Sumac	6.52	36.56	57.45	55.20	3.31	72.41	15.23	4.48	8.21	10.13	2.62	0.90
KSU (check)	Rox Orange	6.66	35.35	56.13	53.58	3.17	70.85	15.58	3.70	10.24	11.88	2.52	0.80
S & W Seed Co	SPX8002	7.01	36.92	57.24	54.98	3.17	72.42	15.17	5.72	7.46	9.17	2.73	0.96
Star Seed	Magnum Ultra BMR	7.07	37.96	60.26	57.91	3.10	73.37	15.47	3.42	5.83	7.75	2.83	0.93
Millet													
Browning Seed	MAXI PEARL MILLET	6.97	39.30	57.49	55.36	4.10	70.65	16.25	6.82	6.53	8.70	2.22	0.99
Browning Seed	TIFF LEAF 3	8.65	38.95	61.51	59.78	3.70	75.85	14.46	4.74	4.77	6.33	2.60	1.04
Dyna-Gro Seed	PearlMil	8.27	39.06	59.66	57.40	3.66	76.55	13.45	4.81	5.24	6.96	2.72	1.20
Sorghum sudan													
Alta Seeds	ADV S6504	5.95	40.13	60.48	58.46	3.48	71.41	16.70	3.79	5.01	6.65	2.49	0.69
Alta Seeds	ADV XS007	5.13	38.51	58.55	56.59	3.09	73.59	14.94	5.24	7.12	9.51	2.42	0.73
Alta Seeds	ADV XS008	6.17	37.60	59.33	57.21	2.82	73.96	14.93	5.47	6.33	8.44	2.57	0.81
Alta Seeds	ADV XS167	8.72	36.91	58.00	55.98	2.89	75.58	13.66	3.65	4.62	6.13	3.01	1.01
Alta Seeds	AS6401	6.55	37.42	58.84	56.44	3.18	73.41	14.98	4.24	7.38	8.95	2.59	0.87
Alta Seeds	AS6402	7.54	36.09	58.74	56.86	2.78	74.62	14.43	5.29	6.48	8.64	2.83	0.94
Browning Seed	CADAN 99 B WMR	6.29	36.87	56.33	53.81	3.63	70.83	15.70	7.03	8.47	10.50	2.55	0.98
Browning Seed	HEADLESS WONDER	6.63	40.21	62.90	60.71	4.05	72.44	16.75	4.68	5.48	7.29	2.16	0.70
Browning Seed	SWEET SIOUX BMR	7.61	36.51	58.36	55.68	3.20	73.56	14.73	5.63	6.74	8.33	2.62	0.98
Channel Seed	Qualimax	6.73	36.25	55.75	54.45	3.42	72.50	14.99	6.37	8.12	10.15	2.56	0.96
Dyna-Gro Seed	Danny Boy II BMR	6.75	40.28	59.48	57.32	3.32	74.06	14.87	3.31	4.15	5.49	2.59	0.73

continued

Table 6b. 2020 Hays, Kansas Forage Hay Performance Test, Ellis County

Brand	Name	Nutritive value											
		CP	ADF	aNDF	aNDFom	Lignin	NDFD-240	uNDFom-240	Starch	ESC (Sugar)	WSC (Sugar)	EE (Fat)	TFA
Dyna-Gro Seed	Dynagraze II	6.61	36.60	55.85	53.49	3.60	70.48	15.79	8.06	8.30	10.28	2.51	1.00
Dyna-Gro Seed	Fullgraze II	6.13	39.45	62.69	60.75	3.72	71.65	17.38	3.94	6.79	8.62	2.62	0.80
Dyna-Gro Seed	Fullgraze II BMR	8.17	36.29	58.51	56.27	2.92	73.86	14.72	4.35	5.16	6.86	2.96	0.97
Dyna-Gro Seed	Super Sweet 10	7.32	37.15	57.41	55.90	3.56	72.31	15.46	7.31	7.03	9.38	2.68	1.05
S & W Seed Co	Sordan 79	6.62	38.19	59.34	57.06	3.67	71.35	16.35	5.03	6.22	8.28	2.67	0.90
S & W Seed Co	SP4555	7.86	36.73	58.26	55.68	3.27	73.06	15.03	5.30	5.62	7.48	2.86	1.04
S & W Seed Co	SPX8001	6.12	35.25	52.91	50.32	2.75	72.44	13.86	7.35	10.00	11.17	2.58	0.93
Star Seed	Drylander BMR	6.43	38.79	63.15	60.94	3.18	76.70	14.20	3.39	4.70	6.24	2.69	0.85
Star Seed	Excel II	7.86	37.72	58.84	56.93	3.35	72.87	15.45	5.13	5.93	7.89	2.50	0.86
Star Seed	Nutrimaxx BMR	7.51	37.17	60.22	58.15	3.20	76.41	13.74	4.24	5.95	7.92	2.49	0.85
Ward Seed	18119	7.65	36.08	56.20	53.86	2.61	74.59	13.67	5.14	6.89	9.20	2.92	1.02
Ward Seed	18164	6.60	36.54	57.62	55.70	3.31	72.98	15.04	5.18	8.43	10.49	2.50	0.88
Ward Seed	18177	7.39	36.04	55.58	53.38	2.67	74.02	13.87	4.75	7.98	9.73	2.98	1.03
Ward Seed	18179	10.55	34.44	56.76	54.47	2.84	74.24	13.99	4.84	5.99	7.97	3.14	1.24
Ward Seed	18180	6.52	38.55	61.25	59.47	3.52	72.09	16.70	5.07	6.33	8.44	2.34	0.70
Ward Seed	18182	8.13	35.40	56.01	54.10	2.73	72.89	14.52	8.60	6.14	8.18	2.94	1.08
Ward Seed	19011	7.15	35.64	54.51	52.42	3.36	70.22	15.55	9.08	6.96	9.29	2.70	1.05
Ward Seed	19055	7.19	37.37	57.89	55.79	3.33	73.31	14.85	5.07	7.66	9.17	2.48	0.83
Ward Seed	19102	6.12	39.39	62.31	60.69	3.64	72.82	16.50	4.35	5.87	7.81	2.31	0.73
Ward Seed	19186	5.95	38.44	60.24	58.26	3.48	74.16	15.05	3.80	6.39	8.52	2.50	0.79
Sorghum sudan and forage sorghum blend													
Browning Seed	Three Little Indians	8.70	40.68	62.86	61.37	4.88	70.14	18.32	4.51	5.42	7.21	2.79	1.01
	Average	7.10	37.47	58.50	56.40	3.32	73.07	15.18	5.21	6.72	8.57	2.64	0.92

Table 6b, continued. 2020 Hays, Kansas Forage Hay Performance Test, Ellis County

Brand	Name	Nutritive value											
		Ash	Ca	P	Mg	K	S	NFC	RFV	TDN	NEG	NEM	NEL
Forage sorghum													
Dyna-Gro Seed	F75FS13	7.78	0.23	0.27	0.15	1.66	0.12	33.24	102.50	60.84	27.41	52.87	62.37
KSU (check)	Early Sumac	8.36	0.27	0.29	0.14	2.01	0.13	30.40	97.92	60.42	26.60	51.99	61.91
KSU (check)	Rox Orange	7.62	0.27	0.29	0.14	1.70	0.12	33.04	101.67	61.36	27.19	52.64	62.96
S & W Seed Co	SPX8002	8.62	0.18	0.29	0.16	1.79	0.14	29.63	97.92	60.14	26.85	52.27	61.59
Star Seed	Magnum Ultra BMR	9.26	0.25	0.30	0.16	1.89	0.14	26.30	91.90	59.33	25.63	50.94	60.70
Millet													
Browning Seed	MAXI PEARL MILLET	8.60	0.36	0.25	0.20	1.98	0.16	28.71	94.45	58.29	26.73	52.13	59.53
Browning Seed	TIFF LEAF 3	9.00	0.34	0.30	0.19	2.34	0.19	22.46	88.71	58.56	25.66	50.98	59.83
Dyna-Gro Seed	PearlMil	9.70	0.33	0.33	0.19	2.46	0.16	24.49	91.26	58.47	26.28	51.65	59.74
Sorghum sudan													
Alta Seeds	ADV S6504	10.35	0.28	0.29	0.12	2.34	0.13	25.63	88.66	57.64	25.16	50.44	58.81
Alta Seeds	ADV XS007	9.28	0.27	0.28	0.14	1.76	0.10	29.53	93.62	58.90	25.67	50.99	60.21
Alta Seeds	ADV XS008	9.10	0.33	0.27	0.15	1.82	0.14	27.86	93.95	59.61	25.70	51.03	61.00
Alta Seeds	ADV XS167	11.11	0.39	0.34	0.17	2.40	0.15	24.54	96.51	60.15	27.12	52.56	61.60
Alta Seeds	AS6401	9.09	0.26	0.29	0.15	1.82	0.12	28.51	94.69	59.75	26.03	51.38	61.16
Alta Seeds	AS6402	9.30	0.35	0.28	0.17	1.65	0.16	26.36	96.28	60.78	26.41	51.79	62.31
Browning Seed	CADAN 99 B WMR	7.71	0.22	0.26	0.16	1.54	0.13	32.31	99.56	60.18	26.98	52.41	61.64
Browning Seed	HEADLESS WONDER	8.25	0.41	0.25	0.17	1.78	0.15	24.53	85.28	57.58	24.40	49.62	58.74
Browning Seed	SWEET SIOUX BMR	8.84	0.24	0.31	0.17	1.78	0.14	28.08	96.46	60.46	26.59	51.99	61.95
Channel Seed	Qualimax	7.77	0.42	0.24	0.19	1.46	0.16	30.95	101.28	60.67	27.36	52.83	62.18
Dyna-Gro Seed	Danny Boy II BMR	11.08	0.33	0.32	0.14	2.49	0.14	25.34	90.07	57.52	25.85	51.18	58.68
Dyna-Gro Seed	Dynagraze II	7.71	0.25	0.26	0.16	1.50	0.13	32.20	100.51	60.39	27.28	52.74	61.87

continued

Table 6b, continued. 2020 Hays, Kansas Forage Hay Performance Test, Ellis County

Brand	Name	Nutritive value											
		Ash	Ca	P	Mg	K	S	NFC	RFV	TDN	NEG	NEM	NEL
Dyna-Gro Seed	Fullgraze II	7.73	0.23	0.25	0.14	1.61	0.14	25.51	86.94	58.17	24.32	49.53	59.40
Dyna-Gro Seed	Fullgraze II BMR	10.07	0.37	0.31	0.17	2.09	0.16	25.76	96.73	60.63	26.72	52.13	62.14
Dyna-Gro Seed	Super Sweet 10	7.66	0.35	0.25	0.18	1.49	0.16	28.88	97.30	59.96	26.88	52.30	61.39
S & W Seed Co	Sordan 79	8.45	0.23	0.29	0.14	1.87	0.14	28.19	92.98	59.15	25.85	51.19	60.49
S & W Seed Co	SP4555	9.33	0.26	0.31	0.16	1.86	0.15	27.29	96.76	60.29	26.71	52.12	61.76
S & W Seed Co	SPX8001	9.56	0.23	0.30	0.14	1.77	0.10	34.65	108.90	61.44	28.34	53.88	63.04
Star Seed	Drylander BMR	9.11	0.22	0.31	0.16	2.23	0.14	23.88	86.59	58.68	24.23	49.43	59.97
Star Seed	Excel II	8.74	0.51	0.25	0.20	1.52	0.17	26.44	94.12	59.52	26.48	51.86	60.90
Star Seed	Nutrimaxx BMR	8.96	0.31	0.29	0.21	1.95	0.17	26.18	92.63	59.94	25.80	51.12	61.38
Ward Seed	18119	9.56	0.30	0.30	0.17	1.76	0.16	28.97	100.54	60.79	27.49	52.96	62.32
Ward Seed	18164	7.65	0.24	0.27	0.15	1.81	0.14	30.27	97.65	60.43	26.56	51.95	61.92
Ward Seed	18177	9.69	0.23	0.31	0.15	1.94	0.14	29.77	101.90	60.82	27.66	53.15	62.36
Ward Seed	18179	9.35	0.35	0.34	0.19	1.80	0.19	25.93	101.89	62.07	28.23	53.77	63.75
Ward Seed	18180	8.40	0.35	0.25	0.16	1.75	0.15	25.74	90.19	58.87	25.04	50.32	60.18
Ward Seed	18182	9.23	0.28	0.31	0.15	1.66	0.16	28.61	103.04	61.33	27.73	53.23	62.92
Ward Seed	19011	8.44	0.25	0.28	0.16	1.55	0.13	32.11	104.73	61.14	28.02	53.54	62.70
Ward Seed	19055	8.31	0.34	0.27	0.17	1.75	0.15	29.18	96.41	59.79	26.64	52.04	61.21
Ward Seed	19102	8.46	0.29	0.27	0.16	1.93	0.14	24.88	86.97	58.21	24.47	49.69	59.45
Ward Seed	19186	8.48	0.26	0.28	0.14	1.95	0.12	27.61	91.10	58.96	25.26	50.55	60.28
Sorghum sudan and forage sorghum blend													
Browning Seed	Three Little Indians	9.13	0.24	0.29	0.16	1.79	0.16	20.83	84.78	57.21	21.30	46.28	58.33
	Average	8.87	0.30	0.29	0.16	1.86	0.14	27.87	95.38	59.71	26.27	51.64	61.12

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Table 7. Hay performance test near Scandia

Brand	Name	Performance					
		1st Cutting	2nd Cutting	Total yield	1st Cutting	2nd Cutting	1st Height
		(lb DM/a)			(% moisture)		(in.)
Forage sorghum							
Dyna-Gro Seed	F75FS13	12176	1736	13911	0.81	0.77	100
KSU (check)	Early Sumac	5928	0	5928	0.81	-	88
KSU (check)	Rox Orange	7174	0	7174	0.81	-	90
Millet							
Dyna-Gro Seed	PearlMil	8727	0	8727	0.83	-	72
Ward Seed	Tifleaf III	9181	0	9181	0.83	-	71
Sorghum sudan							
Alta Seeds	ADV S6504	12714	0	12714	0.76	-	111
Alta Seeds	ADV XS007	6993	0	6993	0.75	-	104
Alta Seeds	ADV XS008	8312	0	8312	0.75	-	79
Alta Seeds	ADV XS167	6381	2837	9218	0.83	0.79	93
Alta Seeds	AS6401	6684	1771	8455	0.79	0.70	100
Alta Seeds	AS6402	5634	0	5634	0.74	-	76
Dyna-Gro Seed	Danny Boy II BMR	10849	0	10849	0.76	-	103
Dyna-Gro Seed	Dynagraze II	7531	2672	10203	0.80	0.73	96
Dyna-Gro Seed	Fullgraze II	20911	0	20911	0.67	-	129
Dyna-Gro Seed	Fullgraze II BMR	13041	0	13041	0.74	-	109
Dyna-Gro Seed	Super Sweet 10	9206	3253	12459	0.80	0.74	91
Star Seed	Drylander BMR	11441	0	11441	0.75	-	96
Star Seed	Excel II	9609	0	9609	0.70	-	107
Star Seed	Nutrimaxx BMR	12709	0	12709	0.73	-	97
Ward Seed	18179	7834	2634	10468	0.80	0.75	97
Ward Seed	18180	11660	1387	13047	0.75	0.62	106
Ward Seed	18182	7480	2468	9948	0.81	0.74	103
Ward Seed	19011	7555	2244	9799	0.78	0.70	80
Ward Seed	19102	16037	0	16037	0.74	-	109
	Average	9824	875	10699			
	LSD (0.05)	3094	1104	3093			
Plant date: 6/12/2020							
Days to harvest:*		61,66,75,84,95	133				

Values in bold are in the top LSD group.

*See Table 4 for dates.

Table 7b. 2020 Scandia, Kansas Forage Hay Performance Test, Republic County

Brand	Name	Nutritive value											
		CP	ADF	aNDF	aNDFom	Lignin	NDFD-240	uNDFom-240	Starch	ESC (Sugar)	WSC (Sugar)	EE (Fat)	TFA
Forage sorghum													
Dyna-Gro Seed	F75FS13	9.05	37.53	61.83	59.17	3.68	74.72	14.96	3.88	6.54	8.10	2.75	1.04
KSU (check)	Early Sumac	10.53	34.07	58.25	55.86	3.20	76.74	13.00	4.19	7.33	9.79	2.90	1.23
KSU (check)	Rox Orange	10.69	32.81	57.02	54.93	2.99	75.93	13.22	4.09	8.82	10.71	2.96	1.17
Millet													
Dyna-Gro Seed	PearlMil	12.63	38.92	61.80	59.52	3.78	79.94	11.94	3.26	2.38	3.10	2.88	1.38
Ward Seed	Tifleaf III	13.24	38.31	62.60	60.45	3.62	80.78	11.64	3.32	2.57	3.35	3.01	1.44
Sorghum sudan													
Alta Seeds	ADV S6504	6.49	36.83	58.44	56.43	3.22	72.80	15.38	4.53	9.52	11.22	2.28	0.76
Alta Seeds	ADV XS007	10.77	32.90	55.36	52.87	2.70	77.64	11.83	4.07	9.47	10.71	3.01	1.20
Alta Seeds	ADV XS008	12.46	33.04	58.96	56.20	2.76	79.22	11.69	3.18	5.86	7.80	3.19	1.29
Alta Seeds	ADV XS167	10.20	36.85	57.65	55.66	3.11	77.87	12.34	3.55	4.15	5.49	3.05	1.10
Alta Seeds	AS6401	11.38	34.32	56.01	53.08	3.04	77.29	12.05	3.96	6.35	8.46	2.95	1.15
Alta Seeds	AS6402	12.97	32.43	56.85	54.12	2.71	78.05	11.89	3.12	5.85	7.79	3.49	1.40
Dyna-Gro Seed	Danny Boy II BMR	8.66	35.41	57.62	55.82	3.06	75.76	13.54	3.37	7.08	9.44	2.72	0.98
Dyna-Gro Seed	Dynagraze II	11.28	38.27	61.65	58.30	4.05	74.01	15.16	3.66	4.41	5.85	2.81	1.07
Dyna-Gro Seed	Fullgraze II	4.74	41.23	66.22	64.88	4.59	68.83	20.21	5.42	8.45	10.03	2.10	0.66
Dyna-Gro Seed	Fullgraze II BMR	6.72	35.93	59.44	57.48	3.28	73.25	15.37	4.05	9.30	10.86	2.45	0.79
Dyna-Gro Seed	Super Sweet 10	12.67	37.09	60.66	58.31	3.82	74.79	14.70	3.16	4.48	5.93	3.11	1.24
Star Seed	Drylander BMR	6.66	35.08	61.39	58.96	2.83	78.28	12.81	3.91	8.53	10.73	2.50	0.90
Star Seed	Excel II	6.39	35.46	57.16	55.03	3.53	72.95	14.87	6.32	12.00	13.26	2.53	1.06
Star Seed	Nutrimaxx BMR	9.10	32.27	57.00	54.49	2.58	79.74	11.03	4.49	9.05	11.02	2.82	1.21
Ward Seed	18179	11.18	39.21	63.70	60.98	4.06	73.91	15.91	3.13	4.06	5.37	2.80	1.11
Ward Seed	18180	8.37	35.26	57.98	55.78	3.50	74.42	14.27	5.26	9.52	10.92	2.72	1.12
Ward Seed	18182	11.09	37.16	60.35	57.88	3.21	76.06	13.87	3.50	4.08	5.40	2.99	1.03
Ward Seed	19011	11.74	33.21	56.72	53.81	2.85	76.27	12.76	4.15	6.46	8.61	3.14	1.29
Ward Seed	19102	6.49	38.10	61.67	59.26	4.02	72.76	16.16	4.25	8.69	9.89	2.35	0.86
	Average	9.81	35.90	59.43	57.05	3.34	75.92	13.77	3.99	6.87	8.49	2.81	1.10

Table 7b, continued. 2020 Scandia, Kansas Forage Hay Performance Test, Republic County

Brand	Name	Nutritive value											
		Ash	Ca	P	Mg	K	S	NFC	RFV	TDN	NEG	NEM	NEL
Forage sorghum													
Dyna-Gro Seed	F75FS13	7.75	0.29	0.31	0.16	1.87	0.17	24.27	89.73	59.66	25.67	50.99	61.07
KSU (check)	Early Sumac	7.34	0.43	0.31	0.22	1.59	0.19	26.67	99.77	62.36	27.61	53.10	64.07
KSU (check)	Rox Orange	7.01	0.35	0.33	0.19	1.67	0.19	27.71	103.48	63.34	28.17	53.70	65.17
Millet													
Dyna-Gro Seed	PearlMil	10.48	0.35	0.41	0.25	3.37	0.24	17.47	88.29	58.58	26.88	52.30	59.86
Ward Seed	Tifleaf III	10.32	0.40	0.42	0.27	3.22	0.26	16.12	87.94	59.06	26.76	52.17	60.39
Sorghum sudan													
Alta Seeds	ADV S6504	8.16	0.30	0.28	0.14	1.53	0.12	29.45	96.05	60.21	26.18	51.54	61.68
Alta Seeds	ADV XS007	8.61	0.44	0.33	0.22	1.65	0.19	28.45	106.28	63.27	28.87	54.47	65.09
Alta Seeds	ADV XS008	8.95	0.49	0.35	0.23	1.66	0.22	22.91	99.58	63.16	27.98	53.49	64.96
Alta Seeds	ADV XS167	10.76	0.38	0.37	0.18	2.68	0.17	23.90	97.29	60.19	27.75	53.24	61.65
Alta Seeds	AS6401	9.57	0.47	0.35	0.20	2.11	0.19	26.65	103.29	62.17	28.82	54.40	63.85
Alta Seeds	AS6402	9.42	0.52	0.36	0.23	2.00	0.22	23.94	104.46	63.63	29.00	54.61	65.49
Dyna-Gro Seed	Danny Boy II BMR	8.90	0.39	0.30	0.18	1.84	0.16	27.08	99.05	61.32	27.25	52.69	62.91
Dyna-Gro Seed	Dynagraze II	9.49	0.34	0.35	0.18	2.13	0.20	21.49	89.17	59.09	26.48	51.87	60.42
Dyna-Gro Seed	Fullgraze II	5.32	0.10	0.24	0.10	1.31	0.12	25.12	79.84	56.78	22.39	47.46	57.86
Dyna-Gro Seed	Fullgraze II BMR	7.30	0.29	0.28	0.15	1.55	0.13	29.00	95.40	60.91	25.84	51.17	62.45
Dyna-Gro Seed	Super Sweet 10	9.27	0.40	0.36	0.20	2.11	0.22	20.26	92.15	60.01	27.35	52.81	61.45
Star Seed	Drylander BMR	6.79	0.22	0.29	0.19	1.63	0.14	28.19	93.40	61.57	25.02	50.29	63.19
Star Seed	Excel II	6.22	0.28	0.26	0.20	1.29	0.13	32.33	99.75	61.27	26.67	52.07	62.86
Star Seed	Nutrimaxx BMR	7.78	0.43	0.31	0.25	1.50	0.17	29.11	104.31	63.77	27.65	53.14	65.64
Ward Seed	18179	9.11	0.31	0.33	0.18	2.04	0.20	19.15	85.22	58.36	25.62	50.94	59.61
Ward Seed	18180	6.89	0.30	0.29	0.20	1.52	0.16	29.13	98.57	61.43	27.00	52.43	63.03
Ward Seed	18182	10.67	0.36	0.37	0.17	2.46	0.20	20.90	92.36	59.95	26.95	52.37	61.39
Ward Seed	19011	8.98	0.44	0.35	0.21	1.89	0.20	25.87	103.65	63.03	28.65	54.22	64.82
Ward Seed	19102	6.64	0.23	0.28	0.17	1.62	0.12	27.93	89.26	59.22	24.86	50.11	60.57
	Average	8.41	0.35	0.33	0.19	1.93	0.18	25.13	95.76	60.93	26.89	52.32	62.48

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Table 8. Silage performance test near Garden City

Brand	Variety	Performance							
		Yield	Harvest moisture	Stand	Vigor	Flowering date	Days to harvest	Height	Lodging
		lb DM/a	%					in.	%
Forage sorghum									
Alta Seeds	ADV F7232	14039	0.72	10.0	10.0	9/17/20	119	67	0
Alta Seeds	ADV F8322	16641	0.69	10.0	9.7	10/1/20	127	86	0
Alta Seeds	ADV XF025	11116	0.71	10.0	9.3	9/10/20	102	95	0
Alta Seeds	AF7201	12443	0.71	10.0	10.0	9/10/20	102	96	0
Dyna-Gro Seed	F70FS91 BMR	13132	0.70	10.0	10.0	9/10/20	102	100	0
Dyna-Gro Seed	F71FS72 BMR	12734	0.74	10.0	9.7	9/10/20	102	81	0
Dyna-Gro Seed	F72FS05	15921	0.69	10.0	10.0	10/1/20	127	89	0
Dyna-Gro Seed	F74FS23 BMR	15319	0.72	10.0	10.0	9/17/20	119	97	63
Dyna-Gro Seed	F74FS72 BMR	14403	0.71	10.0	9.7	10/1/20	127	70	0
Dyna-Gro Seed	F75FS13	11655	0.75	10.0	10.0	9/10/20	102	107	0
Dyna-Gro Seed	Super Sile 20	17643	0.73	10.0	10.0	9/17/20	119	115	0
Dyna-Gro Seed	Super Sile 30	18082	0.70	10.0	10.0	9/17/20	119	103	0
Dyna-Gro Seed	TopTon	16182	0.71	10.0	10.0	10/1/20	127	115	13
Fontanelle	Nutri-Chomp	13555	0.75	10.0	10.0	10/1/20	127	113	32
KSU (check)	KS Orange	11034	0.66	9.7	9.0	10/1/20	127	108	0
Star Seed	Magnum Ultra BMR	16729	0.73	9.7	9.7	10/1/20	127	113	0
Star Seed	Packer	18138	0.68	10.0	9.7	9/17/20	119	87	0
Wards	19038	17594	0.72	10.0	10.0	9/17/20	119	85	0
Wards	19040	15693	0.70	10.0	10.0	9/17/20	119	78	0
Wards	19042	17763	0.72	10.0	9.7	9/17/20	119	93	0
Wards	19181	15281	0.69	10.0	10.0	10/1/20	127	81	0
Wards	20163	14405	0.68	10.0	10.0	9/17/20	119	70	0
Wards	20249	10682	0.67	10.0	9.7	9/10/20	102	83	0
Grain sorghum dual-purpose									
Wards	18072	9724	0.71	10.0	10.0	9/1/20	102	54	0
Wards	18087	10973	0.70	10.0	10.0	9/1/20	102	60	0
Wards	18096	11499	0.68	10.0	10.0	9/10/20	119	62	0
Wards	18153	11729	0.73	10.0	10.0	9/1/20	102	62	0
Wards	18567	11520	0.73	10.0	10.0	9/1/20	102	55	0
Wards	20277	10198	0.75	10.0	10.0	9/1/20	102	66	0
Average		13994	0.71	9.98	9.86		115	86	4
LSD (0.05)		2737							
Planting date: 6/11/2020									
Emergence date: 6/19/2020									

Values in bold are in the top LSD group.

Table 8b. 2020 Garden City, Kansas Silage Performance Test, Finney County

Brand	Variety	Nutritive value											
		CP	ADF	aNDF	aNDFom	Lignin	NDFD-240	uNDFom-240	Starch	ESC (Sugar)	WSC (Sugar)	EE (Fat)	TFA
Forage sorghum													
Alta Seeds	ADV F7232	8.75	30.19	47.43	44.71	2.79	66.20	15.11	10.98	2.31	12.84	2.98	1.17
Alta Seeds	ADV F8322	9.20	31.63	49.25	46.78	2.58	69.66	14.21	8.70	2.30	12.18	2.74	0.97
Alta Seeds	ADV XF025	9.30	31.33	50.39	47.66	2.98	68.54	14.96	9.85	2.23	11.22	2.79	1.17
Alta Seeds	AF7201	7.55	32.75	51.34	49.39	3.92	66.86	16.35	12.94	1.78	10.81	2.64	1.03
Dyna-Gro Seed	F70FS91 BMR	7.85	31.99	50.30	48.52	3.51	66.40	16.31	11.92	1.64	13.08	2.59	1.08
Dyna-Gro Seed	F71FS72 BMR	7.11	33.65	51.74	49.90	3.65	66.62	16.66	9.08	1.65	16.05	2.38	0.89
Dyna-Gro Seed	F72FS05	7.67	32.63	50.67	48.65	3.33	66.70	16.14	9.39	1.82	15.86	2.31	0.89
Dyna-Gro Seed	F74FS23 BMR	8.55	31.98	47.58	45.97	2.74	68.61	14.38	9.28	2.40	14.78	2.65	0.98
Dyna-Gro Seed	F74FS72 BMR	8.68	30.98	49.17	46.38	3.00	65.47	16.04	9.66	2.23	13.67	2.87	1.12
Dyna-Gro Seed	F75FS13	8.76	32.26	49.15	47.07	3.14	65.90	16.05	10.91	1.98	13.82	2.51	0.94
Dyna-Gro Seed	Super Sile 20	9.25	31.85	49.10	46.73	2.81	68.21	14.88	9.77	2.35	12.25	2.67	1.03
Dyna-Gro Seed	Super Sile 30	8.67	29.48	47.07	44.35	2.46	67.20	14.55	12.12	2.57	12.00	3.16	1.23
Dyna-Gro Seed	TopTon	8.43	32.99	51.37	49.14	3.43	68.65	15.40	10.23	2.25	10.24	2.95	1.12
Fontanelle	Nutri-Chomp	7.22	33.75	53.90	52.13	3.09	72.87	14.12	5.03	2.02	17.95	2.50	0.86
KSU (check)	KS Orange	6.82	32.35	52.03	50.01	3.42	65.38	17.31	8.50	1.95	15.84	2.72	0.85
Star Seed	Magnum Ultra BMR	7.19	32.61	53.44	51.60	2.88	73.84	13.41	5.41	1.51	20.33	2.34	0.76
Star Seed	Packer	8.23	33.22	50.98	48.45	3.58	69.09	14.91	9.68	1.65	12.36	2.43	0.94
Wards	19038	8.03	36.74	57.10	55.10	3.86	69.06	17.00	5.10	1.26	12.17	2.29	0.86
Wards	19040	9.17	33.68	52.23	50.16	3.36	69.09	15.33	8.00	1.45	14.05	2.41	0.90
Wards	19042	8.06	35.49	54.39	52.23	3.57	67.21	17.13	3.85	1.70	14.44	2.60	0.94
Wards	19181	9.34	31.87	49.27	46.69	2.63	66.90	15.45	7.64	2.28	14.05	2.85	1.04
Wards	20163	9.06	33.04	50.89	49.06	3.37	69.19	15.11	9.45	2.06	12.13	2.57	0.94
Wards	20249	8.52	32.46	51.69	48.76	3.10	67.06	16.05	9.05	1.73	10.96	2.89	1.04
Grain sorghum dual-purpose													
Wards	18072	10.43	31.21	48.45	45.96	3.77	66.69	15.30	12.57	2.59	7.51	3.01	1.16
Wards	18087	9.21	30.39	47.68	46.11	3.72	67.47	14.98	17.13	2.67	5.54	3.25	1.34
Wards	18096	9.05	32.70	50.35	47.56	3.90	66.65	15.85	10.38	2.20	9.84	2.80	1.12
Wards	18153	9.74	32.84	50.32	48.29	3.42	67.68	15.58	11.27	2.32	6.95	2.81	1.14
Wards	18567	10.43	30.97	47.94	45.19	3.55	65.56	15.49	12.92	2.38	8.05	2.75	1.08
Wards	20277	10.13	34.80	55.75	52.87	3.66	71.19	15.31	5.40	1.58	8.80	2.58	0.99
Average		8.63	32.48	50.72	48.46	3.28	67.93	15.50	9.52	2.03	12.41	2.69	1.02

Table 8b, continued. 2020 Garden City, Kansas Silage Performance Test, Finney County

Brand	Variety	Nutritive value											
		Ash	Ca	P	Mg	K	S	NFC	RFV	TDN	NEG	NEM	NEL
Forage sorghum													
Alta Seeds	ADV F7232	11.28	0.28	0.20	0.21	2.32	0.14	34.99	128.23	66.83	32.22	58.13	68.97
Alta Seeds	ADV F8322	12.88	0.34	0.24	0.24	2.64	0.15	30.98	121.41	66.39	31.61	57.45	68.48
Alta Seeds	ADV XF025	11.74	0.32	0.21	0.24	2.31	0.15	31.17	119.16	66.48	31.18	56.98	68.58
Alta Seeds	AF7201	10.19	0.27	0.18	0.23	2.10	0.11	32.38	114.86	66.04	30.33	56.06	68.09
Dyna-Gro Seed	F70FS91 BMR	10.67	0.26	0.19	0.23	2.30	0.12	32.57	118.88	66.28	30.82	56.59	68.36
Dyna-Gro Seed	F71FS72 BMR	10.43	0.33	0.16	0.24	2.24	0.12	32.21	112.75	65.76	30.05	55.75	67.78
Dyna-Gro Seed	F72FS05	10.45	0.38	0.15	0.28	2.01	0.13	32.97	116.83	66.08	30.63	56.38	68.14
Dyna-Gro Seed	F74FS23 BMR	12.53	0.41	0.20	0.24	2.38	0.15	32.85	125.37	66.28	32.11	58.00	68.36
Dyna-Gro Seed	F74FS72 BMR	10.75	0.24	0.20	0.20	2.24	0.13	34.02	123.05	66.59	31.51	57.34	68.70
Dyna-Gro Seed	F75FS13	11.34	0.39	0.18	0.27	2.31	0.14	32.62	120.59	66.19	31.54	57.37	68.26
Dyna-Gro Seed	Super Sile 20	12.65	0.34	0.23	0.24	2.62	0.15	31.31	121.57	66.32	31.69	57.54	68.40
Dyna-Gro Seed	Super Sile 30	11.46	0.27	0.23	0.21	2.37	0.14	35.16	130.36	67.05	32.35	58.26	69.22
Dyna-Gro Seed	TopTon	10.68	0.26	0.20	0.19	2.04	0.13	31.36	114.51	65.97	30.56	56.30	68.01
Fontanelle	Nutri-Chomp	11.41	0.31	0.17	0.25	2.65	0.11	28.95	108.10	65.73	29.21	54.83	67.75
KSU (check)	KS Orange	8.88	0.24	0.14	0.21	1.89	0.11	34.03	113.90	66.16	29.85	55.54	68.23
Star Seed	Magnum Ultra BMR	9.94	0.38	0.14	0.28	2.15	0.11	31.13	110.84	66.09	29.39	55.03	68.14
Star Seed	Packer	11.43	0.36	0.18	0.26	2.16	0.13	31.64	115.00	65.90	30.66	56.42	67.93
Wards	19038	11.48	0.28	0.19	0.21	2.40	0.13	25.21	98.33	64.81	28.16	53.69	66.72
Wards	19040	11.46	0.40	0.17	0.27	2.05	0.15	29.11	112.01	65.76	30.41	56.14	67.78
Wards	19042	10.96	0.26	0.18	0.19	2.45	0.12	28.67	105.01	65.20	29.24	54.86	67.15
Wards	19181	12.40	0.31	0.26	0.22	2.85	0.16	31.13	121.04	66.31	31.64	57.49	68.40
Wards	20163	11.60	0.38	0.19	0.26	2.11	0.15	30.05	115.56	65.95	30.92	56.70	67.99
Wards	20249	11.18	0.27	0.19	0.22	2.39	0.14	31.29	114.42	66.13	30.46	56.19	68.20
Grain sorghum dual-purpose													
Wards	18072	10.57	0.30	0.24	0.22	2.22	0.16	32.74	124.18	66.52	32.26	58.16	68.62
Wards	18087	10.42	0.26	0.24	0.21	2.28	0.15	33.63	127.66	66.78	32.24	58.14	68.91
Wards	18096	11.05	0.29	0.20	0.21	2.09	0.14	32.18	117.17	66.06	31.12	56.92	68.11
Wards	18153	12.59	0.29	0.25	0.22	2.65	0.16	29.19	117.19	66.01	31.33	57.14	68.06
Wards	18567	11.08	0.28	0.23	0.22	2.23	0.15	33.18	126.18	66.60	32.47	58.39	68.71
Wards	20277	11.54	0.29	0.21	0.24	2.57	0.15	25.67	104.86	65.41	29.28	54.91	67.39
Average		11.21	0.31	0.20	0.23	2.31	0.14	31.46	117.21	66.13	30.87	56.65	68.19

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Table 9. Silage performance test near Hays

Brand	Variety	Performance							
		Yield	Harvest moisture	Stand	Vigor	Flowering date	Days to harvest	Height	Lodging
		lb DM/a	%					in.	%
Forage sorghum									
Alta Seeds	ADV F7232	16311	0.67	8.0	8.3	9/13/20	132	72	0
Alta Seeds	ADV F8322	15046	0.65	8.0	8.0	9/13/20	132	80	0
Alta Seeds	ADV XF025	14798	0.60	8.0	9.3	8/25/20	106	106	0
Alta Seeds	AF7201	16173	0.62	8.0	9.0	8/27/20	106	102	0
Browning Seed	BROWNING 300	14891	0.63	7.3	8.3	8/19/20	106	80	0
Dyna-Gro Seed	F70FS91 BMR	13172	0.64	8.0	8.7	8/25/20	106	107	0
Dyna-Gro Seed	F71FS72 BMR	13232	0.68	9.0	9.3	8/25/20	106	83	0
Dyna-Gro Seed	F72FS05	18833	0.65	8.0	8.3	9/13/20	132	76	0
Dyna-Gro Seed	F74FS23 BMR	16099	0.72	8.7	9.3	9/5/20	106	108	12
Dyna-Gro Seed	F74FS72 BMR	13338	0.65	8.7	9.0	9/16/20	132	69	0
Dyna-Gro Seed	F75FS13	17719	0.66	8.7	9.7	8/14/20	106	119	0
Dyna-Gro Seed	Super Sile 20	15308	0.66	8.3	9.3	9/16/20	132	113	0
Dyna-Gro Seed	Super Sile 30	19964	0.65	9.0	9.3	9/11/20	132	104	0
Dyna-Gro Seed	TopTon	18115	0.69	8.3	9.0	9/13/20	132	116	0
Fontanelle	Nutri-Chomp	15703	0.68	8.3	8.7	9/17/20	132	111	0
KSU (check)	KS Orange	16283	0.62	7.7	9.0	8/27/20	106	118	0
Star Seed	Magnum Ultra BMR	17467	0.70	8.3	9.7	9/16/20	132	116	0
Star Seed	Packer	20260	0.62	9.0	10.0	9/13/20	132	87	0
Wards	19156	15950	0.59	8.7	10.0	8/25/20	106	119	0
Grain sorghum dual-purpose									
Wards	18072	15092	0.60	8.3	8.7	8/19/20	106	63	0
Wards	18087	15595	0.60	9.0	9.0	8/13/20	106	68	0
Wards	18096	16558	0.67	7.7	8.0	8/19/20	106	69	0
Wards	18153	15616	0.61	9.0	9.7	8/18/20	106	70	0
Wards	18567	15175	0.62	9.0	8.0	8/18/20	106	60	0
Average		16112	0.65	8	9		117	92	0
LSD (0.05)		4275							
Planting date: 6/2/2020									
Emergence date: 6/8/2020									

Values in bold are in the top LSD group.

Table 9b. 2020 Hays, Kansas Silage Performance Test, Ellis County

Brand	Variety	Nutritive value											
		CP	ADF	aNDF	aNDFom	Lignin	NDFD-240	uNDFom-240	Starch	ESC (Sugar)	WSC (Sugar)	EE (Fat)	TFA
Forage sorghum													
Alta Seeds	ADV F7232	6.02	27.27	41.25	39.45	2.66	65.82	13.47	18.11	2.26	16.02	3.08	1.08
Alta Seeds	ADV F8322	5.44	29.16	45.86	43.95	3.65	66.88	14.53	18.01	1.54	15.15	2.91	1.08
Alta Seeds	ADV XF025	6.69	29.45	40.89	39.61	4.16	61.39	15.23	28.29	2.27	4.75	3.15	1.42
Alta Seeds	AF7201	5.23	33.23	48.10	46.25	4.20	65.56	15.79	21.20	1.35	6.11	3.07	1.24
Browning Seed	BROWNING 300	6.61	26.17	35.96	33.91	4.53	61.83	12.90	34.72	2.66	4.04	2.97	1.60
Dyna-Gro Seed	F70FS91 BMR	6.34	32.67	44.55	42.84	4.49	62.64	15.99	24.64	1.44	5.06	2.61	1.26
Dyna-Gro Seed	F71FS72 BMR	6.43	30.93	43.39	41.38	3.85	63.39	15.16	22.61	1.48	7.74	3.10	1.24
Dyna-Gro Seed	F72FS05	5.57	28.36	44.39	42.43	3.62	66.09	14.38	18.96	1.70	15.06	2.89	1.11
Dyna-Gro Seed	F74FS23 BMR	6.44	31.01	47.09	45.22	3.17	66.31	15.09	15.14	1.57	12.77	2.80	1.05
Dyna-Gro Seed	F74FS72 BMR	6.25	29.38	45.33	43.50	3.30	68.12	13.78	17.76	1.79	13.25	3.03	1.14
Dyna-Gro Seed	F75FS13	6.38	29.44	41.35	39.14	4.16	60.46	15.46	24.71	1.81	9.14	3.00	1.27
Dyna-Gro Seed	Super Sile 20	6.04	29.16	44.71	42.54	3.95	63.82	15.39	20.27	1.57	14.17	2.72	1.13
Dyna-Gro Seed	Super Sile 30	6.01	30.27	46.52	43.86	3.61	61.97	16.66	16.88	1.58	15.17	2.73	1.03
Dyna-Gro Seed	TopTon	4.70	30.98	49.44	47.28	3.36	66.90	15.65	8.63	1.04	23.34	2.66	0.74
Fontanelle	Nutri-Chomp	4.66	30.57	52.28	50.12	2.92	75.34	12.34	5.94	0.99	24.23	2.59	0.77
KSU (check)	KS Orange	5.24	31.79	47.09	45.33	4.56	61.97	17.25	20.12	1.36	11.62	2.87	1.12
Star Seed	Magnum Ultra BMR	4.90	29.69	51.55	49.53	2.59	72.99	13.35	4.94	1.20	25.09	2.74	0.76
Star Seed	Packer	6.07	28.43	42.28	40.33	3.84	66.36	13.55	20.33	1.98	15.13	2.98	1.17
Wards	19156	6.01	33.53	48.32	46.76	4.85	60.79	18.20	22.57	1.05	7.36	2.52	1.14
Grain sorghum dual-purpose													
Wards	18072	5.79	28.51	40.46	38.86	4.39	60.72	14.97	29.96	2.31	5.83	3.40	1.55
Wards	18087	6.26	24.62	32.93	31.66	4.31	56.92	13.50	38.28	3.00	4.92	3.31	1.78
Wards	18096	7.23	25.54	34.89	33.45	4.13	57.35	14.11	35.01	2.91	4.26	3.10	1.64
Wards	18153	6.42	26.81	36.33	35.06	4.25	59.87	13.92	35.08	2.47	3.19	3.32	1.65
Wards	18567	6.65	25.36	33.41	31.94	4.17	56.14	13.96	38.04	2.39	3.08	3.04	1.71
Average		5.84	29.26	43.27	41.43	3.86	63.73	14.78	22.51	1.82	11.10	2.94	1.24

Table 9b, continued. 2020 Hays, Kansas Silage Performance Test, Ellis County

Brand	Variety	Nutritive value											
		Ash	Ca	P	Mg	K	S	NFC	RFV	TDN	NEG	NEM	NEL
Forage sorghum													
Alta Seeds	ADV F7232	7.35	0.24	0.22	0.13	1.71	0.10	46.38	153.27	67.74	34.03	60.11	69.98
Alta Seeds	ADV F8322	6.71	0.24	0.20	0.14	1.59	0.10	42.93	134.49	67.15	31.98	57.85	69.33
Alta Seeds	ADV XF025	6.87	0.24	0.24	0.12	1.52	0.10	45.48	150.67	67.06	34.35	60.46	69.23
Alta Seeds	AF7201	8.57	0.24	0.23	0.12	1.90	0.10	38.79	124.64	65.90	31.02	56.82	67.93
Browning Seed	BROWNING 300	5.82	0.24	0.23	0.14	1.56	0.10	52.23	178.30	68.07	36.38	62.71	70.36
Dyna-Gro Seed	F70FS91 BMR	7.79	0.24	0.23	0.12	1.78	0.10	41.89	133.72	66.07	32.75	58.71	68.12
Dyna-Gro Seed	F71FS72 BMR	8.33	0.24	0.23	0.12	1.51	0.10	42.94	139.02	66.60	33.24	59.24	68.72
Dyna-Gro Seed	F72FS05	6.43	0.24	0.20	0.16	1.76	0.10	44.59	140.41	67.40	32.62	58.56	69.60
Dyna-Gro Seed	F74FS23 BMR	9.05	0.24	0.22	0.13	1.76	0.10	38.86	131.51	66.58	31.77	57.64	68.69
Dyna-Gro Seed	F74FS72 BMR	8.24	0.24	0.22	0.13	1.70	0.10	41.13	136.96	67.08	32.42	58.34	69.25
Dyna-Gro Seed	F75FS13	7.15	0.24	0.22	0.12	1.53	0.10	46.24	148.49	67.07	34.08	60.16	69.23
Dyna-Gro Seed	Super Sile 20	6.37	0.24	0.21	0.15	1.72	0.10	44.12	138.10	67.15	32.60	58.54	69.33
Dyna-Gro Seed	Super Sile 30	7.31	0.24	0.21	0.14	1.97	0.10	42.18	131.35	66.81	31.87	57.74	68.95
Dyna-Gro Seed	TopTon	6.72	0.24	0.16	0.12	1.72	0.10	40.78	121.84	66.59	30.33	56.05	68.70
Fontanelle	Nutri-Chomp	7.33	0.24	0.16	0.16	2.19	0.10	37.29	116.25	66.72	29.17	54.79	68.84
KSU (check)	KS Orange	5.81	0.24	0.17	0.12	1.31	0.10	42.74	127.27	66.34	31.43	57.26	68.42
Star Seed	Magnum Ultra BMR	7.00	0.24	0.17	0.15	1.97	0.10	38.08	119.26	66.99	29.53	55.19	69.15
Star Seed	Packer	6.31	0.24	0.21	0.14	1.56	0.10	46.21	147.92	67.38	33.61	59.65	69.58
Wards	19156	7.21	0.24	0.20	0.12	1.69	0.10	39.05	123.64	65.80	31.14	56.95	67.83
Grain sorghum dual-purpose													
Wards	18072	6.39	0.24	0.21	0.12	1.41	0.10	47.44	159.54	67.35	34.32	60.44	69.55
Wards	18087	5.13	0.24	0.20	0.12	1.07	0.10	55.10	200.76	68.55	37.60	64.05	70.89
Wards	18096	6.25	0.24	0.24	0.14	1.28	0.11	51.51	189.67	68.27	37.04	63.43	70.58
Wards	18153	6.43	0.24	0.23	0.12	1.36	0.10	50.36	178.02	67.88	36.20	62.51	70.14
Wards	18567	5.94	0.24	0.25	0.12	1.43	0.10	53.65	193.38	68.32	37.49	63.92	70.64
Average		6.94	0.24	0.21	0.13	1.62	0.10	44.58	146.60	67.12	33.21	59.21	69.29

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Table 10. Silage performance test near Scandia

Brand	Variety	Performance					
		Yield	Harvest moisture	Heading date	Days to harvest	Height	Lodging
		lb DM/a	%			in.	%
Forage sorghum							
Alta Seeds	ADV F7232	14442	0.68	9/2/20	116	69	0
Alta Seeds	ADV F8322	16596	0.70	9/2/20	109	83	0
Alta Seeds	ADV XF025	11370	0.69	8/14/20	84	102	0
Alta Seeds	AF7201	11908	0.69	8/15/20	84	101	0
Dyna-Gro Seed	F70FS91 BMR	12387	0.68	8/14/20	84	102	0
Dyna-Gro Seed	F71FS72 BMR	14417	0.70	9/3/20	109	73	0
Dyna-Gro Seed	F72FS05	16052	0.65	9/4/20	116	78	0
Dyna-Gro Seed	F74FS23 BMR	15011	0.70	8/28/20	109	106	10
Dyna-Gro Seed	F74FS72 BMR	10284	0.72	8/16/20	84	75	0
Dyna-Gro Seed	F75FS13	9276	0.75	8/15/20	84	109	0
Dyna-Gro Seed	Super Sile 20	12594	0.69	9/3/20	116	109	3
Dyna-Gro Seed	Super Sile 30	14088	0.69	8/31/20	109	104	3
Dyna-Gro Seed	TopTon	16700	0.69	9/7/20	116	119	23
KSU (check)	KS Orange	9890	0.72	8/24/20	95	121	13
Star Seed	Packer	16154	0.70	9/1/20	109	90	0
Wards	19038	13917	0.69	9/12/20	116	71	0
Wards	19040	11791	0.72	8/26/20	102	68	0
Wards	19042	10293	0.74	9/14/20	116	84	0
Wards	19181	11355	0.67	9/2/20	116	79	0
Wards	20163	15288	0.71	8/21/20	102	73	0
Grain sorghum dual-purpose							
Wards	18072	14832	0.71	8/17/20	95	59	0
Wards	18087	16520	0.67	8/15/20	95	68	0
Wards	18096	14898	0.73	8/20/20	95	65	0
Wards	18153	16037	0.70	8/18/20	95	65	0
Wards	18567	14792	0.69	8/21/20	95	56	0
Average		13636	0.70		102	85	2
LSD (0.05)		2461					
Planting date: 6/12/2020							

Values in bold are in the top LSD group.

Table 10b. 2020 Scandia, Kansas Silage Performance Test, Republic County

Brand	Variety	Nutritive value											
		CP	ADF	aNDF	aNDFom	Lignin	NDFD-240	uNDFom-240	Starch	ESC (Sugar)	WSC (Sugar)	EE (Fat)	TFA
Forage sorghum													
Alta Seeds	ADV F7232	9.43	30.25	51.38	49.33	3.18	72.89	13.37	6.00	2.34	16.02	2.91	1.20
Alta Seeds	ADV F8322	9.04	31.15	50.47	47.73	2.80	74.98	11.94	6.58	2.43	13.52	3.01	1.13
Alta Seeds	ADV XF025	7.23	33.64	54.27	51.86	3.74	72.11	14.46	4.50	1.39	17.40	2.62	0.91
Alta Seeds	AF7201	8.14	30.68	50.19	48.52	2.70	74.24	12.50	5.67	2.27	16.49	3.02	1.16
Dyna-Gro Seed	F70FS91 BMR	7.37	33.07	52.52	50.05	3.36	71.44	14.29	4.91	1.48	17.80	2.65	0.90
Dyna-Gro Seed	F71FS72 BMR	9.39	28.42	46.26	43.79	2.41	74.84	11.03	8.08	2.56	17.22	2.95	1.23
Dyna-Gro Seed	F72FS05	8.18	29.43	48.43	46.50	2.49	73.62	12.25	7.38	2.14	16.79	3.15	1.15
Dyna-Gro Seed	F74FS23 BMR	8.99	30.96	50.22	47.99	3.06	74.33	12.26	6.06	2.25	20.40	2.68	0.92
Dyna-Gro Seed	F74FS72 BMR	7.84	32.89	52.19	50.26	3.24	74.50	12.83	4.66	2.08	16.36	2.91	1.04
Dyna-Gro Seed	F75FS13	6.15	32.06	50.11	48.30	3.43	69.94	14.52	8.55	1.68	17.96	2.63	0.91
Dyna-Gro Seed	Super Sile 20	8.80	32.60	53.47	50.91	3.75	73.26	13.60	6.16	2.00	13.19	2.80	1.06
Dyna-Gro Seed	Super Sile 30	8.84	31.88	51.48	49.48	2.72	75.65	12.06	3.06	2.24	15.52	3.11	1.09
Dyna-Gro Seed	TopTon	6.22	33.24	52.66	51.15	3.11	70.24	15.22	5.35	1.63	20.09	2.58	0.79
KSU (check)	KS Orange	6.97	33.25	54.52	52.63	3.59	70.02	15.75	2.86	1.56	20.68	2.50	0.71
Star Seed	Packer	7.48	32.54	51.36	48.99	3.43	73.91	12.78	4.82	1.50	17.84	2.72	1.03
Wards	19038	6.75	34.31	56.23	54.05	3.48	74.32	13.87	2.79	1.63	17.35	2.60	0.83
Wards	19040	9.29	32.44	52.36	50.19	3.43	75.25	12.42	3.61	2.55	16.99	2.77	1.00
Wards	19042	6.97	32.06	51.32	48.88	3.05	72.22	13.57	2.14	1.67	20.36	2.70	0.92
Wards	19181	8.38	31.83	51.10	49.26	2.87	75.30	12.14	5.22	2.19	16.41	2.93	1.01
Wards	20163	7.81	33.67	52.51	50.36	3.22	72.90	13.66	4.88	1.73	16.18	2.61	1.01
Grain sorghum dual-purpose													
Wards	18072	8.60	34.53	55.04	52.75	4.04	71.88	14.83	5.46	1.74	10.41	3.00	1.11
Wards	18087	8.05	32.22	50.16	47.55	4.34	71.41	13.53	13.78	1.64	9.68	2.93	1.19
Wards	18096	8.51	34.85	56.22	53.86	3.91	73.64	14.20	2.88	1.61	12.61	2.85	1.04
Wards	18153	8.00	35.48	56.42	54.21	3.97	71.36	15.53	5.31	1.31	11.76	2.72	0.97
Wards	18567	7.98	33.84	55.54	53.51	3.79	71.28	15.32	8.17	1.99	10.72	2.96	1.01
Average		8.02	32.45	52.26	50.09	3.32	73.02	13.52	5.56	1.90	15.99	2.81	1.01

Table 10b, continued. 2020 Scandia, Kansas Silage Performance Test, Republic County

Brand	Variety	Nutritive value											
		Ash	Ca	P	Mg	K	S	NFC	RFV	TDN	NEG	NEM	NEL
Forage sorghum													
Alta Seeds	ADV F7232	9.67	0.26	0.19	0.20	2.22	0.14	31.14	118.35	66.82	30.82	56.58	68.95
Alta Seeds	ADV F8322	10.89	0.28	0.21	0.21	2.30	0.14	32.02	119.25	66.54	31.08	56.87	68.64
Alta Seeds	ADV XF025	8.87	0.24	0.14	0.21	2.11	0.11	31.54	107.60	65.77	29.07	54.68	67.79
Alta Seeds	AF7201	9.44	0.24	0.18	0.17	2.22	0.13	33.34	120.46	66.68	30.95	56.73	68.81
Dyna-Gro Seed	F70FS91 BMR	9.51	0.24	0.15	0.19	2.05	0.11	32.59	111.89	65.95	29.81	55.48	67.99
Dyna-Gro Seed	F71FS72 BMR	9.94	0.25	0.21	0.20	2.11	0.14	36.38	134.42	67.38	32.87	58.83	69.58
Dyna-Gro Seed	F72FS05	9.96	0.24	0.19	0.18	2.08	0.13	34.78	126.84	67.07	31.66	57.51	69.24
Dyna-Gro Seed	F74FS23 BMR	8.78	0.40	0.15	0.29	1.88	0.14	34.03	120.23	66.59	31.17	56.97	68.71
Dyna-Gro Seed	F74FS72 BMR	10.17	0.28	0.17	0.19	2.31	0.13	31.36	112.86	66.00	30.06	55.76	68.04
Dyna-Gro Seed	F75FS13	8.53	0.24	0.14	0.17	1.72	0.10	36.18	118.76	66.26	30.44	56.18	68.33
Dyna-Gro Seed	Super Sile 20	10.17	0.28	0.17	0.22	2.08	0.14	29.83	110.62	66.09	29.81	55.49	68.14
Dyna-Gro Seed	Super Sile 30	11.30	0.29	0.19	0.20	2.45	0.15	30.07	116.07	66.31	30.62	56.37	68.39
Dyna-Gro Seed	TopTon	8.99	0.27	0.14	0.21	1.86	0.11	33.10	111.38	65.90	29.44	55.08	67.93
KSU (check)	KS Orange	7.82	0.24	0.12	0.17	1.87	0.10	32.49	107.43	65.89	28.90	54.49	67.92
Star Seed	Packer	9.78	0.26	0.15	0.22	2.22	0.12	33.05	115.11	66.11	30.30	56.02	68.17
Wards	19038	8.83	0.24	0.16	0.19	2.23	0.11	30.00	103.00	65.56	28.16	53.69	67.56
Wards	19040	9.82	0.34	0.17	0.25	2.05	0.15	30.30	113.12	66.14	30.39	56.12	68.20
Wards	19042	9.18	0.24	0.14	0.16	2.08	0.10	34.55	116.00	66.26	30.18	55.89	68.33
Wards	19181	9.75	0.26	0.18	0.20	1.99	0.14	32.00	117.01	66.33	30.65	56.41	68.41
Wards	20163	10.53	0.27	0.19	0.22	2.45	0.13	30.85	111.15	65.76	29.93	55.62	67.78
Grain sorghum dual-purpose													
Wards	18072	9.84	0.24	0.21	0.18	2.43	0.14	28.54	104.78	65.50	29.14	54.76	67.48
Wards	18087	8.53	0.24	0.21	0.18	1.97	0.11	35.02	119.27	66.20	30.94	56.73	68.27
Wards	18096	9.67	0.25	0.20	0.18	2.45	0.13	27.67	102.13	65.39	28.64	54.21	67.37
Wards	18153	9.81	0.24	0.20	0.17	2.17	0.13	27.53	101.01	65.20	28.43	53.98	67.15
Wards	18567	9.16	0.24	0.20	0.16	2.13	0.12	28.96	105.64	65.71	28.77	54.35	67.72
Average		9.56	0.26	0.17	0.20	2.14	0.13	31.89	113.78	66.14	30.09	55.79	68.20

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Table 11. Dual-purpose grain sorghum performance near Garden City

Brand	Variety	Performance				
		Yield	Harvest moisture	Test weight	Stand	Vigor
		bu/a	%			
Wards	18072	51.1	12.0	58.3	10.0	10.0
Wards	18087	73.0	11.9	60.0	10.0	10.0
Wards	18096	51.1	12.0	57.9	10.0	10.0
Wards	18153	75.6	12.4	59.6	10.0	10.0
Wards	18567	78.1	12.3	59.4	10.0	10.0
Wards	20277	39.3	12.1	57.6	10.0	10.0
Average		61	12	59	10	10
LSD (0.05)		28				

Values in bold are in the top LSD group.

Table 12. Dual-purpose grain sorghum performance near Hays

Brand	Variety	Performance				
		Yield	Harvest moisture	Test weight	Stand	Vigor
		bu/a	%			
Wards	18072	87.4	10.8	55.6	8.3	8.7
Wards	18096	62.0	10.8	55.8	7.7	8.0
Wards	18567	100.4	11.2	58.3	9.0	8.0
Wards	18087	65.3	10.8	57.2	9.0	9.0
Wards	18153	82.7	11.5	57.8	9.0	9.7
Average		80	11	57	9	9
LSD (0.05)		8				

Values in bold are in the top LSD group.

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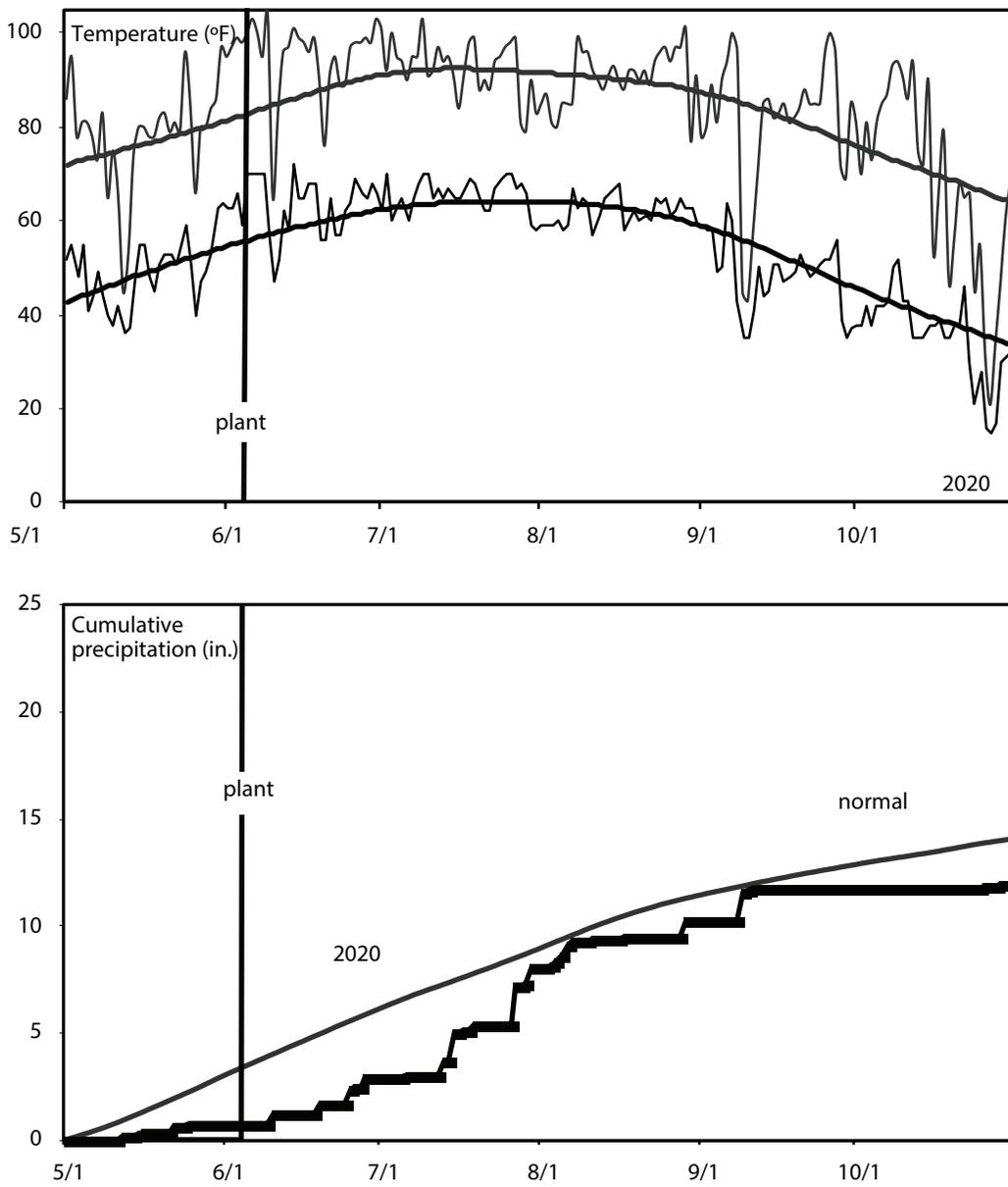


Figure 1. Precipitation and temperature during the 2020 growing season near Garden City, KS. Top pane: daily and mean (1981 to 2010) high and low temperature. Bottom pane: daily and mean (1981 to 2010) cumulative precipitation.

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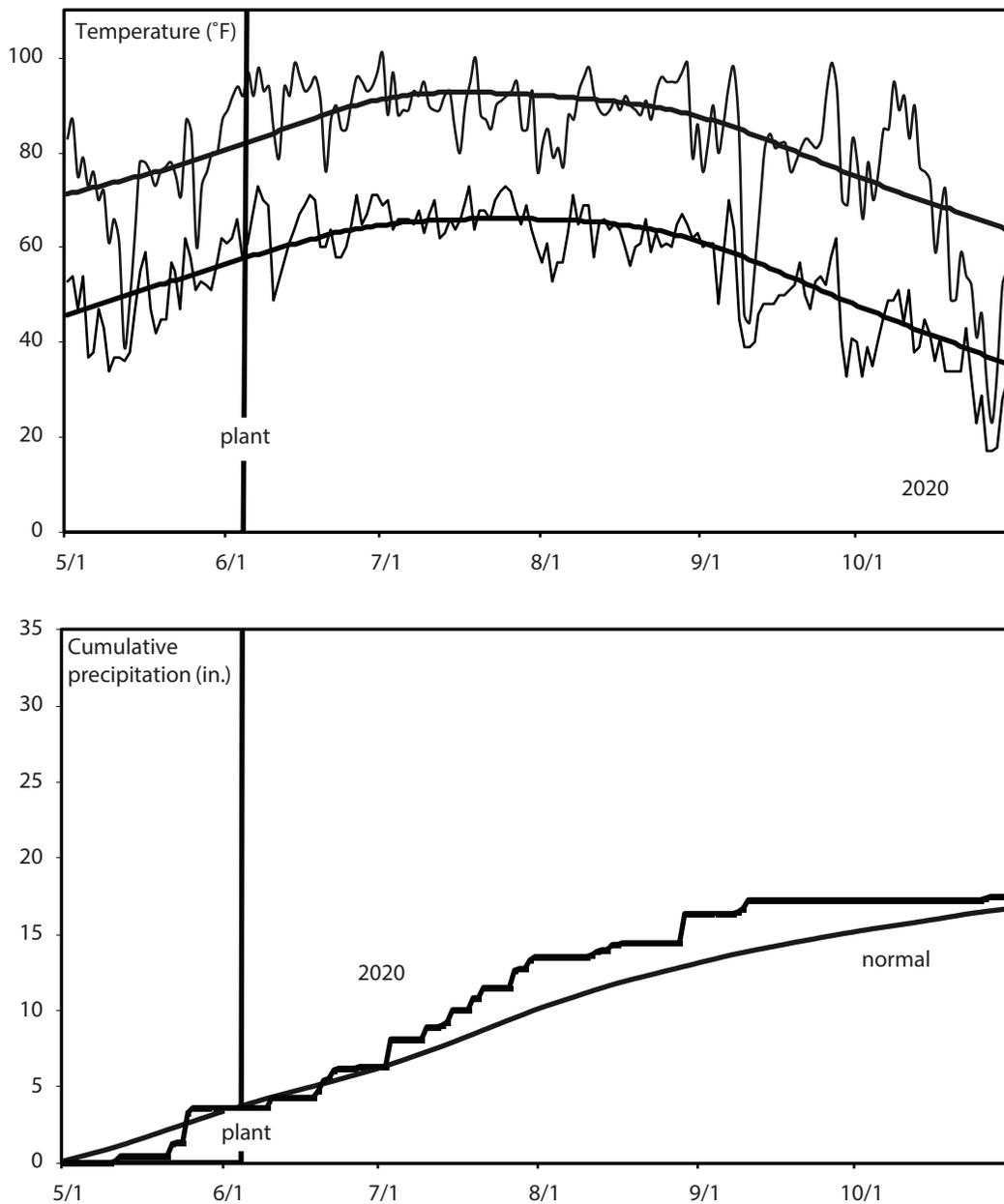


Figure 2. Precipitation and temperature during the 2020 growing season near Hays, KS. Top pane: daily and mean (1981 to 2010) high and low temperature. Bottom pane: daily and mean (1981 to 2010) cumulative precipitation.

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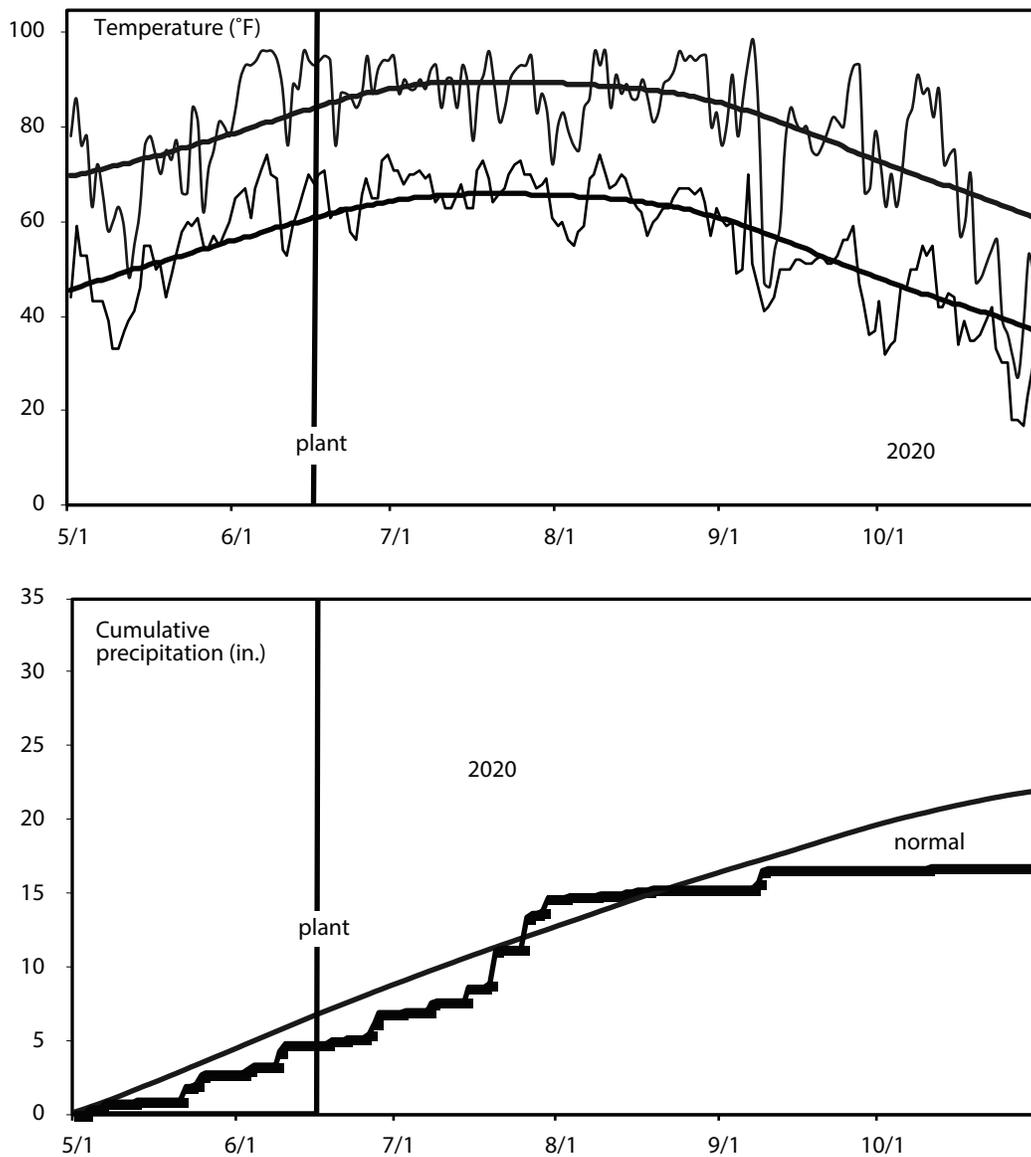


Figure 3. Precipitation and temperature during the 2020 growing season near Scandia, KS. Top pane: daily and mean (1981 to 2010) high and low temperature. Bottom pane: daily and mean (1981 to 2010) cumulative precipitation.

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