2005

Kansas Performance Tests with Summer Annual Forages

Report of Progress 955

Kansas State University
Agricultural Experiment Station
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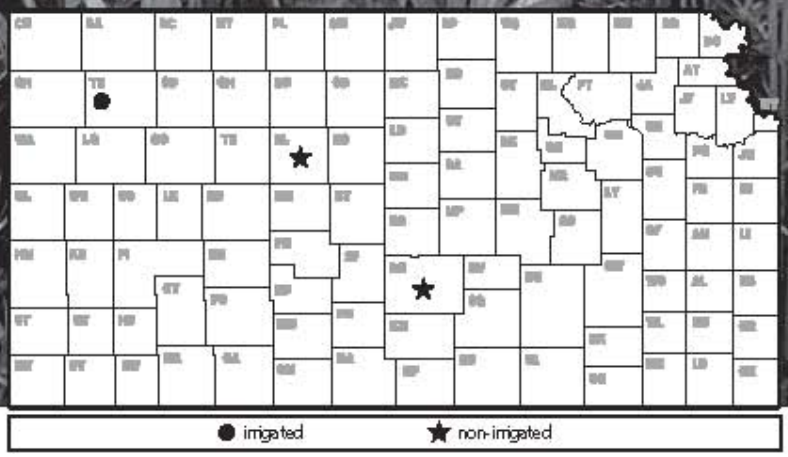

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INTRODUCTION

Kansas is a top producer of meat and animal products. An important input for the beef and dairy industries is the fodder or roughage that forms a key element in ruminant diets. In 2005, Kansas farms produced 3.2 million tons of corn and sorghum silage (January 12, 2006 *Crops* Report, Kansas Agricultural Statistics Service). Additional roughage was obtained from other summer annual forages such as sorghum-sudan, sudan, and millet. This publication presents the results of tests designed to compare forage production and quality of corn, sorghum, and sorghum-sudan hybrids under typical Kansas growing conditions.

PROCEDURES

Crop performance tests in Kansas are a cooperative effort of K-State Research and Extension and the private seed industry. Entry fees from private seed companies help finance the tests. Seed companies receive test announcements and entry forms in late January; deadlines for receipt of completed entry forms and seed are in early March. Because entry selection and location are voluntary, not all hybrids grown in the state are included in tests, and hybrids are not grown uniformly at all test locations.

Seed companies were offered the opportunity to participate in summer annual forage tests at four locations in 2005: Parsons, Hutchinson, Hays, and Colby. Six companies entered a total of 9 forage sorghum hybrids and 11 hay types (sorghum-sudan hybrids, sudan, or millet). The test at Parsons was dropped because of poor stands.

Three plots (replications) of each hybrid were grown at each location in a randomized complete-block design. Each forage sorghum plot consisted of four rows trimmed to a length of 20 to 30 feet, depending on location. Forage and grain yield estimates and samples for moisture and quality analysis were obtained from the center two rows. Hay-type entries were planted in narrow rows at high populations.

Each species was harvested as close as possible to the stage of maturity that would optimize yield and quality of forage − forage sorghum hybrids at mid-dough and sorghum-sudan hybrids at boot stage. The hay-type hybrids were harvested twice (Cut 1 and Cut 2).

Samples from each harvest were collected to determine moisture content and for laboratory analysis of forage quality: crude protein (CP), neutral detergent fiber (NDF), acid detergent fiber (ADF), and acid detergent lignin (ADL). Crude protein was calculated by multiplying the nitrogen content by 6.25, the average proportion of elemental nitrogen to plant protein.

Near infrared reflectance (NIR) technology was used to predict forage quality parameters. Calibration equations were based on a subset of samples from the current year that were analyzed with wet chemistry. The calibration equations fit the data quite well, with R^2 of 0.99, 0.97, 0.95, and 0.92 for CP, NDF, ADF, and ADL, respectively.

Although not all of the crude protein in a forage is available to the animal as true protein, a forage with more crude protein generally requires less supplemental protein in the ration. Neutral detergent fiber (NDF) estimates total fiber consisting of cellulose, hemicellulose, and lignin, and is often related to intake. Forages with lesser NDF values are desirable because the animal can consume more of the forage, requiring fewer ration supplements. Acid detergent fiber (ADF) estimates total cellulose, lignin, and pectin, and often is used to predict the energy content of forage. Forages with lesser ADF values are desirable because of their greater energy content and higher digestibility. Acid detergent lignin (ADL) estimates the lignin fraction, an indigestible fiber with no nutritive value. Lesser ADL values are associated with greater forage digestibility.

RESULTS

Individual test results are presented in Tables 1 to 6. Average values for hybrids in all 3 tests grown in 2005 are listed in Tables 7 and 8. Hybrid rankings often followed similar trends when grown in more than one location or in more than one year. Some hybrids, however, were more consistent than others or were better adapted to either dryland or irrigated conditions.

Species yield differences depended on test location. At Hutchinson, the hay types out yielded the forage sorghums on average. Second-cutting yields were much lower than those for the first cutting at Hays and Colby, but only slightly lower at Hutchinson. Forage sorghums out yielded the hay types at Hays and Colby. In general, yields were less than those for last year.

As in past years, forage sorghum hybrids tended to have less crude protein than the hay types had. The various fiber components (NDF, ADF, ADL) showed inconsistent species patterns. At Hutchinson, the hay types had fiber and lignin equal to or less than what the forage sorghums had. At Hays and Colby, the forage sorghums generally had less fiber on average than the hay types had, although average lignin content was similar. Individual hybrids from either species differed from the species averages for most quality characteristics. Harvest management and hybrid selection both play an important role in obtaining high yields of quality forage.

Table 1. Hutchinson Summer Annual Forage Test, 2005.

		Forage					Grain	Days			Pop.
		Yield (pounds DM/acre)			Moist. (%)		yield	to	Ht.	Lodg	(1000
BRAND	NAME	Total	Cut 1	Cut 2	Cut 1	Cut 2	(bu/a)	blm	(in)	(%)	ppa)
FORAGE SORGHUM											
SORG. PARTNERS	NK 300	11,319	--	--	58	--	38	85	59	0	22.5
DEKALB	FS-5	7,130	--	--	68	--	18	65	71	2	20.1
MATURITY CHECK	ATLAS	6,653	--	--	67	--	12	65	70	3	21.9
DEKALB	DKS59-09	6,211	--	--	67	--	16	64	61	5	23.8
SORG. PARTNERS	SS 405	6,077	--	--	60	--	12	89	119	63	25.4
MATURITY CHECK	EARLY SUMAC	4,959	--	--	71	--	10	63	64	23	22.7
	AVERAGES	7,058	--	--	65	--	18	72	74	16	22.7
	CV(%)	15	--	--	4	--	21	8	5	47	0.0
	LSD(0.05)*	1,907	--	--	5	--	7	11	6	14	NS
HAY TYPES**								**Ht1**	**Ht2**		**(%)**
MATURITY CHECK	PIPER (SU)	9,208	4,395	4,813	80	79	--	55	62	--	--
MATURITY CHECK	NB280S (SS)	9,111	5,023	4,088	79	81	--	63	62	--	--
BUFFALO	GRAZEX BMR718 (SS)	8,822	5,072	3,750	81	84	--	55	54	--	--
BUFFALO	GRAZEX BMR727 (SS)	8,629	5,135	3,494	81	83	--	60	58	--	--
SORG. PARTNERS	SORDAN HEADLESS (SS)	8,586	5,036	3,550	82	86	--	53	51	--	--
GOLDEN HARVEST	RE-GRO H-22B (SS)	8,370	4,035	4,334	82	83	--	58	58	--	--
BUFFALO	GRAZEX BMR719 (SS)	7,923	4,816	3,107	82	85	--	55	55	--	--
GOLDEN HARVEST	RE GRO EX34 (SS)	7,864	4,559	3,306	81	83	--	53	53	--	--
SORG. PARTNERS	TRUDAN HEADLESS (SU)	7,748	3,929	3,820	84	84	--	49	53	--	--
	AVERAGES	8,473	4,667	3,807	81	83	--	56	56	--	--
	CV(%)	8	10	18	2	3	--	5	5	--	--
	LSD(0.05)*	1,216	828	1,168	3	4	--	5	5	--	--
2 - Year Averages											
FORAGE SORGHUM											
SORG. PARTNERS	NK 300	10,445	--	--	50	--	74	79	68	50	22.5
DEKALB	FS-5	9,148	--	--	66	--	53	70	89	1	20.1
DEKALB	DKS59-09	7,407	--	--	59	--	64	68	67	33	23.8
SORG. PARTNERS	SS 405	7,332	--	--	62	--	43	88	126	33	25.4
MATURITY CHECK	ATLAS	6,705	--	--	68	--	49	73	88	2	21.9
MATURITY CHECK	EARLY SUMAC	6,200	--	--	69	--	41	68	79	23	22.7
	AVERAGES	7,767	--	--	64	--	52	74	89	25	22.7
HAY TYPES**								**Ht1**	**Ht2**		**(%)**
MATURITY CHECK	NB280S (SS)	12,433	6,053	6,380	79	76	--	66	64	--	--
SORG. PARTNERS	SORDAN HEADLESS (SS)	12,009	5,802	6,208	82	82	--	55	54	--	--
BUFFALO	GRAZEX BMR727 (SS)	11,391	5,588	5,803	81	79	--	59	60	--	--
MATURITY CHECK	PIPER (SU)	11,351	5,191	6,160	79	70	--	63	63	--	--
SORG. PARTNERS	TRUDAN HEADLESS (SU)	11,041	5,139	5,902	83	81	--	53	56	--	--
3 - Year Averages											
FORAGE SORGHUM											
DEKALB	FS-5	8,991	--	--	63	--	39	77	82	1	20.1
SORG. PARTNERS	SS 405	7,533	--	--	61	--	30	101	120	33	25.4
DEKALB	DKS59-09	7,069	--	--	60	--	46	79	62	33	23.8
MATURITY CHECK	ATLAS	6,733	--	--	66	--	35	87	87	2	21.9
MATURITY CHECK	EARLY SUMAC	5,568	--	--	66	--	30	67	73	23	22.7
	AVERAGES	7,639	--	--	63	--	37	83	84	25	22.7
HAY TYPES**								**Ht1**	**Ht2**		**(%)**
MATURITY CHECK	NB280S (SS)	11,503	4,873	6,630	76	68	--	56	65	3	91.7
SORG. PARTNERS	SORDAN HEADLESS (SS)	11,223	4,533	6,690	78	77	--	46	58	5	81.7
MATURITY CHECK	PIPER (SU)	9,538	3,981	5,557	77	64	--	54	62	10	80.0

* Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.
** SS = Sorghum-sudan hybrid, SU = Sudan.

Table 2. Hutchinson Summer Annual Forage Test - Forage Quality, 2005.

		Forage Quality (dry matter basis)							
		Protein (%)		NDF (%)		ADF (%)		ADL (%)	
BRAND	NAME	Cut 1	Cut 2	Cut 1	Cut 2	Cut 1	Cut 2	Cut 1	Cut 2
FORAGE SORGHUM									
MATURITY CHECK	EARLY SUMAC	8.4	--	55.0	--	33.0	--	5.9	--
DEKALB	FS-5	7.2	--	59.9	--	36.2	--	7.4	--
MATURITY CHECK	ATLAS	7.2	--	61.0	--	37.2	--	7.4	--
DEKALB	DKS59-09	6.1	--	60.3	--	37.5	--	6.2	--
SORG. PARTNERS	NK 300	5.4	--	59.6	--	36.7	--	7.4	--
SORG. PARTNERS	SS 405	5.1	--	60.1	--	38.5	--	6.5	--
	AVERAGES	6.6	--	59.3	--	36.5	--	6.8	--
	CV(%)	9.3	--	3.4	--	4.4	--	3.7	--
	LSD(0.05)*	1.6	--	NS	--	NS	--	0.6	--
HAY TYPES**									
SORG. PARTNERS	SORDAN HEADLESS (SS)	17.6	14.7	58.4	63.0	33.4	39.2	5.8	6.6
MATURITY CHECK	PIPER (SU)	16.5	17.6	59.1	63.0	35.0	37.5	5.8	7.4
BUFFALO	GRAZEX BMR727 (SS)	16.4	16.1	57.8	62.3	31.8	37.7	5.2	6.4
BUFFALO	GRAZEX BMR719 (SS)	16.2	13.3	58.4	62.6	34.0	39.0	5.1	6.2
MATURITY CHECK	NB280S (SS)	16.1	15.1	59.8	64.2	34.0	39.1	5.7	7.3
BUFFALO	GRAZEX BMR718 (SS)	16.0	15.0	58.6	63.1	33.1	39.3	5.1	6.2
GOLDEN HARVEST	RE-GRO H-22B (SS)	15.3	15.8	61.0	64.3	36.2	40.0	6.4	7.3
GOLDEN HARVEST	RE GRO EX34 (SS)	15.3	13.7	59.2	63.1	34.7	39.2	5.3	6.3
SORG. PARTNERS	TRUDAN HEADLESS (SU)	14.4	18.0	61.7	61.4	38.5	37.4	6.3	6.9
	AVERAGES	16.0	15.5	59.3	63.0	34.5	38.7	5.7	6.7
	CV(%)	9.5	11.7	2.3	1.6	5.5	4.1	5.4	4.5
	LSD(0.05)*	NS	NS	NS	NS	NS	NS	0.7	0.7
2-year Averages									
FORAGE SORGHUM									
MATURITY CHECK	EARLY SUMAC	7.7	--	57.1	--	35.5	--	7.2	--
DEKALB	FS-5	6.5	--	60.0	--	38.2	--	7.7	--
DEKALB	DKS59-09	6.3	--	62.6	--	41.6	--	8.2	--
MATURITY CHECK	ATLAS	6.2	--	59.3	--	37.5	--	7.5	--
SORG. PARTNERS	NK 300	5.8	--	63.2	--	42.0	--	8.7	--
SORG. PARTNERS	SS 405	5.4	--	65.1	--	43.2	--	8.1	--
	AVERAGES	6.2	--	61.0	--	39.3	--	7.6	--
HAY TYPES**									
SORG. PARTNERS	SORDAN HEADLESS (SS)	17.4	13.6	58.0	61.7	33.7	36.8	6.0	5.9
BUFFALO	GRAZEX BMR727 (SS)	15.8	13.5	58.0	61.5	33.2	36.1	5.1	5.7
SORG. PARTNERS	TRUDAN HEADLESS (SU)	15.8	14.6	59.3	61.6	35.5	37.5	6.2	6.7
MATURITY CHECK	NB280S (SS)	15.7	13.1	59.7	62.3	34.9	36.6	5.9	6.7
MATURITY CHECK	PIPER (SU)	15.7	12.9	60.2	65.0	36.1	39.7	6.2	7.6
3-year Averages									
FORAGE SORGHUM									
MATURITY CHECK	EARLY SUMAC	7.8	--	57.6	--	35.1	--	6.8	--
DEKALB	FS-5	7.0	--	61.1	--	37.4	--	7.2	--
DEKALB	DKS59-09	6.9	--	62.2	--	39.9	--	7.8	--
MATURITY CHECK	ATLAS	6.6	--	59.1	--	36.4	--	7.0	--
SORG. PARTNERS	SS 405	5.5	--	63.3	--	40.4	--	7.4	--
	AVERAGES	6.7	--	61.0	--	38.0	--	7.1	--
HAY TYPES**									
SORG. PARTNERS	SORDAN HEADLESS (SS)	16.4	13.3	57.6	62.9	31.8	36.7	5.4	5.8
MATURITY CHECK	PIPER (SU)	14.9	12.9	59.3	65.8	33.7	39.1	5.5	7.2
MATURITY CHECK	NB280S (SS)	14.9	12.7	59.2	63.7	33.0	36.7	5.3	6.5

* Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.
** SS = Sorghum-sudan hybrid, SU = Sudan.

Table 3. Hays Summer Annual Forage Test, 2005.

		Forage					Grain	Days			Pop.
		Yield (pounds DM/acre)			Moist. (%)		yield	to	Ht.	Lodg	(1000
BRAND	NAME	Total	Cut 1	Cut 2	Cut 1	Cut 2	(bu/a)	blm	(in)	(%)	ppa)
FORAGE SORGHUM											
SORG. PARTNERS	NK 300	11,776	--	--	63	--	37	96	49	--	51.3
SORG. PARTNERS	SS 405	10,558	--	--	72	--	5	--	94	--	38.4
SORG. PARTNERS	HIKANE II	9,483	--	--	66	--	27	61	64	--	42.5
DEKALB	FS-5	9,400	--	--	64	--	28	80	59	--	54.0
DEKALB	DKS59-09	8,829	--	--	63	--	28	78	43	--	56.5
MATURITY CHECK	ATLAS	7,678	--	--	65	--	18	88	72	--	25.3
MATURITY CHECK	EARLY SUMAC	6,803	--	--	69	--	10	71	57	--	24.3
	AVERAGES	9,218	--	--	66	--	22	79	63	--	41.7
	CV(%)	9	--	--	3	--	25	3	7	--	0.0
	LSD(0.05)*	1,500	--	--	4	--	10	4	7	--	5.6
HAY TYPES**								**Ht1**	**Ht2**		**(%)**
SORG. PARTNERS	SORDAN 79 (SS)	9,392	7,809	1,604	80	77	--	61	27	--	--
MATURITY CHECK	NB280S (SS)	8,667	7,124	1,718	76	77	--	69	31	--	--
MATURITY CHECK	PIPER (SU)	7,368	5,622	1,676	73	75	--	69	38	--	--
	AVERAGES	8,476	6,852	1,666	76	76	--	66	32	--	--
	CV(%)	9	8	21	1	1	--	8	24	--	--
	LSD(0.05)*	1,722	1,234	NS	2	2	--	12	17	--	--
2 - Year Averages											
FORAGE SORGHUM											
SORG. PARTNERS	SS 405	11,965	--	--	70	--	19	88	96	3	38.4
SORG. PARTNERS	NK 300	11,961	--	--	61	--	68	86	56	43	51.3
DEKALB	FS-5	11,740	--	--	66	--	46	83	78	0	54.0
SORG. PARTNERS	HIKANE II	10,944	--	--	68	--	40	68	75	0	42.5
DEKALB	DKS59-09	10,520	--	--	64	--	67	79	54	30	56.5
MATURITY CHECK	ATLAS	10,190	--	--	69	--	30	88	85	0	25.3
MATURITY CHECK	EARLY SUMAC	8,644	--	--	70	--	24	74	67	40	24.3
	AVERAGES	10,685	--	--	67	--	40	80	74	22	41.7
HAY TYPES**								**Ht1**	**Ht2**		**(%)**
SORG. PARTNERS	SORDAN 79 (SS)	9,420	7,052	2,378	81	73	--	62	38	--	--
MATURITY CHECK	NB280S (SS)	8,702	6,248	2,541	78	73	--	72	41	--	--
MATURITY CHECK	PIPER (SU)	7,681	5,054	2,592	74	70	--	73	50	--	--
	AVERAGES	8,639	6,235	2,425	79	72	--	66	39	--	--
3 - Year Averages											
FORAGE SORGHUM											
SORG. PARTNERS	SS 405	10,665	--	--	71	--	19	111	85	20	38.4
SORG. PARTNERS	NK 300	10,462	--	--	64	--	68	100	53	22	51.3
DEKALB	FS-5	10,338	--	--	67	--	46	97	70	5	54.0
DEKALB	DKS59-09	8,925	--	--	66	--	67	91	51	32	56.5
MATURITY CHECK	ATLAS	8,860	--	--	70	--	30	106	75	17	25.3
MATURITY CHECK	EARLY SUMAC	7,683	--	--	70	--	24	91	62	32	24.3
	AVERAGES	9,218	--	--	68	--	40	96	66	28	41.7
HAY TYPES**								**Ht1**	**Ht2**		**(%)**
SORG. PARTNERS	SORDAN 79 (SS)	9,996	7,159	2,844	75	75	--	55	34	13	--
MATURITY CHECK	NB280S (SS)	9,667	6,438	3,287	72	72	--	63	39	0	--
MATURITY CHECK	PIPER (SU)	7,285	4,936	2,325	67	71	--	64	43	33	--
	AVERAGES	8,904	6,187	2,732	72	73	--	57	36	9	--

* Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.
** SS = Sorghum-sudan hybrid, SU = Sudan.

Table 4. Hays Summer Annual Forage Test - Forage Quality, 2005.

		Forage Quality (dry matter basis)							
		Protein (%)		NDF (%)		ADF (%)		ADL (%)	
BRAND	NAME	Cut 1	Cut 2	Cut 1	Cut 2	Cut 1	Cut 2	Cut 1	Cut 2
FORAGE SORGHUM									
MATURITY CHECK	EARLY SUMAC	7.9	--	51.6	--	30.2	--	6.0	--
SORG. PARTNERS	NK 300	7.5	--	54.6	--	32.5	--	7.1	--
DEKALB	FS-5	7.0	--	55.2	--	33.2	--	7.2	--
DEKALB	DKS59-09	6.8	--	53.8	--	32.1	--	6.5	--
SORG. PARTNERS	SS 405	6.3	--	59.9	--	37.9	--	6.6	--
MATURITY CHECK	ATLAS	6.0	--	55.5	--	33.7	--	6.8	--
SORG. PARTNERS	HIKANE II	5.7	--	52.7	--	32.3	--	6.6	--
	AVERAGES	6.7	--	54.8	--	33.1	--	6.7	--
	CV(%)	9.0	--	4.4	--	4.7	--	6.9	--
	LSD(0.05)*	1.5	--	NS	--	3.8	--	NS	--
HAY TYPES**									
SORG. PARTNERS	SORDAN 79 (SS)	10.4	10.9	62.2	58.3	38.0	33.3	7.1	6.6
MATURITY CHECK	NB280S (SS)	10.2	12.2	63.7	58.8	38.1	33.1	7.5	6.4
MATURITY CHECK	PIPER (SU)	9.4	11.1	66.3	59.9	41.1	35.4	8.6	7.3
	AVERAGES	10.0	11.4	64.1	59.0	39.0	33.9	7.7	6.8
	CV(%)	5.1	2.8	2.1	0.4	3.4	2.8	7.3	3.9
	LSD(0.05)*	NS	1.4	NS	1.1	NS	NS	NS	NS
		2-year Averages							
FORAGE SORGHUM									
SORG. PARTNERS	NK 300	7.5	--	52.9	--	33.0	--	7.5	--
DEKALB	DKS59-09	7.1	--	51.2	--	32.4	--	7.0	--
MATURITY CHECK	ATLAS	6.7	--	54.8	--	33.6	--	7.0	--
MATURITY CHECK	EARLY SUMAC	6.6	--	51.6	--	31.6	--	7.0	--
SORG. PARTNERS	SS 405	6.3	--	60.3	--	39.0	--	7.8	--
DEKALB	FS-5	6.0	--	57.3	--	36.2	--	7.9	--
SORG. PARTNERS	HIKANE II	5.9	--	51.2	--	32.4	--	7.1	--
	AVERAGES	6.5	--	55.0	--	34.5	--	7.2	--
HAY TYPES**									
SORG. PARTNERS	SORDAN 79 (SS)	10.9	8.8	61.9	60.0	39.7	35.2	7.6	6.6
MATURITY CHECK	NB280S (SS)	10.8	8.7	62.9	60.8	39.9	35.8	8.1	6.5
MATURITY CHECK	PIPER (SU)	9.8	7.8	64.6	63.3	40.9	38.7	8.7	7.2
	AVERAGES	10.7	8.8	62.8	60.1	40.4	35.8	7.9	6.6
		3-year Averages							
FORAGE SORGHUM									
DEKALB	DKS59-09	8.3	--	52.8	--	32.3	--	6.9	--
SORG. PARTNERS	NK 300	8.2	--	55.4	--	33.6	--	7.3	--
MATURITY CHECK	EARLY SUMAC	7.3	--	53.2	--	32.1	--	7.1	--
MATURITY CHECK	ATLAS	7.0	--	55.6	--	33.7	--	7.1	--
SORG. PARTNERS	SS 405	7.0	--	59.7	--	37.3	--	7.5	--
DEKALB	FS-5	6.5	--	57.4	--	35.1	--	7.4	--
	AVERAGES	7.3	--	55.9	--	34.2	--	7.1	--
HAY TYPES**									
SORG. PARTNERS	SORDAN 79 (SS)	10.6	9.5	60.7	60.0	37.6	36.3	7.3	7.2
MATURITY CHECK	NB280S (SS)	10.3	9.6	61.3	60.4	37.5	36.1	7.6	7.1
MATURITY CHECK	PIPER (SU)	9.5	9.0	62.5	62.1	38.2	38.2	8.1	7.7
	AVERAGES	10.5	9.8	61.2	59.9	37.7	36.5	7.4	7.3

* Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.
** SS = Sorghum-sudan hybrid, SU = Sudan.

Table 5. Colby Irrigated Summer Annual Forage Test, 2005.

		Forage					Grain	Days			Pop.
		Yield (pounds DM/acre)			Moist. (%)		yield	to	Ht.	Lodg	(1000
BRAND	NAME	Total	Cut 1	Cut 2	Cut 1	Cut 2	(bu/a)	blm	(in)	(%)	ppa)
FORAGE SORGHUM											
SORG. PARTNERS	HIKANE II	16,854	--	--	67	--	52	69	89	--	73.9
SORG. PARTNERS	NK 300	16,361	--	--	72	--	28	81	66	--	60.7
DEKALB	FS-5	13,924	--	--	73	--	30	78	91	--	72.7
DEKALB	DKS59-09	13,221	--	--	74	--	48	76	68	--	57.1
MATURITY CHECK	EARLY SUMAC	12,908	--	--	71	--	34	71	83	--	45.2
DRUSSEL SEED	DSS DIVIDEND BMR	12,298	--	--	74	--	24	77	81	--	68.2
MATURITY CHECK	ATLAS	12,112	--	--	70	--	52	74	94	--	56.9
MOSS SEED	4EVER GREEN	11,782	--	--	80	--	--	--	94	--	56.6
MOSS SEED	MILLENIUM BMR	10,595	--	--	73	--	33	79	92	--	49.4
	AVERAGES	13,339	--	--	73	--	38	76	84	--	60.1
	CV(%)	9	--	--	3	--	37	2	8	--	0.0
	LSD(0.05)*	2,010	--	--	4	--	24	2	12	--	14.1
HAY TYPES**								**Ht1**	**Ht2**		**(%)**
MATURITY CHECK	NB280S (SS)	16,094	13,492	2,601	67	34	--	103	29	--	--
DRUSSEL SEED	DSS BONUS-R BMR (SS)	14,921	12,715	2,205	79	41	--	99	27	--	--
GOLDEN HARVEST	RE-GRO H-22B (SS)	14,282	11,431	2,850	74	40	--	99	32	--	--
GOLDEN HARVEST	RE GRO EX34 (SS)	12,471	10,631	1,840	74	28	--	97	26	--	--
MOSS SEED	SU-2-LM (SS)	12,374	10,169	2,204	75	32	--	103	26	--	--
SORG. PARTNERS	TRUDAN HEADLESS (SU)	12,172	9,340	2,832	79	25	--	96	22	--	--
MOSS SEED	MEGA GREEN (SS)	11,008	9,382	1,626	79	36	--	103	21	--	--
SORG. PARTNERS	SORDAN HEADLESS (SS)	10,138	8,125	2,013	83	37	--	94	22	--	--
MATURITY CHECK	PIPER (SU)	9,858	7,945	1,914	67	32	--	97	23	--	--
	AVERAGES	12,591	10,359	2,232	75	34	--	99	25	--	--
	CV(%)	12	13	18	2	13	--	5	19	--	--
	LSD(0.05)*	2,656	2,244	711	3	7	--	-1	NS	--	--
		2 - Year Averages									
FORAGE SORGHUM											
SORG. PARTNERS	HIKANE II	17,592	--	--	67	--	61	76	100	12	73.9
DEKALB	FS-5	17,231	--	--	70	--	51	83	101	3	72.7
SORG. PARTNERS	NK 300	16,858	--	--	68	--	64	75	72	7	60.7
DRUSSEL SEED	DSS DIVIDEND BMR	15,346	--	--	72	--	51	80	87	77	68.2
DEKALB	DKS59-09	15,313	--	--	72	--	75	80	72	28	57.1
MATURITY CHECK	ATLAS	15,255	--	--	69	--	49	82	102	8	56.9
MATURITY CHECK	EARLY SUMAC	13,982	--	--	72	--	45	77	92	5	45.2
	AVERAGES	15,250	--	--	71	--	59	79	92	23	60.1
HAY TYPES**								**Ht1**	**Ht2**		**(%)**
MATURITY CHECK	NB280S (SS)	15,878	12,310	3,568	70	50	--	106	38	--	--
GOLDEN HARVEST	RE-GRO H-22B (SS)	14,478	10,791	3,687	74	54	--	100	37	--	--
DRUSSEL SEED	DSS BONUS-R BMR (SS)	14,427	11,078	3,348	80	55	--	95	34	--	--
SORG. PARTNERS	TRUDAN HEADLESS (SU)	13,368	9,938	3,430	78	48	--	94	28	--	--
MATURITY CHECK	PIPER (SU)	11,915	7,877	4,038	69	47	--	99	35	--	--
SORG. PARTNERS	SORDAN HEADLESS (SS)	11,321	8,392	2,929	82	54	--	93	29	--	--
	AVERAGES	13,210	9,996	3,213	76	51	--	98	33	--	--

(continued)

Table 5. Colby Irrigated Summer Annual Forage Test, 2005 (continued).

		Forage					Grain	Days			Pop.
		Yield (pounds DM/acre)			Moist. (%)		yield	to	Ht.	Lodg	(1000
BRAND	NAME	Total	Cut 1	Cut 2	Cut 1	Cut 2	(bu/a)	blm	(in)	(%)	ppa)
		3 - Year Averages									
FORAGE SORGHUM											
DEKALB	FS-5	16,522	--	--	68	--	49	83	99	2	68.7
SORG. PARTNERS	NK 300	16,412	--	--	66	--	56	77	70	3	57.6
DRUSSEL SEED	DSS DIVIDEND BMR	14,624	--	--	71	--	40	82	88	67	63.7
DEKALB	DKS59-09	14,450	--	--	70	--	70	78	72	19	63.8
MATURITY CHECK	ATLAS	13,923	--	--	69	--	43	82	100	4	44.5
MATURITY CHECK	EARLY SUMAC	13,533	--	--	71	--	43	77	93	8	48.7
	AVERAGES	14,587	--	--	70	--	48	80	91	18	56.6
HAY TYPES**								**Ht1**	**Ht2**		**(%)**
MATURITY CHECK	NB280S (SS)	14,524	11,110	3,414	70	47	--	104	30	0	--
DRUSSEL SEED	DSS BONUS-R BMR (SS)	13,801	10,852	2,949	79	47	--	89	27	0	--
MATURITY CHECK	PIPER (SU)	11,358	7,820	3,538	68	44	--	99	28	0	--
SORG. PARTNERS	SORDAN HEADLESS (SS)	11,349	8,506	2,843	81	47	--	87	24	0	--
	AVERAGES	12,498	9,513	2,985	75	45	--	94	26	3	--

* Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.
** SS = Sorghum-sudan hybrid, SU = Sudan.

Table 6. Colby Irrigated Summer Annual Forage Test - Forage Quality, 2005.

		Forage Quality (dry matter basis)							
		Protein (%)		NDF (%)		ADF (%)		ADL (%)	
BRAND	NAME	Cut 1	Cut 2	Cut 1	Cut 2	Cut 1	Cut 2	Cut 1	Cut 2
FORAGE SORGHUM									
SORG. PARTNERS	NK 300	6.9	--	58.8	--	35.9	--	10.1	--
MOSS SEED	4EVER GREEN	6.6	--	65.0	--	40.8	--	8.9	--
DEKALB	FS-5	6.5	--	56.0	--	35.5	--	9.0	--
DRUSSEL SEED	DSS DIVIDEND BMR	6.5	--	55.2	--	34.7	--	8.7	--
SORG. PARTNERS	HIKANE II	6.4	--	60.5	--	37.5	--	8.7	--
MATURITY CHECK	ATLAS	6.4	--	53.9	--	34.4	--	9.5	--
DEKALB	DKS59-09	5.8	--	58.9	--	37.3	--	9.0	--
MATURITY CHECK	EARLY SUMAC	5.6	--	52.3	--	32.9	--	9.9	--
MOSS SEED	MILLENIUM BMR	5.5	--	55.9	--	35.9	--	7.8	--
	AVERAGES	5.9	--	54.1	--	33.1	--	9.4	--
	CV(%)	6.2	--	57.1	--	35.8	--	9.1	--
	LSD(0.05)*	NS	--	1.8	--	1.9	--	NS	--
HAY TYPES**									
DRUSSEL SEED	DSS BONUS-R BMR (SS)	9.8	9.2	61.8	62.6	39.7	38.7	8.5	8.3
SORG. PARTNERS	SORDAN HEADLESS (SS)	8.5	10.2	66.4	62.8	43.2	37.1	9.0	8.2
MOSS SEED	MEGA GREEN (SS)	8.1	10.4	67.1	61.9	44.4	36.7	9.2	8.2
SORG. PARTNERS	TRUDAN HEADLESS (SU)	8.0	9.9	66.3	62.5	44.4	37.4	9.5	9.0
MATURITY CHECK	NB280S (SS)	7.7	9.7	63.1	62.6	39.7	37.4	9.7	9.1
MOSS SEED	SU-2-LM (SS)	7.7	10.6	63.7	62.4	41.6	36.8	9.5	8.2
GOLDEN HARVEST	RE-GRO H-22B (SS)	7.6	9.7	61.1	62.8	40.3	38.1	9.2	8.3
GOLDEN HARVEST	RE GRO EX34 (SS)	7.4	11.1	62.5	60.7	40.2	36.3	8.6	7.1
MATURITY CHECK	PIPER (SU)	6.4	9.8	66.6	62.0	43.7	37.3	10.6	8.1
	AVERAGES	7.9	10.1	64.3	62.3	41.9	37.3	9.3	8.3
	CV(%)	8.8	11.1	2.7	2.9	4.0	5.7	5.8	12.4
	LSD(0.05)*	1.6	NS	4.0	NS	3.8	NS	1.3	NS
		2-year Averages							
FORAGE SORGHUM									
DRUSSEL SEED	DSS DIVIDEND BMR	7.0	--	49.4	--	31.3	--	7.0	--
SORG. PARTNERS	HIKANE II	6.6	--	49.6	--	31.5	--	7.2	--
SORG. PARTNERS	NK 300	6.5	--	50.2	--	31.3	--	8.3	--
DEKALB	FS-5	6.3	--	52.0	--	33.5	--	8.2	--
MATURITY CHECK	ATLAS	6.2	--	49.6	--	31.9	--	7.8	--
DEKALB	DKS59-09	5.9	--	50.4	--	32.7	--	7.5	--
MATURITY CHECK	EARLY SUMAC	5.4	--	48.0	--	30.7	--	8.1	--
	AVERAGES	6.0	--	49.4	--	31.3	--	7.8	--
HAY TYPES**									
DRUSSEL SEED	DSS BONUS-R BMR (SS)	8.9	--	62.3	--	40.7	--	9.0	--
SORG. PARTNERS	SORDAN HEADLESS (SS)	7.4	--	66.4	--	44.5	--	9.1	--
GOLDEN HARVEST	RE-GRO H-22B (SS)	6.7	--	60.1	--	39.9	--	9.4	--
SORG. PARTNERS	TRUDAN HEADLESS (SU)	6.6	--	64.8	--	44.0	--	9.6	--
MATURITY CHECK	PIPER (SU)	6.5	--	65.7	--	44.2	--	10.8	--
MATURITY CHECK	NB280S (SS)	6.2	--	64.7	--	42.6	--	10.2	--
	AVERAGES	7.2	--	63.4	--	42.0	--	9.3	--

(continued)

Table 6. Colby Irrigated Summer Annual Forage Test - Forage Quality, 2005 (continued).

		Forage Quality (dry matter basis)							
		Protein (%)		NDF (%)		ADF (%)		ADL (%)	
BRAND	NAME	Cut 1	Cut 2	Cut 1	Cut 2	Cut 1	Cut 2	Cut 1	Cut 2
		3-year Averages							
FORAGE SORGHUM									
DRUSSEL SEED	DSS DIVIDEND BMR	7.1	--	51.5	--	33.1	--	7.6	--
SORG. PARTNERS	NK 300	6.6	--	53.3	--	34.2	--	8.8	--
DEKALB	FS-5	6.2	--	53.1	--	34.4	--	8.3	--
MATURITY CHECK	ATLAS	6.1	--	51.0	--	32.8	--	7.8	--
DEKALB	DKS59-09	6.0	--	53.0	--	35.0	--	8.2	--
MATURITY CHECK	EARLY SUMAC	5.4	--	49.6	--	32.3	--	8.5	--
	AVERAGES	6.2	--	51.7	--	33.1	--	8.2	--
HAY TYPES**									
DRUSSEL SEED	DSS BONUS-R BMR (SS)	9.3	--	61.6	--	40.0	--	9.2	--
SORG. PARTNERS	SORDAN HEADLESS (SS)	8.3	--	64.9	--	43.1	--	8.9	--
MATURITY CHECK	PIPER (SU)	7.1	--	64.4	--	42.3	--	10.0	--
MATURITY CHECK	NB280S (SS)	6.9	--	63.4	--	40.7	--	9.2	--
	AVERAGES	8.0	--	62.4	--	40.7	--	8.9	--

* Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.
** SS = Sorghum-sudan hybrid, SU = Sudan.

Table 7. 2005 Summer Annual Forages, Multi-location Averages.

		Forage					Grain	Days			
		Yield (pounds DM/acre)			Moist. (%)		yield	to	Ht.	Lodg	Stnd
BRAND	NAME	Total	Cut 1	Cut 2	Cut 1	Cut 2	(bu/a)	blm	(in)	(%)	(%)
FORAGE SORGHUM											
SORG. PARTNERS	NK 300	13,152	--	--	65	--	34	87	58	0	--
DEKALB	FS-5	10,151	--	--	68	--	25	74	74	2	--
DEKALB	DKS59-09	9,420	--	--	68	--	31	73	57	5	--
MATURITY CHECK	ATLAS	8,814	--	--	68	--	27	76	79	3	--
MATURITY CHECK	EARLY SUMAC	8,223	--	--	71	--	18	68	68	23	--
	AVERAGES	9,872	--	--	68	--	26	76	74	16	--
HAY TYPES*								**Ht1**	**Ht2**		
MATURITY CHECK	NB280S (SS)	11,290	8,546	2,802	74	64	--	78	41	--	--
MATURITY CHECK	PIPER (SU)	8,811	5,987	2,801	73	62	--	74	41	--	--

Table 8. 2005 Summer Annual Forages, Multi-location Averages.

		Forage Quality (dry matter basis)							
		Protein (%)		NDF (%)		ADF (%)		ADL (%)	
BRAND	NAME	Cut 1	Cut 2	Cut 1	Cut 2	Cut 1	Cut 2	Cut 1	Cut 2
FORAGE SORGHUM									
MATURITY CHECK	EARLY SUMAC	7.3	--	53.0	--	32.0	--	7.3	--
DEKALB	FS-5	6.9	--	57.0	--	35.0	--	7.9	--
SORG. PARTNERS	NK 300	6.6	--	57.7	--	35.0	--	8.2	--
MATURITY CHECK	ATLAS	6.5	--	56.8	--	35.1	--	7.9	--
DEKALB	DKS59-09	6.2	--	57.7	--	35.6	--	7.2	--
	AVERAGES	6.4	--	56.1	--	34.2	--	7.6	--
HAY TYPES*									
MATURITY CHECK	NB280S (SS)	11.3	12.3	62.2	61.9	37.3	36.5	7.6	7.6
MATURITY CHECK	PIPER (SU)	10.8	12.8	64.0	61.6	39.9	36.7	8.3	7.6

* SS = Sorghum-sudan hybrid, SU = Sudan.

Table 9. Entrants in the 2005 Kansas Summer Annual Forage Performance Tests.

Brand/Company/Address Crop - Hybrid	Traits*	Maturity**
BUFFALO Sharp Bros. Seed Company Box 140 Healy, KS 67850 800-462-8483 sharpseed.com		
SS - GRAZEX BMR718	BMR	ME
SS - GRAZEX BMR719	BMR	ME
SS - GRAZEX BMR727	BMR	ME
DEKALB Monsanto Seed 7159 N. 247th West P.O. Box 7 Mount Hope, KS 67108 316-445-2290 monsanto.com		
FS - DKS59-09	--	M
FS - FS-5	--	M
DRUSSEL SEED Drussel Seed, Inc. 2197 West Parallel Rd. Garden City, KS 67846 620-275-2359		
FS - DSS DIVIDEND BMR	BMR	ML
SS - DSS BONUS-R BMR	BMR	PS
GOLDEN HARVEST J.C. Robinson Seed Co. 100 JC Robinson Blvd. PO Box A Waterloo, NE 68069 800-944-7333 goldenharvestseeds.com		
SS - RE GRO EX34	BMR	ME
SS - RE-GRO H-22B	--	ME
MOSS SEED Walter Moss Seed Co. P.O. Box 21114 Waco, TX 76702-1114 254-840-4774		
FS - 4EVER GREEN	PS	PS
FS - 4EVER GREEN BMR	BMR	PS
FS - MILLENIUM BMR	BMR	L
SS - MEGA GREEN	PS	M
SS - SU-2-LM	LM	L
SORG. PARTNERS Sorghum Partners, Inc. Box 189, 403 S. Monroe New Deal, TX 79350 806-746-5566 sorghum-partners.com		
FS - HIKANE II	--	M
FS - NK 300	--	M
FS - SS 405	--	L
SS - SORDAN 79	--	M
SS - SORDAN HEADLESS	--	PS
SU - TRUDAN HEADLESS	--	PS

* BMR = brown mid-rib, PS = photoperiod sensitive
** E = early, M = medium, L = late, PS = photoperiod sensitive

The information contained in this publication is available for viewing or downloading at http://www.ksu.edu/kscpt.

CONTRIBUTORS

MAIN STATION - MANHATTAN

Kraig Roozeboom, Agronomist

EXPERIMENT FIELDS

Bill Heer - Hutchinson

RESEARCH CENTERS

Patrick Evans - Colby

Kenneth Kofoid - Hays

Keith Harmoney - Hays

NOTE: Trade names are used to identify products. No endorsement is intended, nor is any criticism implied of similar products not named.

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The URL is ***www.ksu.edu/kscpt***.

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University Research Policy Agreement with Cooperating Seed Companies*

Permission is hereby given to Kansas State University to test varieties and/or hybrids designated on the attached entry forms in the manner indicated in the test announcements. I certify that seed submitted for testing is a true sample of the seed being offered for sale.

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Contributors

Main Station, Manhattan
Kraig Roozeboom, Agronomist

Experiment Fields
William Heer, Hutchinson

Research Centers
Patrick Evans, Colby
Ken Kofoid, Hays
Keith Harmoney, Hays

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