

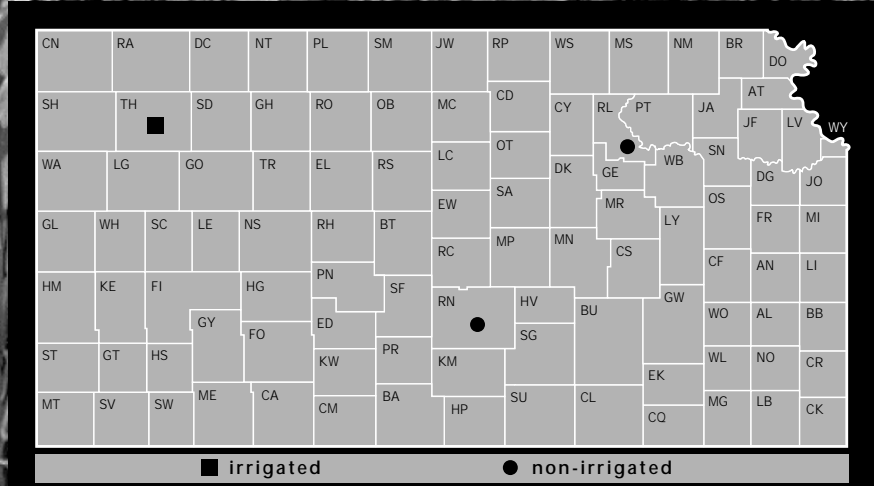
2001

KANSAS PERFORMANCE TESTS WITH

SUMMER ANNUAL FORAGES

REPORT OF PROGRESS 889

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service



2001 KANSAS SUMMER ANNUAL FORAGE PERFORMANCE TESTS¹

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SUMMARY

This report presents results of tests to compare hybrids of corn, forage sorghum, and sorghum-sudan grown as summer annual forages. Various characteristics of forage production and quality were measured at Colby, Hutchinson, and Manhattan, Kansas.

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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 2001, Kansas farms produced 5.3 million tons of corn and sorghum silage (January 11 Crops Report, Kansas Agricultural Statistics Service). Additional roughage was obtained from other summer annual forages such as sorghum-sudan. This publication presents the results of tests designed to compare forage production and quality of corn, sorghum, and sorghum-sudan hybrids.

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 three locations in 2001, Manhattan, Hutchinson, and Colby. Nine companies entered a total of 23 forage sorghum hybrids, and 14 sorghum-sudan hybrids. Only two corn hybrids were submitted, so corn was dropped from the tests.

Three plots (replications) of each hybrid were grown at each location in a randomized complete block design. Each plot consisted of four rows trimmed to a length of 20 or 30 feet, depending on location. Forage and grain yield estimates and samples for moisture and quality analysis were obtained from the center two rows. Entries were arranged so that statistical comparisons could be made among hybrids of the same species and between hybrids of different species.

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 sorghum-sudan hybrids were harvested twice at Manhattan and Colby. Drought

stress inhibited regrowth at Hutchinson, preventing a second cutting.

Samples from each harvest were collected to determine moisture content and for laboratory analysis of forage quality, including crude protein, neutral detergent fiber (NDF), acid detergent fiber (ADF), and acid detergent lignin (ADL). Crude protein is calculated by multiplying the nitrogen content of the forage by 6.25, the average proportion of elemental nitrogen to plant protein. While not all of the crude protein in a forage is available to the animal as true protein, a forage with a higher level of 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 lower 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 is often used to predict the energy content of forage. Forages with lower ADF values are desirable because of their higher energy content and generally higher digestibility. Acid detergent lignin (ADL) estimates the lignin fraction, an indigestible fiber with no nutritive value. Lower ADL values are associated with greater forage digestibility.

RESULTS

Individual test results are presented in Tables 1 - 6. Tables 7 and 8 include average values for hybrids included in both of the past two years at Colby. Average values for hybrids in all 3 tests grown in 2001 are listed in Tables 9 and 10. Hybrid rankings followed similar trends when grown in more than one location or in more than one year. However, some hybrids were more consistent than others.

Species differences were not consistent across locations. Forage sorghum and sorghum-sudan hybrids yielded similarly at Hutchinson and Colby. At Manhattan, sorghum-sudan hybrids significantly out-yielded forage sorghum hybrids.

Forage sorghum hybrids tended to have lower crude protein values, but the various fiber components (NDF, ADF, ADL) were also lower. Brown midrib hybrids of both species tended to have lower ADL values and higher crude protein values; both desirable quality characteristics.

Table 1. Riley Co. Summer Annual Forage Test, Manhattan, 2001.

| BRAND | NAME | Forage | | | | | Grain Days | | Ht. (in) | Lodg (%) | Stnd (%) |
|-----------------------|----------------------|----------------------|--------|-------|------------|-------|--------------|--------|----------|----------|----------|
| | | Yield (tons DM/acre) | | | Moist. (%) | | yield (bu/a) | to blm | | | |
| | | Total | Cut 1 | Cut 2 | Cut 1 | Cut 2 | | | | | |
| FORAGE SORGHUM | | | | | | | | | | | |
| DEKALB | FS-5 | 6,819 | -- | -- | 71 | -- | 73 | 65 | 104 | 15 | -- |
| GARST/AGRIPRO | NO325 | 6,781 | -- | -- | 80 | -- | 1 | 91 | 100 | 0 | -- |
| DEKALB | DKS59-09 | 6,252 | -- | -- | 75 | -- | 87 | 68 | 75 | 0 | -- |
| GARST | 333 | 5,965 | -- | -- | 78 | -- | 2 | 91 | 106 | 60 | -- |
| GARST/AGRIPRO | NO348BMR | 5,001 | -- | -- | 75 | -- | 47 | 78 | 104 | 45 | -- |
| VALLEY PREMIUM | UDDER BUSTER BMR | 4,922 | -- | -- | 74 | -- | 33 | 77 | 100 | 45 | -- |
| MATURITY CHECK | ATLAS | 4,437 | -- | -- | 75 | -- | 35 | 76 | 100 | 17 | -- |
| MATURITY CHECK | EARLY SUMAC | 3,094 | -- | -- | 74 | -- | 73 | 64 | 91 | 70 | -- |
| | Averages | 5,409 | -- | -- | 75 | -- | 44 | 76 | 98 | 31 | -- |
| | CV(%) | 10 | -- | -- | 2 | -- | 12 | 2 | 5 | 82 | -- |
| | LSD(0.05)** | 983 | -- | -- | 3 | -- | 9 | 3 | 9 | 45 | -- |
| SORGHUM SUDAN | | | | | | | | | | | |
| MATURITY CHECK | NB280S | 12,367 | 10,334 | 2,033 | 80 | 83 | -- | -- | 66 | 25 | -- |
| VALLEY PREMIUM | SWEET CHIEF X-TRA | 12,195 | 9,903 | 2,293 | 81 | 84 | -- | -- | 68 | 2 | -- |
| MMR | 352/40 | 11,836 | 10,532 | 1,305 | 85 | 85 | -- | -- | 72 | 0 | -- |
| MMR | 327/52 BMR | 11,185 | 9,783 | 1,402 | 82 | 84 | -- | -- | 67 | 2 | -- |
| VALLEY PREMIUM | SWEET CHIEF X-TRABMR | 10,547 | 9,280 | 1,267 | 82 | 85 | -- | -- | 66 | 2 | -- |
| MMR | 328/53 BMR | 10,142 | 8,710 | 1,432 | 83 | 85 | -- | -- | 65 | 0 | -- |
| SEED RESOURCE | S-98-1 | 9,747 | 8,485 | 1,262 | 82 | 84 | -- | -- | 59 | 8 | -- |
| MATURITY CHECK | PIPER | 9,366 | 8,555 | 811 | 78 | 80 | -- | -- | 67 | 25 | -- |
| | Averages | 10,923 | 9,448 | 1,476 | 82 | 84 | -- | -- | 66 | 8 | -- |
| | CV(%) | 6 | 6 | 9 | 2 | 1 | -- | -- | 3 | 77 | -- |
| | LSD(0.05)** | 1,131 | 1,044 | 228 | 2 | 1 | -- | -- | 3 | 11 | -- |
| TEST, OVERALL | | | | | | | | | | | |
| | Averages | 8,166 | -- | -- | 78 | -- | -- | -- | 82 | 20 | -- |
| | LSD(0.05)** | 1,050 | -- | -- | 2 | -- | -- | -- | 6 | 28 | -- |

**Unless two varieties differ by more than the L.S.D., little confidence can be placed in one being superior to the other.

Table 2. Riley Co. Summer Annual Forage Test, Manhattan, 2001.

| BRAND | NAME | Forage Quality (dry matter basis) | | | | | | | |
|-----------------------|----------------------|-----------------------------------|-------|---------|-------|---------|-------|---------|-------|
| | | Protein (%) | | NDF (%) | | ADF (%) | | ADL (%) | |
| | | Cut 1 | Cut 2 | Cut 1 | Cut 2 | Cut 1 | Cut 2 | Cut 1 | Cut 2 |
| FORAGE SORGHUM | | | | | | | | | |
| VALLEY PREMIUM | UDDER BUSTER BMR | 7.1 | -- | 51.5 | -- | 32.2 | -- | 4.9 | -- |
| DEKALB | DKS59-09 | 6.3 | -- | 53.4 | -- | 36.1 | -- | 6.9 | -- |
| GARST | 333 | 6.2 | -- | 58.1 | -- | 37.8 | -- | 6.8 | -- |
| MATURITY CHECK | EARLY SUMAC | 6.2 | -- | 53.5 | -- | 35.9 | -- | 7.5 | -- |
| MATURITY CHECK | ATLAS | 5.9 | -- | 50.9 | -- | 32.5 | -- | 6.3 | -- |
| GARST/AGRIPRO | NO325 | 5.7 | -- | 60.8 | -- | 40.3 | -- | 7.0 | -- |
| GARST/AGRIPRO | NO348BMR | 5.6 | -- | 50.9 | -- | 32.5 | -- | 5.3 | -- |
| DEKALB | FS-5 | 5.5 | -- | 53.0 | -- | 34.6 | -- | 6.7 | -- |
| | Averages | 6.0 | -- | 54.0 | -- | 35.2 | -- | 6.4 | -- |
| | CV(%) | 7.0 | -- | 2.2 | -- | 4.8 | -- | 5.5 | -- |
| | LSD(0.05)** | 0.8 | -- | 2.1 | -- | 3.0 | -- | 0.6 | -- |
| SORGHUM SUDAN | | | | | | | | | |
| SEED RESOURCE | S-98-1 | 12.2 | 12.4 | 61.7 | 60.0 | 38.3 | 38.4 | 7.6 | 6.5 |
| MMR | 352/40 | 11.0 | 11.8 | 64.5 | 62.5 | 42.1 | 42.0 | 8.9 | 6.9 |
| MATURITY CHECK | NB280S | 10.7 | 10.3 | 62.1 | 61.3 | 40.6 | 40.4 | 8.6 | 6.8 |
| MMR | 328/53 BMR | 10.2 | 11.4 | 62.9 | 60.8 | 40.9 | 40.2 | 7.7 | 6.1 |
| MMR | 327/52 BMR | 10.1 | 10.6 | 59.6 | 59.1 | 38.6 | 38.7 | 7.6 | 5.5 |
| VALLEY PREMIUM | SWEET CHIEF X-TRABMR | 9.5 | 10.7 | 60.2 | 59.1 | 40.2 | 38.2 | 8.2 | 5.2 |
| VALLEY PREMIUM | SWEET CHIEF X-TRA | 9.3 | 11.1 | 63.5 | 60.5 | 40.8 | 39.3 | 8.2 | 6.5 |
| MATURITY CHECK | PIPER | 9.2 | 10.9 | 63.4 | 59.5 | 42.0 | 38.4 | 8.7 | 6.7 |
| | Averages | 10.3 | 11.1 | 62.2 | 60.4 | 40.4 | 39.5 | 8.2 | 6.3 |
| | CV(%) | 12.3 | 7.9 | 2.7 | 2.3 | 5.3 | 3.5 | 6.0 | 9.1 |
| | LSD(0.05)** | NS | NS | 2.9 | NS | NS | 2.4 | 0.9 | 1.0 |
| TEST, OVERALL | | | | | | | | | |
| | Averages | 8.2 | -- | 57.1 | -- | 37.8 | -- | 7.3 | -- |
| | LSD(0.05)** | 1.5 | -- | 2.5 | -- | 3.4 | -- | 0.7 | -- |

**Unless two varieties differ by more than the L.S.D., little confidence can be placed in one being superior to the other.

Table 3. Reno Co. Summer Annual Forage Test, Hutchinson, 2001.

| BRAND | NAME | Forage | | | | | Grain Days | | Ht. (in) | Lodg (%) | Stnd (%) |
|-----------------------|----------------------|----------------------|-------|-------|------------|-------|--------------|--------|----------|----------|----------|
| | | Yield (tons DM/acre) | | | Moist. (%) | | yield (bu/a) | to blm | | | |
| | | Total | Cut 1 | Cut 2 | Cut 1 | Cut 2 | | | | | |
| FORAGE SORGHUM | | | | | | | | | | | |
| DEKALB | FS-5 | 10,132 | -- | -- | 67 | -- | 31 | 77 | 68 | -- | 102 |
| WARNER | 2-WAY F-145 | 9,929 | -- | -- | 66 | -- | 10 | 80 | 68 | -- | 122 |
| WARNER | 2-WAY BMR | 8,886 | -- | -- | 66 | -- | 30 | 74 | 68 | -- | 90 |
| MATURITY CHECK | EARLY SUMAC | 8,816 | -- | -- | 65 | -- | 21 | 67 | 72 | -- | 86 |
| DEKALB | DKS59-09 | 8,639 | -- | -- | 65 | -- | 30 | 71 | 44 | -- | 132 |
| VALLEY PREMIUM | UDDER BUSTER BMR | 8,504 | -- | -- | 65 | -- | 19 | 76 | 64 | -- | 87 |
| | Averages | 9,151 | -- | -- | 66 | -- | 23 | 74 | 64 | -- | 103 |
| | CV(%) | 6 | -- | -- | 4 | -- | 15 | 3 | 9 | -- | 6 |
| | LSD(0.05)** | 1,005 | -- | -- | NS | -- | 6 | 4 | 11 | -- | 10 |
| SORGHUM SUDAN | | | | | | | | | | | |
| TRIUMPH | SUPERSWEET 10 | 10,021 | -- | -- | 66 | -- | -- | 63 | 55 | -- | 98 |
| VALLEY PREMIUM | SWEET CHIEF X-TRA | 9,571 | -- | -- | 66 | -- | -- | 61 | 61 | -- | 99 |
| VALLEY PREMIUM | SWEET CHIEF X-TRABMR | 9,202 | -- | -- | 65 | -- | -- | 64 | 57 | -- | 98 |
| MATURITY CHECK | NB280S | 8,943 | -- | -- | 62 | -- | -- | 59 | 58 | -- | 89 |
| SEED RESOURCE | S-98-1 | 7,856 | -- | -- | 66 | -- | -- | 63 | 57 | -- | 85 |
| MATURITY CHECK | PIPER | 7,692 | -- | -- | 50 | -- | -- | 59 | 60 | -- | 88 |
| | Averages | 8,881 | -- | -- | 63 | -- | -- | 62 | 58 | -- | 93 |
| | CV(%) | 10 | -- | -- | 2 | -- | -- | 2 | 5 | -- | 4 |
| | LSD(0.05)** | 1,568 | -- | -- | 3 | -- | -- | 2 | NS | -- | 7 |
| TEST, OVERALL | | | | | | | | | | | |
| | Averages | 9,016 | -- | -- | 64 | -- | -- | 68 | 61 | -- | 98 |
| | LSD(0.05)** | 1,271 | -- | -- | 3 | -- | -- | 3 | 8 | -- | 9 |

Table 4. Reno Co. Summer Annual Forage Test, Hutchinson, 2001.

| BRAND | NAME | Forage Quality (dry matter basis) | | | | | | | |
|-----------------------|----------------------|-----------------------------------|-------|---------|-------|---------|-------|---------|-------|
| | | Protein (%) | | NDF (%) | | ADF (%) | | ADL (%) | |
| | | Cut 1 | Cut 2 | Cut 1 | Cut 2 | Cut 1 | Cut 2 | Cut 1 | Cut 2 |
| FORAGE SORGHUM | | | | | | | | | |
| WARNER | 2-WAY BMR | 6.5 | -- | 51.6 | -- | 32.0 | -- | 4.6 | -- |
| WARNER | 2-WAY F-145 | 6.3 | -- | 54.5 | -- | 33.3 | -- | 5.3 | -- |
| DEKALB | DKS59-09 | 6.2 | -- | 54.6 | -- | 33.5 | -- | 5.0 | -- |
| VALLEY PREMIUM | UDDER BUSTER BMR | 6.0 | -- | 51.7 | -- | 32.4 | -- | 4.4 | -- |
| MATURITY CHECK | EARLY SUMAC | 5.2 | -- | 48.3 | -- | 33.0 | -- | 5.8 | -- |
| DEKALB | FS-5 | 4.8 | -- | 55.6 | -- | 34.4 | -- | 5.7 | -- |
| | Averages | 5.8 | -- | 52.7 | -- | 33.1 | -- | 5.1 | -- |
| | CV(%) | 12.5 | -- | 2.9 | -- | 3.8 | -- | 5.0 | -- |
| | LSD(0.05)** | NS | -- | 2.8 | -- | NS | -- | 0.5 | -- |
| SORGHUM SUDAN | | | | | | | | | |
| SEED RESOURCE | S-98-1 | 10.5 | -- | 56.0 | -- | 29.0 | -- | 4.5 | -- |
| VALLEY PREMIUM | SWEET CHIEF X-TRABMR | 9.0 | -- | 55.8 | -- | 31.2 | -- | 4.5 | -- |
| VALLEY PREMIUM | SWEET CHIEF X-TRA | 7.8 | -- | 57.0 | -- | 33.2 | -- | 5.3 | -- |
| TRIUMPH | SUPERSWEET 10 | 7.5 | -- | 55.1 | -- | 32.1 | -- | 5.0 | -- |
| MATURITY CHECK | PIPER | 7.2 | -- | 61.7 | -- | 37.1 | -- | 6.8 | -- |
| MATURITY CHECK | NB280S | 6.5 | -- | 57.7 | -- | 34.9 | -- | 5.9 | -- |
| | Averages | 8.1 | -- | 57.2 | -- | 32.9 | -- | 5.3 | -- |
| | CV(%) | 12.4 | -- | 1.7 | -- | 3.0 | -- | 7.2 | -- |
| | LSD(0.05)** | 1.8 | -- | 1.7 | -- | 1.8 | -- | 0.7 | -- |
| TEST, OVERALL | | | | | | | | | |
| | Averages | 7.0 | -- | 55.0 | -- | 33.0 | -- | 5.2 | -- |
| | LSD(0.05)** | 1.6 | -- | 2.2 | -- | 2.0 | -- | 0.6 | -- |

**Unless two varieties differ by more than the L.S.D., little confidence can be placed in one being superior to the other.

Table 5. Thomas Co. Irr. Summer Annual Forage Test, Colby, 2001.

| BRAND | NAME | Forage | | | | | Grain Days | | Ht. (in) | Lodg (%) | Stnd (%) |
|-----------------------|----------------------|----------------------|--------|-------|------------|-------|--------------|--------|----------|----------|----------|
| | | Yield (tons DM/acre) | | | Moist. (%) | | yield (bu/a) | to blm | | | |
| | | Total | Cut 1 | Cut 2 | Cut 1 | Cut 2 | | | | | |
| FORAGE SORGHUM | | | | | | | | | | | |
| WARNER | 2-WAY F-145 | 15,536 | -- | -- | 76 | -- | 6 | 98 | 108 | -- | 119 |
| DEKALB | DKS59-09 | 14,471 | -- | -- | 75 | -- | 84 | 78 | 75 | -- | 102 |
| SEED RESOURCE | F00-1 | 14,330 | -- | -- | 68 | -- | 70 | 74 | 84 | -- | 112 |
| AGRIPRO | HIGH ENERGY II | 14,247 | -- | -- | 75 | -- | 3 | 99 | 105 | -- | 106 |
| KAYSTAR | FORARI IV | 14,109 | -- | -- | 76 | -- | 0 | 98 | 107 | -- | 65 |
| BUFFALO | CANEX BMR208 | 13,956 | -- | -- | 70 | -- | 52 | 76 | 90 | -- | 88 |
| MATURITY CHECK | EARLY SUMAC | 13,887 | -- | -- | 71 | -- | 47 | 73 | 91 | -- | 74 |
| SEED RESOURCE | F-97-1 | 13,824 | -- | -- | 74 | -- | 54 | 83 | 97 | -- | 82 |
| SEED RESOURCE | F00-2 | 13,707 | -- | -- | 74 | -- | 55 | 79 | 95 | -- | 107 |
| DEKALB | FS-5 | 13,119 | -- | -- | 75 | -- | 35 | 82 | 103 | -- | 82 |
| MMR | 327/36 BMR | 13,114 | -- | -- | 78 | -- | 0 | 106 | 107 | -- | 82 |
| GARST/AGRIPRO | NO325 | 13,033 | -- | -- | 78 | -- | 0 | 101 | 81 | -- | 94 |
| BUFFALO | CANEX | 12,904 | -- | -- | 73 | -- | 39 | 76 | 99 | -- | 94 |
| SEED RESOURCE | F00-3 | 12,796 | -- | -- | 73 | -- | 25 | 88 | 93 | -- | 42 |
| BUFFALO | CANEX BMR310 | 12,071 | -- | -- | 72 | -- | 41 | 77 | 87 | -- | 100 |
| BUFFALO | CANEX II | 11,879 | -- | -- | 72 | -- | 29 | 78 | 97 | -- | 107 |
| MMR | 327/23 BMR | 11,872 | -- | -- | 77 | -- | 28 | 86 | 99 | -- | 68 |
| MATURITY CHECK | ATLAS | 11,687 | -- | -- | 76 | -- | 18 | 89 | 103 | -- | 59 |
| GARST/AGRIPRO | NO348BMR | 11,682 | -- | -- | 75 | -- | 20 | 85 | 105 | -- | 76 |
| MMR | 327/35 BMR | 11,402 | -- | -- | 75 | -- | 34 | 85 | 92 | -- | 82 |
| VALLEY PREMIUM | UDDER BUSTER BMR | 10,751 | -- | -- | 75 | -- | 34 | 86 | 101 | -- | 65 |
| WARNER | 2-WAY BMR | 10,641 | -- | -- | 74 | -- | 23 | 86 | 97 | -- | 75 |
| | Averages | 12,955 | -- | -- | 74 | -- | 32 | 86 | 96 | -- | 85 |
| | CV(%) | 7 | -- | -- | 3 | -- | 33 | 2 | 6 | -- | 20 |
| | LSD(0.05)** | 1,460 | -- | -- | 4 | -- | 17 | 2 | 9 | -- | 29 |
| SORGHUM SUDAN | | | | | | | | | | | |
| BUFFALO | GRAZEX IIW | 14,565 | 11,599 | 2,966 | 70 | 68 | -- | 72 | 103 | -- | -- |
| BUFFALO | GRAZEX BMR727 | 13,870 | 11,436 | 2,434 | 74 | 59 | -- | 80 | 93 | -- | -- |
| BUFFALO | GRAZEX II | 13,641 | 11,094 | 2,547 | 71 | 63 | -- | 75 | 103 | -- | -- |
| VALLEY PREMIUM | SWEET CHIEF X-TRA | 13,604 | 11,457 | 2,147 | 73 | 62 | -- | 71 | 89 | -- | -- |
| MMR | 352/40 | 13,337 | 11,350 | 1,987 | 76 | 57 | -- | 88 | 95 | -- | -- |
| TRIUMPH | SUPERSWEET 10 | 13,308 | 10,074 | 3,233 | 75 | 68 | -- | 73 | 90 | -- | -- |
| VALLEY PREMIUM | SWEET CHIEF X-TRABMR | 12,921 | 11,045 | 1,876 | 75 | 65 | -- | 78 | 93 | -- | -- |
| MMR | 327/52 BMR | 12,753 | 10,411 | 2,342 | 73 | 65 | -- | 79 | 91 | -- | -- |
| BUFFALO | GRAZEX BMR720 | 12,645 | 10,291 | 2,355 | 75 | 65 | -- | 74 | 93 | -- | -- |
| SEED RESOURCE | S-98-1 | 12,619 | 10,306 | 2,313 | 75 | 59 | -- | 79 | 91 | -- | -- |
| MATURITY CHECK | NB280S | 12,530 | 10,180 | 2,351 | 74 | 64 | -- | 69 | 96 | -- | -- |
| MATURITY CHECK | PIPER | 12,150 | 9,487 | 2,663 | 67 | 57 | -- | 71 | 94 | -- | -- |
| BUFFALO | CANEX BMR702 | 11,660 | 10,071 | 1,589 | 76 | 49 | -- | 80 | 83 | -- | -- |
| MMR | 328/53 BMR | 11,507 | 9,347 | 2,160 | 75 | 60 | -- | 86 | 90 | -- | -- |
| | Averages | 12,936 | 10,582 | 2,355 | 73 | 62 | -- | 77 | 93 | -- | -- |
| | CV(%) | 8 | 8 | 24 | 2 | 10 | -- | 3 | 4 | -- | -- |
| | LSD(0.05)** | 1,634 | 1,453 | NS | 3 | 10 | -- | 4 | 6 | -- | -- |
| TEST, OVERALL | | | | | | | | | | | |
| | Averages | 12,948 | -- | -- | 74 | -- | -- | 82 | 95 | -- | -- |
| | LSD(0.05)** | 1,541 | -- | -- | 3 | -- | -- | 3 | 8 | -- | -- |

**Unless two varieties differ by more than the L.S.D., little confidence can be placed in one being superior to the other.

Table 6. Thomas Co. Irr. Summer Annual Forage Test, Colby, 2001.

| BRAND | NAME | Forage Quality (dry matter basis) | | | | | | | |
|-----------------------|----------------------|-----------------------------------|-------|---------|-------|---------|-------|---------|-------|
| | | Protein (%) | | NDF (%) | | ADF (%) | | ADL (%) | |
| | | Cut 1 | Cut 2 | Cut 1 | Cut 2 | Cut 1 | Cut 2 | Cut 1 | Cut 2 |
| FORAGE SORGHUM | | | | | | | | | |
| MMR | 327/35 BMR | 6.4 | -- | 53.6 | -- | 35.5 | -- | 6.4 | -- |
| BUFFALO | CANEX BMR208 | 6.0 | -- | 48.5 | -- | 31.1 | -- | 5.7 | -- |
| MMR | 327/36 BMR | 6.0 | -- | 56.3 | -- | 37.0 | -- | 5.8 | -- |
| DEKALB | DKS59-09 | 5.9 | -- | 45.1 | -- | 31.0 | -- | 6.1 | -- |
| GARST/AGRIPRO | NO348BMR | 5.9 | -- | 50.9 | -- | 33.5 | -- | 5.7 | -- |
| SEED RESOURCE | F00-3 | 5.9 | -- | 52.1 | -- | 32.6 | -- | 5.2 | -- |
| MATURITY CHECK | EARLY SUMAC | 5.8 | -- | 45.6 | -- | 29.0 | -- | 6.5 | -- |
| SEED RESOURCE | F00-1 | 5.8 | -- | 46.9 | -- | 32.4 | -- | 6.9 | -- |
| SEED RESOURCE | F-97-1 | 5.7 | -- | 54.5 | -- | 36.6 | -- | 6.5 | -- |
| WARNER | 2-WAY BMR | 5.7 | -- | 49.3 | -- | 31.6 | -- | 5.1 | -- |
| MMR | 327/23 BMR | 5.4 | -- | 49.6 | -- | 32.2 | -- | 5.3 | -- |
| BUFFALO | CANEX | 5.4 | -- | 48.3 | -- | 31.3 | -- | 6.4 | -- |
| SEED RESOURCE | F00-2 | 5.4 | -- | 48.9 | -- | 32.4 | -- | 6.7 | -- |
| VALLEY PREMIUM | UDDER BUSTER BMR | 5.4 | -- | 49.6 | -- | 32.0 | -- | 5.4 | -- |
| BUFFALO | CANEX II | 5.1 | -- | 49.7 | -- | 33.4 | -- | 6.2 | -- |
| BUFFALO | CANEX BMR310 | 5.1 | -- | 50.3 | -- | 31.4 | -- | 5.3 | -- |
| WARNER | 2-WAY F-145 | 5.0 | -- | 59.7 | -- | 40.0 | -- | 7.7 | -- |
| GARST/AGRIPRO | NO325 | 4.8 | -- | 61.1 | -- | 40.4 | -- | 7.6 | -- |
| AGRIPRO | HIGH ENERGY II | 4.8 | -- | 58.6 | -- | 38.1 | -- | 6.9 | -- |
| MATURITY CHECK | ATLAS | 4.7 | -- | 52.0 | -- | 33.8 | -- | 6.1 | -- |
| DEKALB | FS-5 | 4.7 | -- | 52.6 | -- | 35.6 | -- | 7.1 | -- |
| KAYSTAR | FORARI IV | 4.2 | -- | 60.6 | -- | 40.9 | -- | 8.0 | -- |
| | Averages | 5.4 | -- | 52.0 | -- | 34.2 | -- | 6.3 | -- |
| | CV(%) | 12.6 | -- | 6.2 | -- | 7.5 | -- | 8.7 | -- |
| | LSD(0.05)** | 1.1 | -- | 5.3 | -- | 4.2 | -- | 0.9 | -- |
| SORGHUM SUDAN | | | | | | | | | |
| MMR | 327/52 BMR | 6.2 | 8.4 | 58.5 | 62.8 | 37.1 | 34.7 | 5.8 | 4.7 |
| MMR | 352/40 | 6.1 | 7.2 | 61.0 | 65.6 | 40.2 | 36.6 | 7.5 | 5.6 |
| BUFFALO | GRAZEX BMR720 | 5.9 | 7.1 | 57.4 | 63.8 | 36.6 | 36.0 | 6.1 | 5.1 |
| MMR | 328/53 BMR | 5.9 | 8.0 | 59.6 | 64.5 | 38.0 | 35.7 | 5.8 | 4.9 |
| BUFFALO | GRAZEX BMR727 | 5.8 | 7.9 | 58.3 | 63.6 | 37.5 | 35.2 | 6.5 | 5.3 |
| SEED RESOURCE | S-98-1 | 5.8 | 7.9 | 57.7 | 64.1 | 37.3 | 35.8 | 6.2 | 5.3 |
| BUFFALO | CANEX BMR702 | 5.6 | 8.7 | 57.5 | 63.4 | 35.6 | 33.3 | 5.4 | 4.4 |
| VALLEY PREMIUM | SWEET CHIEF X-TRABMR | 5.5 | 6.7 | 58.1 | 63.8 | 37.2 | 35.0 | 6.1 | 4.6 |
| MATURITY CHECK | NB280S | 5.4 | 6.3 | 56.7 | 64.9 | 37.7 | 37.3 | 7.8 | 5.8 |
| TRIUMPH | SUPERSWEET 10 | 5.2 | 8.5 | 58.2 | 62.7 | 38.1 | 35.1 | 7.0 | 5.5 |
| VALLEY PREMIUM | SWEET CHIEF X-TRA | 5.2 | 7.3 | 57.9 | 64.8 | 38.2 | 36.7 | 6.8 | 5.7 |
| BUFFALO | GRAZEX IIW | 5.2 | 6.9 | 61.3 | 64.4 | 40.3 | 37.8 | 7.4 | 6.2 |
| BUFFALO | GRAZEX II | 5.0 | 6.8 | 62.1 | 64.6 | 41.4 | 37.7 | 7.8 | 6.0 |
| MATURITY CHECK | PIPER | 3.3 | 6.9 | 65.0 | 64.8 | 43.6 | 37.3 | 8.8 | 6.3 |
| | Averages | 5.4 | 7.5 | 59.2 | 64.1 | 38.5 | 36.0 | 6.8 | 5.4 |
| | CV(%) | 16.2 | 10.9 | 2.9 | 1.6 | 3.4 | 2.2 | 6.5 | 5.0 |
| | LSD(0.05)** | 1.5 | 1.4 | 2.9 | 1.7 | 2.2 | 1.3 | 0.7 | 0.5 |
| TEST, OVERALL | | | | | | | | | |
| | Averages | 5.4 | -- | 54.8 | -- | 35.9 | -- | 6.5 | -- |
| | LSD(0.05)** | 1.3 | -- | 4.1 | -- | 3.2 | -- | 0.8 | -- |

**Unless two varieties differ by more than the L.S.D., little confidence can be placed in one being superior to the other.

Table 7. Thomas Co. Irr. Summer Annual Forage Test, Colby, 2 - Year Averages.

| BRAND | NAME | Forage | | | | | Grain Days | | Ht. (in) | Lodg (%) | Stnd (%) |
|-----------------------|---------------|----------------------|--------|-------|------------|-------|--------------|--------|----------|----------|----------|
| | | Yield (tons DM/acre) | | | Moist. (%) | | yield (bu/a) | to blm | | | |
| | | Total | Cut 1 | Cut 2 | Cut 1 | Cut 2 | | | | | |
| FORAGE SORGHUM | | | | | | | | | | | |
| MATURITY CHECK | EARLY SUMAC | 11,582 | -- | -- | 73 | -- | 45 | 75 | 91 | 7 | 70 |
| BUFFALO | CANEX BMR208 | 10,911 | -- | -- | 71 | -- | 48 | 76 | 93 | 8 | 89 |
| BUFFALO | CANEX II | 9,860 | -- | -- | 73 | -- | 39 | 77 | 100 | 3 | 97 |
| BUFFALO | CANEX | 9,777 | -- | -- | 73 | -- | 40 | 76 | 98 | 0 | 81 |
| MATURITY CHECK | ATLAS | 9,682 | -- | -- | 76 | -- | 24 | 87 | 101 | 0 | 59 |
| | Averages | 10,064 | -- | -- | 75 | -- | 38 | 82 | 97 | 10 | 82 |
| SORGHUM SUDAN | | | | | | | | | | | |
| BUFFALO | GRAZEX IIW | 13,039 | 10,064 | 2,976 | 76 | 72 | -- | 72 | 93 | -- | -- |
| BUFFALO | GRAZEX II | 12,096 | 9,580 | 2,517 | 77 | 70 | -- | 75 | 90 | -- | -- |
| TRIUMPH | SUPERSWEET 10 | 11,973 | 8,934 | 3,038 | 80 | 73 | -- | 73 | 82 | -- | -- |
| MATURITY CHECK | PIPER | 11,527 | 8,246 | 3,282 | 75 | 66 | -- | 71 | 94 | -- | -- |
| BUFFALO | GRAZEX BMR727 | 11,388 | 9,310 | 2,078 | 79 | 66 | -- | 80 | 83 | -- | -- |
| MMR | 327/52 BMR | 11,128 | 9,133 | 1,995 | 78 | 70 | -- | 79 | 85 | -- | -- |
| MATURITY CHECK | NB280S | 10,680 | 8,589 | 2,091 | 78 | 70 | -- | 69 | 90 | -- | -- |
| | Averages | 11,263 | 8,969 | 2,294 | 79 | 69 | -- | 77 | 85 | -- | -- |
| TEST, OVERALL | | | | | | | | | | | |
| | Averages | 10,578 | -- | -- | 76 | -- | 49 | 81 | 91 | 7 | 83 |

Table 8. Thomas Co. Irr. Summer Annual Forage Test, Colby, 2 - Year Averages.

| BRAND | NAME | Forage Quality (dry matter basis) | | | | | | | |
|-----------------------|---------------|-----------------------------------|-------|---------|-------|---------|-------|---------|-------|
| | | Protein (%) | | NDF (%) | | ADF (%) | | ADL (%) | |
| | | Cut 1 | Cut 2 | Cut 1 | Cut 2 | Cut 1 | Cut 2 | Cut 1 | Cut 2 |
| FORAGE SORGHUM | | | | | | | | | |
| MATURITY CHECK | EARLY SUMAC | 6.0 | -- | 50.4 | -- | 33.1 | -- | 6.5 | -- |
| BUFFALO | CANEX BMR208 | 5.7 | -- | 53.3 | -- | 34.2 | -- | 5.7 | -- |
| MATURITY CHECK | ATLAS | 5.4 | -- | 54.0 | -- | 33.3 | -- | 6.1 | -- |
| BUFFALO | CANEX II | 5.4 | -- | 51.5 | -- | 35.2 | -- | 6.2 | -- |
| BUFFALO | CANEX | 5.4 | -- | 48.9 | -- | 31.3 | -- | 6.4 | -- |
| | Averages | 5.6 | -- | 54.7 | -- | 36.0 | -- | 6.3 | -- |
| SORGHUM SUDAN | | | | | | | | | |
| BUFFALO | GRAZEX BMR727 | 6.9 | 8.4 | 59.0 | 51.6 | 37.6 | 50.4 | 6.5 | 5.3 |
| MMR | 327/52 BMR | 6.6 | 8.9 | 58.9 | 51.0 | 35.5 | 49.4 | 5.8 | 4.7 |
| BUFFALO | GRAZEX II | 6.5 | 7.8 | 63.2 | 51.7 | 44.0 | 51.1 | 7.8 | 6.0 |
| TRIUMPH | SUPERSWEET 10 | 6.5 | 8.5 | 60.7 | 50.2 | 40.4 | 49.4 | 7.0 | 5.5 |
| MATURITY CHECK | NB280S | 6.5 | 7.5 | 59.7 | 52.0 | 39.7 | 50.5 | 7.8 | 5.8 |
| BUFFALO | GRAZEX IIW | 6.4 | 7.3 | 62.6 | 51.3 | 41.7 | 51.1 | 7.4 | 6.2 |
| MATURITY CHECK | PIPER | 5.7 | 8.5 | 66.0 | 51.6 | 43.7 | 51.2 | 8.8 | 6.3 |
| | Averages | 6.7 | 8.2 | 60.6 | 51.2 | 39.5 | 50.2 | 6.8 | 5.4 |
| TEST, OVERALL | | | | | | | | | |
| | Averages | 6.1 | -- | 56.6 | -- | 36.6 | -- | 6.5 | -- |

Table 9. 2001, Summer Annual Forages, 3 - Location Averages.

| BRAND | NAME | Forage | | | | | Grain Days | | Ht. (in) | Lodg (%) | Stnd (%) |
|-----------------------|----------------------|----------------------|--------|-------|------------|-------|--------------|--------|----------|----------|----------|
| | | Yield (tons DM/acre) | | | Moist. (%) | | yield (bu/a) | to blm | | | |
| | | Total | Cut 1 | Cut 2 | Cut 1 | Cut 2 | | | | | |
| FORAGE SORGHUM | | | | | | | | | | | |
| DEKALB | FS-5 | 10,023 | -- | -- | 71 | -- | 46 | 75 | 92 | 15 | 92 |
| DEKALB | DKS59-09 | 9,787 | -- | -- | 72 | -- | 67 | 72 | 65 | 0 | 117 |
| MATURITY CHECK | EARLY SUMAC | 8,599 | -- | -- | 70 | -- | 47 | 68 | 85 | 70 | 80 |
| VALLEY PREMIUM | UDDER BUSTER BMR | 8,059 | -- | -- | 72 | -- | 29 | 80 | 89 | 45 | 76 |
| | Averages | 9,172 | -- | -- | 72 | -- | 33 | 79 | 86 | 31 | 94 |
| SORGHUM SUDAN | | | | | | | | | | | |
| VALLEY PREMIUM | SWEET CHIEF X-TRA | 11,790 | 10,680 | 2,220 | 73 | 73 | -- | 66 | 73 | 2 | 99 |
| MATURITY CHECK | NB280S | 11,280 | 10,257 | 2,192 | 72 | 74 | -- | 64 | 73 | 25 | 89 |
| VALLEY PREMIUM | SWEET CHIEF X-TRABMR | 10,890 | 10,162 | 1,572 | 74 | 75 | -- | 71 | 72 | 2 | 98 |
| SEED RESOURCE | S-98-1 | 10,074 | 9,396 | 1,787 | 74 | 72 | -- | 71 | 69 | 8 | 85 |
| MATURITY CHECK | PIPER | 9,736 | 9,021 | 1,737 | 65 | 68 | -- | 65 | 74 | 25 | 88 |
| | Averages | 10,913 | 10,015 | 1,915 | 72 | 73 | -- | 69 | 72 | 8 | 93 |
| TEST, OVERALL | | | | | | | | | | | |
| | Averages | 10,043 | -- | -- | 72 | -- | -- | 75 | 79 | 20 | 98 |

Table 10. Summer Annual Forages, 3 - Location Averages.

| BRAND | NAME | Forage Quality (dry matter basis) | | | | | | | |
|-----------------------|----------------------|-----------------------------------|-------|---------|-------|---------|-------|---------|-------|
| | | Protein (%) | | NDF (%) | | ADF (%) | | ADL (%) | |
| | | Cut 1 | Cut 2 | Cut 1 | Cut 2 | Cut 1 | Cut 2 | Cut 1 | Cut 2 |
| FORAGE SORGHUM | | | | | | | | | |
| DEKALB | DKS59-09 | 6.1 | -- | 51.0 | -- | 33.5 | -- | 6.0 | -- |
| VALLEY PREMIUM | UDDER BUSTER BMR | 6.1 | -- | 50.9 | -- | 32.2 | -- | 4.9 | -- |
| MATURITY CHECK | EARLY SUMAC | 5.7 | -- | 49.1 | -- | 32.6 | -- | 6.6 | -- |
| DEKALB | FS-5 | 5.0 | -- | 53.7 | -- | 34.9 | -- | 6.5 | -- |
| | Averages | 5.8 | -- | 52.9 | -- | 34.2 | -- | 5.9 | -- |
| SORGHUM SUDAN | | | | | | | | | |
| SEED RESOURCE | S-98-1 | 9.5 | 10.1 | 58.5 | 62.1 | 34.9 | 37.1 | 6.1 | 5.9 |
| VALLEY PREMIUM | SWEET CHIEF X-TRABMR | 8.0 | 8.7 | 58.0 | 61.5 | 36.2 | 36.6 | 6.3 | 4.9 |
| MATURITY CHECK | NB280S | 7.5 | 8.3 | 58.8 | 63.1 | 37.7 | 38.9 | 7.4 | 6.3 |
| VALLEY PREMIUM | SWEET CHIEF X-TRA | 7.4 | 9.2 | 59.5 | 62.6 | 37.4 | 38.0 | 6.8 | 6.1 |
| MATURITY CHECK | PIPER | 6.6 | 8.9 | 63.4 | 62.2 | 40.9 | 37.9 | 8.1 | 6.5 |
| | Averages | 7.9 | 9.3 | 59.6 | 62.2 | 37.3 | 37.7 | 6.8 | 5.8 |
| TEST, OVERALL | | | | | | | | | |
| | Averages | 6.8 | -- | 55.6 | -- | 35.6 | -- | 6.3 | -- |

APPENDIX: Entrants in the 2001 Kansas Summer Annual Forage Performance Tests.

| Brand/Company/Address | | | Brand/Company/Address | | |
|---------------------------|--------|----------|---------------------------|--------|----------|
| Crop - Hybrid | Traits | Maturity | Crop - Hybrid | Traits | Maturity |
| DEKALB | | | MMR | | |
| Monsanto Seed | | | MMR Genetics LLC | | |
| 7159 n 247th West | | | PO Box 60 | | |
| PO Box 7 | | | Vega, TX 79092 | | |
| Mt. Hope, KS 67108 | | | 806-267-2379 | | |
| 316-445-2290 | | | FS - 327/23 BMR | | |
| farmsource.com | | | FS - 327/35 BMR | | |
| FS - DKS59-09 | -- | M | FS - 327/36 BMR | | |
| FS - FS-5 | -- | M | SS - 327/52 BMR | | |
| BUFFALO | | | SS - 328/53 BMR | | |
| Sharp Bros Seed Company | | | SS - 352/40 | | |
| Box 140 | | | SEED RESOURCE | | |
| Healy, KS 67850 | | | Seed Resource | | |
| 316-398-2231 | | | P.O. Box 326 | | |
| sharpseed.com | | | 505 East Service Rd. | | |
| FS - CANEX | -- | E | Tulia, TX 79088 | | |
| FS - CANEX BMR208 | BMR | E | 806-995-3882 | | |
| FS - CANEX BMR310 | BMR | E | FS - F00-1 | | |
| FS - CANEX II | -- | E | FS - F00-2 | | |
| SS - CANEX BMR702 | BMR | E | FS - F00-3 | | |
| SS - GRAZEX BMR720 | BMR | E | FS - F-97-1 | | |
| SS - GRAZEX BMR727 | BMR | E | SS - S-98-1 | | |
| SS - GRAZEX II | -- | E | TRIUMPH | | |
| SS - GRAZEX IIW | -- | E | Triumph Seed Co Inc | | |
| GARST | | | PO Box 1050 | | |
| Garst and AgriPro Seed Co | | | Hwy 62 Bypass | | |
| 615 Main St. PO Box 300 | | | Ralls, TX 79357 | | |
| Coon Rapids, IA 50058 | | | 800-530-4789 | | |
| 800-831-1850 | | | triumphseed.com | | |
| garstseed.com | | | SS - SUPERSWEET 10 | | |
| FS - 333 | -- | L | VALLEY PREMIUM | | |
| FS - HIGH ENERGY II | -- | L | Valley Feed & Seed Inc | | |
| FS - NO325 | -- | M | 1903 S Meridian | | |
| FS - NO348BMR | BMR | L | Wichita, KS 67213 | | |
| KAYSTAR | | | 316-942-2278 | | |
| Kaystar Seed | | | FS - UDDER BUSTER BMR | | |
| 40329 US Hwy 14E | | | SS - SWEET CHIEF X-TRA | | |
| PO Box 947 | | | SS - SWEET CHIEF X-TRABMR | | |
| Huron, SD 57350 | | | BMR | | |
| 605-352-8791 | | | ME | | |
| kaystarseed.com | | | ME | | |
| FS - FORARI IV | -- | M | WARNER | | |
| WARNER | | | Warner Seeds, Inc. | | |
| Kaystar Seed | | | Box 1877 | | |
| 40329 US Hwy 14E | | | Hereford, TX 79045 | | |
| PO Box 947 | | | 806-364-4470 | | |
| Huron, SD 57350 | | | FS - 2-WAY BMR | | |
| 605-352-8791 | | | FS - 2-WAY F-145 | | |
| kaystarseed.com | | | BMR | | |
| FS - FORARI IV | -- | M | -- | | |
| | | | ML | | |

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