

2001

KANSAS PERFORMANCE TESTS WITH

ALFALFA

VARIETIES

REPORT OF PROGRESS 887

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service

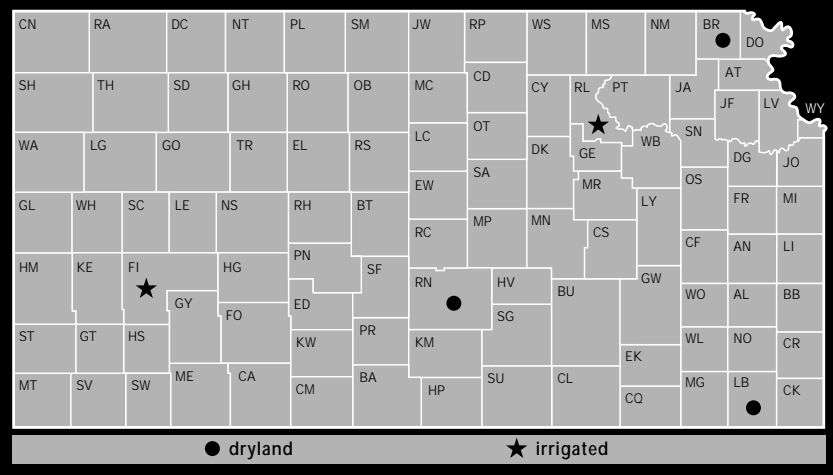


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2001 KANSAS ALFALFA PERFORMANCE TESTS

INTRODUCTION

TEST OBJECTIVES AND PROCEDURES

The Kansas Agricultural Experiment Station established an official alfalfa performance testing program in 1980 to provide Kansas growers with unbiased performance comparisons on alfalfa varieties marketed in the state. Each year, private companies are asked to enter varieties voluntarily at the locations slated for establishment that year. Announcements and entry forms are mailed to private companies in June for entry in fall-seeded tests. Companies enter varieties of their choice and pay entry fees to cover part of the costs of conducting the tests. Most tests are planted in mid-August or September; however, the Southeast Kansas test usually is planted in the spring. Individual tests are conducted for a minimum of 3 years. New tests typically are established during the final production year of the previous test.

The Manhattan test was established as a "no insecticide" test to evaluate variety differences in resistance and/or tolerance to infestations of insect pests such as alfalfa weevil and potato leafhopper. The susceptible check variety, Ranger, was included as a basis for comparison. Other tests are treated with insecticide to control weevils, armyworms, or other pests that might decimate the crop, but rarely for leafhoppers.

Descriptive information is presented with the results for each test. This information, including soil type, establishment methods, fertilization, pest control, irrigation, harvest dates, and growing conditions unique to that location, can help explain test and/or variety performance.

FORAGE YIELDS were estimated by harvesting four replications of each variety with a plot harvester. The amount of forage produced from a specific area (35-80 ft²) was weighed, and a subsample was taken to determine moisture content. This information was used to convert the plot weights to tons of dry matter per acre for each cutting, the season total, and the total for each previous season as presented in Tables 1-6.

The forage yield over the lifetime of a particular test is presented as the total tons of dry matter produced per acre, as the total tons of 15% moisture hay, and as a percentage of the test average.

Each table is separated into three sections. The first lists released cultivars that are generally available on the seed market or soon will be. The second section includes experimental cultivars that were entered in the test before being released for sale. These experimental lines often represent an earlier generation of seed than that used for the released cultivars. The third section includes summary statistics unique to that test.

At the bottom of each column, the Least Significant Difference (LSD) is listed at the 0.05 and 0.20 levels. These values indicate how large a difference is needed to be confident that one variety is superior to another. Differences between varieties that are equal to or greater than the 0.05 LSD have only a 1 in 20 chance of being due to chance or error. Differences equal to or greater than the 0.20 LSD have a 1 in 5 chance of being caused by chance or error.

The Coefficient of Variability (CV) provides an estimate of the consistency of the results of a particular test. In these tests, CV's below 10% generally indicate reliable, uniform data, whereas CV's of 10-15% are not uncommon and generally indicate that the data are acceptable for rough comparisons. Tests with CV's over 15% may still be useful, but variety comparisons lack precision.

The Mean Coefficient of Variability (MCV) is similar to the CV in that it serves as an indicator of test precision. The MCV is calculated by dividing the 0.05 LSD by the test mean (average) and multiplying by 100. The MCV reveals the percent difference required to detect differences between varieties with 95% confidence. Many alfalfa breeders and testers agree that tests with MCV values greater than 10% are of little benefit.

2001 STATEWIDE GROWING CONDITIONS

The 2001 season was similar to last year, with an extended period of hot, dry weather (Figures 1 and 2). The primary difference was that this stressful period occurred in July and August in 2001 rather than in August and September as it did in 2000. The first two harvests were delayed slightly by heavy rains in some areas, but were still relatively early compared to the 5-year average (Figure 3). The third and fourth harvests lagged behind last year's, following the 5-year average more closely. (From Crop-Weather reports, Kansas Agricultural Statistics, Topeka).

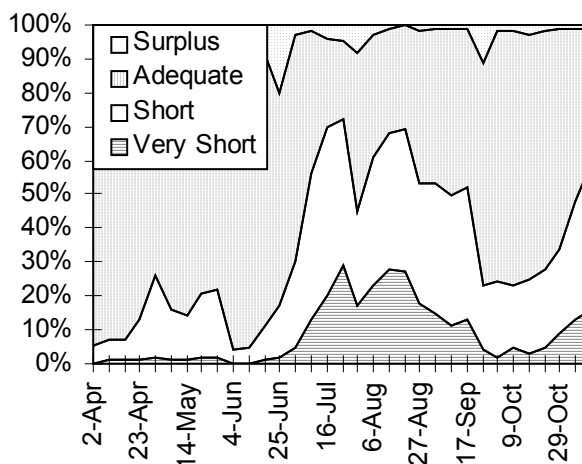


Figure 2. Status of statewide topsoil moisture.

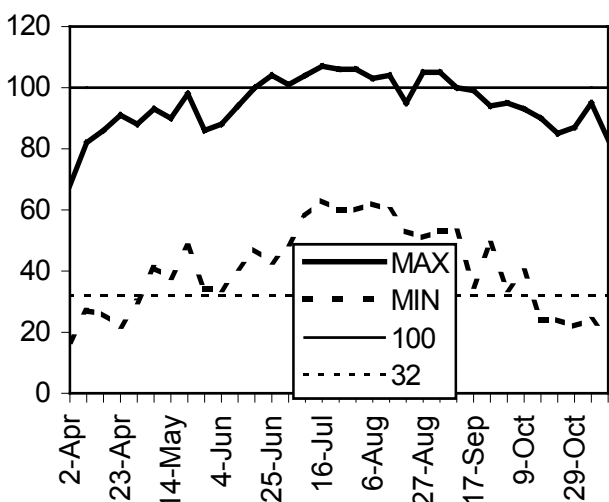


Figure 1. 2001 Kansas weekly maximum and minimum temperatures.

Statewide average yields dropped, but total alfalfa hay production increased compared to last year. The November 9 Kansas Agricultural Statistics report predicted a 0.1 ton per acre decrease in average yield from 4.1 tons per acre in 2000 to 4.0 tons per acre in 2001. Total alfalfa acreage harvested in 2001 was up by 50,000 acres from that in 2000 to 950,000 acres. The higher harvested acreage resulted in an increase in total alfalfa hay production from 3.7 million tons in 2000 to 3.8 million tons in 2001.

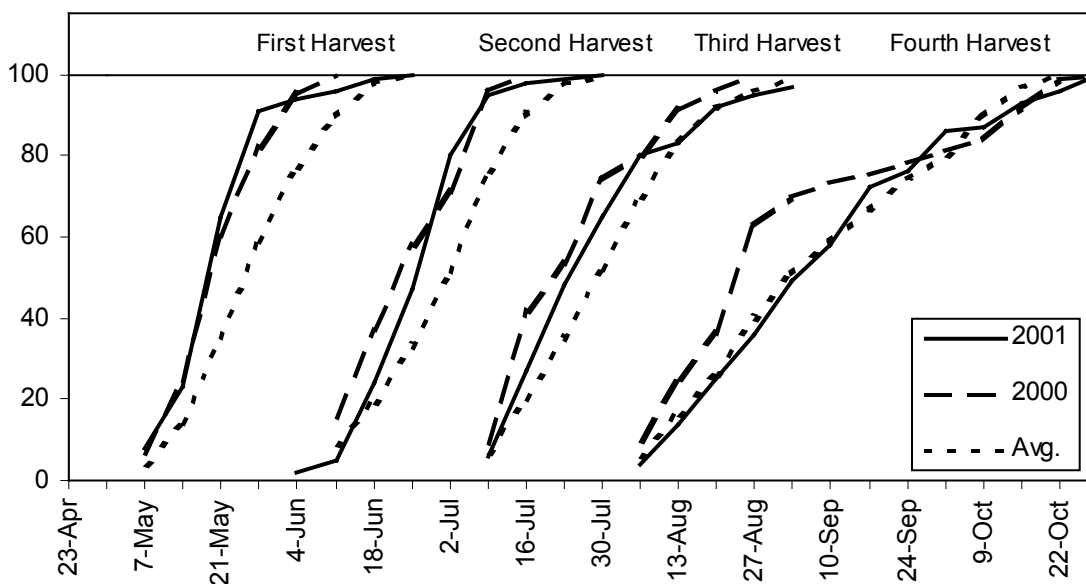


Figure 3. Progress of statewide alfalfa harvest.

A wide range of insect pests was found in alfalfa fields in 2001. Alfalfa weevils appeared in early April in southeast and south central fields. Most fields in southern Kansas had been sprayed for this pest by the end of April. By early May, reports of weevils had been received from most of the state. Beet armyworm and variegated cutworm moths were trapped from late April to early June. However, few fields were treated for these pests. Large numbers of beet armyworm larvae were found in some fields later in the season. Garden webworm populations increased rapidly in mid to late summer. A number of fields in south central, southeast, and eastern Kansas required treatment. Several fields in eastern Kansas sustained severe damage from this pest. Garden webworm populations remained high, sometimes causing problems in new seedings of alfalfa in September. Spotted alfalfa aphid appeared in some fields in August. Large numbers of grasshoppers, both differential and two-striped, damaged field margins beginning in July and continuing through August. (From Cooperative Economic Insect Survey reports, Kansas Department of Agriculture and Kansas Insect Newsletter, KSU Extension Entomology).

Diseases appeared to cause fewer problems for the 2001 alfalfa crop than in typical years. As usual, spring black stem was present early in the season. In mid-June the plant diagnostic clinic received several samples of seedling alfalfa with phytophthora root rot. Symptoms included stunting, wilting, yellowing, and purpling of the foliage. Heavy rains in many parts of Kansas in early June were ideal for infection by the free-swimming zoospores of this fungus. (From Plant Disease Survey Reports, Kansas Department of Agriculture and Plant Disease Alerts, KSU Department of Plant Pathology).

VARIETY CHARACTERIZATION

For variety selection, producers should consider the performance of a variety in each of the current tests where it appears, its performance over time and locations relative to familiar or check varieties, and the disease and insect resistance characteristics that are potentially important in their situation.

Tables 1-5 contain updated yield data from individual tests currently in progress. First-season yields for a spring-planted test are often more variable than yields in subsequent years. Season totals are important, but yield distribution during the season may vary among varieties. Examine yields from individual cuttings to determine if differences in yield distribution exist. Yield totals over many years provide the best measure of variety performance over time.

The appendices provide additional descriptive and contact information. Appendix 1 contains fall dormancy, disease resistance, and insect resistance ratings. These ratings were obtained primarily from the annual 'Fall Dormancy & Pest Resistance Ratings for Alfalfa Varieties' pamphlet published by the Alfalfa Council. That report summarizes information submitted by developers of alfalfa varieties as part of the variety registration process. The Association of Official Seed Certifying Agencies (AOSCA) National Alfalfa Variety Review Board (NAVRB) reviewed the ratings before they were published. Companies submitting varieties for the tests provided ratings for some unregistered varieties. Appendix 2 contains marketing contacts for released varieties included in the 2001 Kansas Alfalfa Performance Tests.

Fall dormancy values are based on the fall canopy height measured in Minnesota. Dormancy values generally are related to the speed of regrowth. The rapid regrowth types have higher values, and the slower regrowth types have lower values.

Table 1. Northeast Kansas, Powhattan Alfalfa Performance Test, Seeded August 1998.

NAME	Forage Yield							00-01 Total, 15% Moist.	00-01 Total, % of Mean
	tons/acre								
	Dry Matter					2000 Total	00-01 Total		
	5-23	6-27	7-30	9-5	Total				
RELEASED CULTIVARS									
DK 141	2.43	1.60	1.47	1.35	6.85	4.04	10.89	12.81	105
WL 232 HQ	2.30	1.71	1.44	1.22	6.68	3.98	10.66	12.54	103
WL 325 HQ	2.21	1.65	1.51	1.31	6.67	3.94	10.61	12.48	102
Dagger+EV	2.30	1.62	1.33	1.30	6.55	4.05	10.60	12.47	102
Pioneer 53V08	2.29	1.70	1.38	1.36	6.73	3.84	10.57	12.44	102
Magnum V	2.42	1.64	1.51	1.22	6.79	3.74	10.53	12.39	102
TMF 4464	2.28	1.75	1.46	1.28	6.77	3.75	10.52	12.38	101
Geneva	2.23	1.57	1.39	1.26	6.44	4.03	10.47	12.32	101
Pioneer 54H55	2.33	1.56	1.33	1.20	6.42	4.01	10.43	12.27	101
ABT350	2.20	1.75	1.49	1.30	6.74	3.67	10.41	12.25	100
Yielder	2.05	1.70	1.55	1.28	6.58	3.78	10.36	12.19	100
Amerigraze 401+Z	2.27	1.68	1.40	1.31	6.66	3.69	10.35	12.18	100
DK 142	2.33	1.54	1.34	1.29	6.49	3.85	10.34	12.16	100
Gold Plus	2.19	1.56	1.41	1.22	6.37	3.96	10.33	12.15	100
Depend+EV	2.20	1.63	1.37	1.23	6.44	3.87	10.31	12.13	99
ProGro	2.18	1.67	1.35	1.24	6.45	3.86	10.31	12.13	99
Cimarron 3i	2.42	1.45	1.34	1.33	6.53	3.76	10.29	12.11	99
Spur	2.19	1.51	1.31	1.31	6.31	3.97	10.28	12.09	99
WL 324	2.31	1.59	1.30	1.19	6.39	3.86	10.25	12.06	99
Ace	2.30	1.53	1.25	1.22	6.30	3.91	10.21	12.01	98
Emperor	2.14	1.56	1.44	1.23	6.37	3.78	10.15	11.94	98
Affinity+Z	2.19	1.55	1.31	1.24	6.29	3.62	9.91	11.66	96
Perry	2.40	1.49	1.32	1.07	6.28	3.55	9.83	11.56	95
Kanza	2.10	1.49	1.35	1.14	6.08	3.72	9.80	11.53	95
EXPERIMENTAL STRAINS									
ZC9751A	2.31	1.63	1.44	1.26	6.64	4.09	10.73	12.62	103
C304	2.30	1.54	1.38	1.36	6.59	4.10	10.69	12.58	103
C230	2.38	1.57	1.47	1.33	6.75	3.88	10.63	12.51	103
4G70	2.09	1.70	1.47	1.23	6.49	4.11	10.60	12.47	102
ZH9731H	2.27	1.61	1.40	1.26	6.54	3.67	10.21	12.01	98
ZC9741A	2.10	1.63	1.41	1.19	6.33	3.79	10.12	11.91	98
ZC9740A	2.16	1.62	1.35	1.17	6.30	3.76	10.06	11.84	97
SUMMARY STATISTICS									
Average	2.25	1.61	1.40	1.25	6.51	3.86	10.37	12.20	100
LSD(0.05)	0.20	NS	NS	NS	0.39	0.23	0.67	0.79	6
LSD(0.20)	0.13	0.12	0.10	NS	0.26	0.12	0.44	0.52	4
CV(%)	6.46	8.10	8.43	8.97	4.32	5.14	3.34	3.34	3
MCV(%)	8.89	NS	NS	NS	5.99	5.96	6.46	6.46	6

<p>LOCATION: Northeast Kansas Site: Cornbelt Experiment Field County: Brown Town: Powhattan Soil: Grundy silty clay loam</p> <p>ESTABLISHMENT: 9/2/98; RCBD, 4 reps Plots 5'x20'; 4'x20' harvested 15 lb. seed/acre</p>	<p>2001 FERTILIZATION: None in 2001</p> <p>2001 PEST CONTROL: Weevil numbers were held in check by the first cutting.</p>	<p>2001 CONDITIONS: Alfalfa weevil caused minimal injury prior to the first cutting. Webworms caused considerable damage prior to the July 30 harvest. Rainfall was below normal for April, May, and August. Rains in June and July came at favorable times and in adequate amounts to produce good yields.</p>
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**Table 2. Northeast Kansas, Manhattan Alfalfa Performance Test, Seeded May 1999.
Limited Irrigation**

NAME	Plant Height inches	Leaf Hopper Injury Rating 1-5*			Forage Yield									99-01 Total, % of Mean	
					tons/acre										Total, 15% Moist.
					Dry Matter					2000 Total	1999 Total	99-01 Total			
					2001										
7-26	6-13	7-26	Ave.	5-10	6-13	7-26	9-14	Total	Total	Total	Total				
RELEASED CULTIVARS															
645-II	19	1.3	2.8	2.0	1.53	1.66	2.37	1.11	6.67	8.58	1.97	17.22	20.26	110	
NetYield500	20	1.8	3.3	2.5	1.53	1.67	2.26	1.17	6.62	8.59	1.91	17.12	20.14	109	
Abilene+Z	20	1.0	2.8	1.9	1.59	1.88	2.46	1.31	7.24	7.74	1.99	16.97	19.96	108	
Kanza	22	1.8	3.0	2.4	1.49	1.68	2.27	1.44	6.88	7.76	2.23	16.87	19.85	107	
Dagger+EV	21	1.5	3.0	2.3	1.54	2.11	2.27	1.42	7.34	7.56	1.73	16.63	19.56	106	
Jade II	21	2.0	3.0	2.5	1.54	1.65	2.14	1.20	6.52	7.67	1.99	16.18	19.04	103	
Feast+EV	20	1.0	3.0	2.0	1.51	1.70	1.96	1.08	6.26	7.41	2.11	15.78	18.56	101	
ABT 400SCL	21	1.5	3.3	2.4	1.44	1.52	2.17	1.14	6.26	7.53	1.95	15.74	18.52	100	
Pioneer 54H69	23	1.0	2.0	1.5	1.42	1.75	1.89	1.12	6.17	7.56	1.97	15.70	18.47	100	
Defense+EV	19	1.0	3.0	2.0	1.39	1.80	2.08	1.14	6.40	7.00	1.99	15.39	18.11	98	
Ameriguard 302+Z	21	1.3	2.5	1.9	1.45	1.59	2.10	1.13	6.26	7.32	1.80	15.38	18.09	98	
Perry	22	1.0	2.8	1.9	1.39	1.44	1.98	1.12	5.93	7.25	1.71	14.89	17.52	95	
DK 131HG	22	1.0	2.0	1.5	1.31	1.37	1.92	1.19	5.79	6.75	1.93	14.47	17.02	92	
Geneva	20	1.5	3.0	2.3	1.25	1.34	1.69	0.94	5.21	7.25	1.94	14.40	16.94	92	
Ranger	20	2.5	4.3	3.4	1.28	1.32	2.01	1.06	5.66	6.39	1.54	13.59	15.99	87	
EXPERIMENTAL STRAINS															
W326	20	2.0	4.0	3.0	2.02	1.96	2.47	1.33	7.78	7.54	1.96	17.28	20.33	110	
ZC9650	21	1.0	3.0	2.0	1.77	1.75	2.41	1.18	7.11	7.47	1.96	16.54	19.46	105	
ZG9840	19	1.5	3.3	2.4	1.74	1.65	1.94	1.07	6.40	7.97	1.96	16.33	19.21	104	
ZC9842A	20	1.0	2.8	1.9	1.39	1.72	2.05	1.07	6.23	7.67	2.02	15.92	18.73	101	
ZC9851A	21	1.0	2.3	1.6	1.41	1.68	2.02	1.18	6.29	7.79	1.76	15.84	18.64	101	
ZC9841A	19	1.0	2.5	1.8	1.40	1.70	2.17	1.04	6.31	7.36	1.90	15.57	18.32	99	
ZC9840A	19	1.0	2.5	1.8	1.35	1.63	1.79	1.18	5.95	7.70	1.75	15.40	18.12	98	
ZH9844H	19	1.0	2.0	1.5	1.40	1.60	1.87	1.21	6.07	6.97	2.17	15.21	17.89	97	
KS224	19	2.0	3.5	2.8	1.24	1.66	1.78	1.07	5.74	6.88	1.59	14.21	16.72	91	
ZH9841H	21	1.0	2.0	1.5	1.22	1.37	1.67	0.96	5.22	6.70	1.83	13.75	16.18	88	
SUMMARY STATISTICS															
Average	20	1.3	2.9	2.1	1.46	1.65	2.07	1.15	6.33	7.46	1.91	15.70	18.47	100	
LSD(0.05)	2	0.5	0.7	0.4	0.34	0.24	0.48	0.20	0.91	0.57	0.19	1.83	2.15	12	
LSD(0.20)	1	0.3	0.5	0.3	0.22	0.16	0.31	0.13	0.59	0.29	0.15	1.19	1.40	8	
CV(%)	8	24.1	17.9	13.9	16.39	10.54	16.45	12.38	10.22	6.43	8.60	5.25	5.25	5	
MCV(%)	11	33.9	25.3	19.6	23.11	14.86	23.18	17.45	14.40	7.58	10.11	11.66	11.66	12	

*NAAIC Leaf Hopper Resistance Ratings:

- 1 - No apparent injury
- 2 - Very minor stunting and yellowing
- 3 - Moderate stunting, yellowing is evident on 20-40% of leaves
- 4 - Significant injury; plants show significant stunting with yellowing on 40-60% of leaves
- 5 - Severe injury; plants show severe stunting, yellowing or reddening evident on 60-100% of leaves

<p>LOCATION: Northeast Kansas Site: Ashland Research Farm County: Riley Town: Manhattan Soil: Haynie very fine sand</p> <p>ESTABLISHMENT: 5/24/99; RCBD, 4 reps Plots 3'x15'; 3'x12' harvested 15 lb. seed/acre</p>	<p>2001 FERTILIZATION: None</p> <p>2001 PEST CONTROL: Malathion applied 2 weeks prior to 1st harvest to control alfalfa weevils.</p>	<p>2001 CONDITIONS: Alfalfa weevils caused moderate damage to first harvest forage. Leafhoppers caused no damage on first and fourth harvest forage. Irrigation (~2 inches each) was applied twice after 2nd, 3rd, and 4th harvests. First harvest was made at 20% bloom, others at 10%. Plot damage due to gophers increased variability.</p>
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Table 3. Southeast Kansas, Mound Valley Alfalfa Performance Test, Seeded April 1998.

NAME	Forage Yield									98-01 Total, % of Mean			
	tons/acre												
	Dry Matter				2000 Total	1999 Total	1998 Total	98-01 Total	Total, 15% Moist.				
	2001		Total										
5-9	6-18	7-13	Total	Total	Total	Total	Total	Total	Total				
RELEASED CULTIVARS													
Cimarron 3i	1.27	1.90	0.83	4.00	6.28	5.36	2.15	17.79	20.93	104			
Pioneer 54H55	1.30	1.91	0.89	4.10	6.43	4.72	2.18	17.43	20.51	102			
6420	1.27	1.98	0.93	4.18	6.15	5.01	2.08	17.42	20.49	102			
WL 324	1.27	1.94	0.85	4.06	6.16	4.95	2.25	17.42	20.49	102			
Amerigraze 401+Z	1.31	1.98	0.84	4.13	6.05	5.06	2.12	17.36	20.42	102			
WL 326 GZ	1.31	1.94	0.83	4.08	6.35	4.76	2.17	17.36	20.42	102			
ProGro	1.31	1.95	0.90	4.16	6.17	4.83	2.19	17.35	20.41	102			
DK 141	1.36	1.96	0.84	4.16	6.14	4.79	2.25	17.34	20.40	102			
Emperor	1.31	1.83	0.84	3.99	6.25	4.80	2.19	17.23	20.27	101			
Stamina	1.28	1.93	0.80	4.02	6.02	5.05	1.98	17.07	20.08	100			
Perry	1.41	1.91	0.81	4.13	5.72	5.04	2.15	17.04	20.05	100			
631	1.28	1.84	0.86	3.98	5.93	4.91	2.21	17.03	20.04	100			
Kanza	1.27	1.83	0.93	4.03	6.03	4.66	2.19	16.91	19.89	99			
DK 142	1.38	1.85	0.83	4.06	5.89	4.85	2.11	16.91	19.89	99			
Sendero	1.13	1.87	0.89	3.88	5.96	4.84	2.19	16.87	19.85	99			
Spur	1.32	1.79	0.86	3.97	5.86	4.72	1.97	16.52	19.44	97			
Gold Plus	1.23	1.79	0.81	3.84	5.82	4.61	2.09	16.36	19.25	96			
WL 325 HQ	1.25	1.90	0.83	3.99	5.80	4.38	2.03	16.20	19.06	95			
EXPERIMENTAL STRAINS													
ZC9751A	1.31	2.09	0.95	4.36	6.11	4.92	2.12	17.51	20.60	103			
CW 74013	1.26	1.89	0.87	4.02	6.04	4.83	2.20	17.09	20.11	100			
ZC9651	1.35	1.85	0.94	4.15	6.02	4.77	2.07	17.01	20.01	100			
CW 74031	1.33	1.89	0.92	4.14	5.97	4.78	2.12	17.01	20.01	100			
CW 74034	1.23	1.92	0.95	4.09	6.01	4.83	2.00	16.93	19.92	99			
ZC9650	1.21	1.83	0.95	3.99	6.01	4.80	2.10	16.90	19.88	99			
CW 5426	1.27	1.94	0.93	4.14	5.83	4.85	2.04	16.86	19.84	99			
ZC9750A	1.28	1.81	0.96	4.05	6.05	4.72	2.03	16.85	19.82	99			
CW 6408	1.35	1.83	0.88	4.07	5.93	4.72	2.04	16.76	19.72	98			
CW 75044	1.22	1.86	0.96	4.04	5.94	4.63	2.00	16.61	19.54	98			
SUMMARY STATISTICS													
Average	1.29	1.89	0.88	4.06	6.03	4.83	2.11	17.03	20.04	100			
LSD(0.05)	0.11	NS	0.08	0.22	0.31	0.29	0.14	1.09	1.28	6			
LSD(0.20)	0.06	NS	0.05	0.14	0.16	0.23	0.11	0.71	0.84	4			
CV(%)	5.91	6.61	6.17	3.87	4.31	5.12	5.73	2.35	2.35	2			
MCV(%)	8.31	NS	8.69	5.44	5.07	6.02	6.74	6.40	6.40	6			
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%; vertical-align: top;"> LOCATION: Southeast Kansas Site: Southeast Ag. Research Center County: Labette Town: Mound Valley Soil: Parsons silty clay loam ESTABLISHMENT: 4/14/98; RCBD, 4 reps Plots 5'x30'; 3'x20' harvested 15 lb. seed/acre </td> <td style="width:33%; vertical-align: top;"> 2001 FERTILIZATION: 20-50-200 lb/a of N-P2O5-K2O on March 9 2001 PEST CONTROL: Lorsban applied on April 12 to control alfalfa weevils. </td> <td style="width:33%; vertical-align: top;"> 2001 CONDITIONS: Favorable temperatures and rainfall in April, May, and June resulted in good first and second harvest yields. Dry conditions in July and August combined with a webworm attack in August limited third-harvest yields and subsequent regrowth. Insufficient regrowth occurred to allow additional harvests. </td> </tr> </table>											LOCATION: Southeast Kansas Site: Southeast Ag. Research Center County: Labette Town: Mound Valley Soil: Parsons silty clay loam ESTABLISHMENT: 4/14/98; RCBD, 4 reps Plots 5'x30'; 3'x20' harvested 15 lb. seed/acre	2001 FERTILIZATION: 20-50-200 lb/a of N-P2O5-K2O on March 9 2001 PEST CONTROL: Lorsban applied on April 12 to control alfalfa weevils.	2001 CONDITIONS: Favorable temperatures and rainfall in April, May, and June resulted in good first and second harvest yields. Dry conditions in July and August combined with a webworm attack in August limited third-harvest yields and subsequent regrowth. Insufficient regrowth occurred to allow additional harvests.
LOCATION: Southeast Kansas Site: Southeast Ag. Research Center County: Labette Town: Mound Valley Soil: Parsons silty clay loam ESTABLISHMENT: 4/14/98; RCBD, 4 reps Plots 5'x30'; 3'x20' harvested 15 lb. seed/acre	2001 FERTILIZATION: 20-50-200 lb/a of N-P2O5-K2O on March 9 2001 PEST CONTROL: Lorsban applied on April 12 to control alfalfa weevils.	2001 CONDITIONS: Favorable temperatures and rainfall in April, May, and June resulted in good first and second harvest yields. Dry conditions in July and August combined with a webworm attack in August limited third-harvest yields and subsequent regrowth. Insufficient regrowth occurred to allow additional harvests.											

Table 4. South Central Kansas, Hutchinson Alfalfa Performance Test, Seeded Sept. 1999.

NAME	Plant Height inches			Forage Yield						00-01 Total, 15% Moist.	00-01 Total, % of Mean
				tons/acre							
	5-22 6-20 7-19			Dry Matter			Total	2000 Total	00-01 Total		
				2001							
5-22	6-20	7-19	5-22	6-20	7-19	Total	Total	Total			
RELEASED CULTIVARS											
WL 327	23	21	16	1.99	1.49	0.95	4.43	5.89	10.32	12.14	110
Magnum V	22	21	17	1.92	1.42	0.94	4.28	5.66	9.94	11.69	106
Aspire	23	21	17	1.64	1.33	1.09	4.05	5.65	9.70	11.41	103
6420	22	20	14	2.15	1.46	0.97	4.57	5.12	9.69	11.40	103
Pioneer 54Q53	23	21	16	1.84	1.42	0.96	4.22	5.41	9.63	11.33	103
Kanza	23	20	19	1.86	1.43	1.14	4.43	5.16	9.59	11.28	102
DK 142	22	21	16	1.90	1.48	0.99	4.38	5.15	9.53	11.21	101
ABT350	22	20	17	1.98	1.52	1.10	4.60	4.90	9.50	11.18	101
Forecast 1001	23	21	16	1.83	1.43	0.95	4.21	5.28	9.49	11.16	101
WL 232 HQ	20	20	15	1.99	1.48	0.98	4.45	4.94	9.39	11.05	100
TMF 4464	23	21	16	1.96	1.49	1.00	4.44	4.94	9.38	11.04	100
Dagger+EV	24	20	16	1.93	1.44	0.98	4.35	5.01	9.36	11.01	100
Cimarron SR	23	21	15	2.12	1.37	0.97	4.46	4.88	9.34	10.99	99
Perry	24	21	14	2.18	1.42	0.88	4.48	4.77	9.25	10.88	99
Abilene+Z	22	21	15	1.85	1.54	0.97	4.36	4.87	9.23	10.86	98
DK 140	23	21	16	1.79	1.51	1.00	4.30	4.88	9.18	10.80	98
Cimarron 3i	25	20	16	1.97	1.28	0.91	4.15	4.96	9.11	10.72	97
Award	22	20	15	1.75	1.45	0.93	4.12	4.86	8.98	10.56	96
Macon	21	19	15	1.66	1.41	0.93	3.99	4.37	8.36	9.84	89
EXPERIMENTAL STRAINS											
ZC9650	23	20	16	1.92	1.43	0.95	4.29	5.25	9.54	11.22	102
ZC9850A	20	19	13	1.98	1.55	0.93	4.45	4.92	9.37	11.02	100
SUMMARY STATISTICS											
Average	22	20	16	1.91	1.44	0.97	4.33	5.06	9.39	11.05	100
LSD(0.05)	2	NS	2	0.19	0.13	0.13	0.26	0.46	0.80	0.94	9
LSD(0.20)	2	NS	1	0.13	0.09	0.09	0.17	0.23	0.52	0.61	6
CV(%)	8	7	10	7.16	6.57	9.57	4.30	7.64	4.52	4.52	5
MCV(%)	11	NS	15	10.13	9.29	13.52	6.06	9.02	8.52	8.52	9
LOCATION: South Central Kansas Site: South Central Experiment Field County: Reno Town: Hutchinson Soil: Ost silt loam				2001 FERTILIZATION: 75-40-40 prior to planting				2001 CONDITIONS: Good moisture during the winter months set up excellent first-harvest yields. Hot, dry conditions during most of the summer limited regrowth and yields of later harvests. The fourth harvest was so severely stunted that no yields were measured.			
ESTABLISHMENT: 9/14/99; RCBD, 4 reps Plots 5'x20', 3'x20' harvested 18 lb. seed/acre				2001 PEST CONTROL: Sinbar applied January 24 for weed control. Furdan applied April 13 to control alfalfa weevils.							

Table 5. Southwest Kansas, Garden City Alfalfa Performance Test, Seeded August 1999. Irrigated

NAME	Forage Yield								00-01 Total, % of Mean
	tons/acre								
	Dry Matter					2000 Total	00-01 Total	Total, 15% Moist.	
	5-24	6-27	2001 8-1	9-6	Total				
RELEASED CULTIVARS									
Pioneer 54Q53	3.00	2.20	2.15	2.36	9.71	12.08	21.79	25.64	104
TMF 4464	3.15	2.19	1.96	2.31	9.61	12.16	21.77	25.61	104
WL 327	2.95	2.15	1.97	2.32	9.39	12.21	21.60	25.41	103
Aspire	2.84	2.22	2.15	2.40	9.61	11.77	21.38	25.15	102
Magnum V	2.95	2.12	1.80	2.33	9.20	12.15	21.35	25.12	102
Affinity+Z	3.11	2.12	1.97	2.27	9.47	11.84	21.31	25.07	102
Emperor	3.01	2.12	2.00	2.21	9.34	11.97	21.31	25.07	102
Dagger+EV	2.95	2.22	2.08	2.30	9.55	11.75	21.30	25.06	102
Forecast 1001	2.97	2.21	1.93	2.30	9.41	11.87	21.28	25.04	102
Cimarron 3i	3.09	2.03	1.85	2.28	9.25	11.97	21.22	24.96	101
ABT 400SCL	2.87	2.13	1.99	2.29	9.28	11.87	21.15	24.88	101
Jade II	2.90	2.11	1.80	2.29	9.10	12.01	21.11	24.84	101
Pioneer 53V08	2.96	2.10	1.94	2.24	9.24	11.85	21.09	24.81	101
Abilene+Z	2.82	2.11	2.07	2.34	9.34	11.68	21.02	24.73	100
GH 750	2.93	2.13	1.89	2.22	9.17	11.77	20.94	24.64	100
Cimarron SR	2.88	1.99	1.90	2.26	9.03	11.73	20.76	24.42	99
6420	2.90	2.13	1.80	2.32	9.15	11.60	20.75	24.41	99
FQ315	2.99	2.11	1.84	2.17	9.11	11.62	20.73	24.39	99
ABT350	2.91	2.09	2.00	2.27	9.27	11.34	20.61	24.25	99
DK 140	2.93	2.11	1.86	2.23	9.13	11.47	20.60	24.24	98
DK 142	3.01	2.02	1.74	2.18	8.95	11.43	20.38	23.98	97
Award	2.86	2.08	1.83	2.16	8.93	11.18	20.11	23.66	96
Perry	2.85	1.95	1.71	2.25	8.76	11.30	20.06	23.60	96
Kanza	2.63	2.11	2.01	2.46	9.21	10.83	20.04	23.58	96
EXPERIMENTAL STRAINS									
DS983809	3.04	2.26	1.77	2.31	9.38	12.39	21.77	25.61	104
ZC9850A	3.07	2.16	2.03	2.32	9.58	12.10	21.68	25.51	104
HybriForce-400	3.13	2.19	1.96	2.39	9.67	11.98	21.65	25.47	103
DS983810	2.94	2.19	1.77	2.30	9.20	12.37	21.57	25.38	103
DS983808	2.99	2.22	1.71	2.22	9.14	12.36	21.50	25.29	103

(continued)

Table 5. Southwest Kansas, Garden City Alfalfa Performance Test, Seeded August 1999. Irrigated

NAME	Forage Yield								00-01 Total, % of Mean
	tons/acre								
	Dry Matter					2000 Total	00-01 Total	Total, 15% Moist.	
	5-24	6-27	2001 8-1	9-6	Total				
ZC9853A	3.17	2.20	1.94	2.24	9.55	11.85	21.40	25.18	102
DS983811	2.97	2.26	1.83	2.30	9.36	11.99	21.35	25.12	102
DS983812	3.00	2.18	1.76	2.29	9.23	11.94	21.17	24.91	101
DS9707 HYB	3.01	2.07	1.80	2.33	9.21	11.92	21.13	24.86	101
ZC9650	2.79	2.04	2.00	2.25	9.08	11.92	21.00	24.71	100
ZC9851A	2.78	2.08	2.00	2.32	9.18	11.81	20.99	24.69	100
CW 64025	3.01	2.17	1.90	2.23	9.31	11.67	20.98	24.68	100
ZC9854A	3.01	2.10	1.85	2.19	9.15	11.64	20.79	24.46	99
DS9704 HYB	2.85	2.06	1.77	2.25	8.93	11.79	20.72	24.38	99
CW 84024	2.84	2.07	1.82	2.21	8.94	11.64	20.58	24.21	98
CW 74033	2.81	2.14	1.89	2.24	9.08	11.48	20.56	24.19	98
CW 84025	3.06	2.13	1.88	2.24	9.31	11.24	20.55	24.18	98
CW 64018	2.89	2.10	1.87	2.17	9.03	11.40	20.43	24.04	98
DS983813	2.93	2.16	1.77	2.27	9.13	11.27	20.40	24.00	98
ZC9840A	3.02	2.00	1.82	2.06	8.90	11.40	20.30	23.88	97
ZC9842A	2.99	2.12	1.92	2.18	9.21	11.07	20.28	23.86	97
CW 74043	2.97	2.08	1.69	2.11	8.85	11.41	20.26	23.84	97
ZC9841A	2.72	2.03	1.87	2.16	8.78	11.13	19.91	23.42	95
SUMMARY STATISTICS									
Average	2.94	2.12	1.89	2.26	9.21	11.71	20.92	24.61	100
LSD(0.05)	0.18	0.13	0.13	0.10	0.45	0.43	0.96	1.13	5
LSD(0.20)	0.12	0.09	0.08	0.06	0.29	0.22	0.63	0.74	3
CV(%)	4.33	4.36	4.80	3.29	3.48	3.17	2.36	2.36	2
MCV(%)	6.06	6.10	6.70	4.59	4.86	3.71	4.59	4.59	5

<p>LOCATION: Southwest Kansas Site: Southwest Res.-Ext. Center County: Finney Town: Garden City Soil: Keith silt loam</p> <p>ESTABLISHMENT: 8/24/99; RCBD, 4 reps Plots 3'x20'; 3'x20' harvested 32 lb. seed/acre</p>	<p>2001 FERTILIZATION: 22-104-0 applied at planting</p> <p>2001 PEST CONTROL: Pursuit Plus applied in March to control grasses. Cygon 400 applied on August 8 to control cowpea aphids.</p>	<p>2001 CONDITIONS: Cool, wet conditions early in the season facilitated excellent first and second harvest yields. Heat stress and cowpea aphids likely contributed to a third-harvest yield reduction.</p>
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**Appendix 1: Varieties in 2001 Kansas Alfalfa Performance Tests
with unverified fall dormancy and disease and insect resistance ratings.**

COMPANY Name	S N													COMPANY Name	S N														
	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P		F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P	F B V F A R A P A S P K K P						
AgriPro														Monsanto															
Dagger+EV	5	H	H	H	H	H	M	H	M	R	H	-	L	L	Aspire	6	M	R	H	H	H	H	H	R	H	-	-	-	
Defense+EV	3	H	H	H	H	H	-	R	-	-	H	-	-	-	Award	4	H	H	H	H	H	H	H	R	R	R	-	-	-
Depend+EV	4	H	H	H	H	H	M	R	S	M	R	-	-	-	DK 131HG	3	H	H	H	H	H	R	R	L	M	R	-	R	R
Feast+EV	3	H	H	H	R	H	-	M	-	-	H	-	-	-	DK 140	4	H	R	H	H	H	H	R	M	M	H	-	M	M
Yielder	3	H	H	H	R	H	-	R	-	-	-	-	-	-	DK 141	4	H	H	H	H	H	R	R	-	M	H	-	-	-
Allied														DK 142	4	H	R	H	R	H	R	H	-	R	H	-	-	-	
Macon	4	H	H	H	H	H	R	R	-	M	H	-	-	-	Mycogen														
America's Alfalfa														TMF 4464	4	H	H	H	H	H	-	R	-	M	R	-	-	-	
Abilene+Z	5	H	H	H	H	H	M	H	M	R	R	-	-	-	NC+														
Affinity+Z	4	H	H	H	H	H	-	R	-	R	R	-	-	-	Jade II	4	H	R	H	R	H	R	R	M	-	M	-	M	M
Amerigraze 401+Z	4	H	H	H	H	H	-	R	-	R	R	-	-	-	NE AES & USDA														
Ameriguard 302+Z	3	H	H	H	H	H	-	R	-	R	H	-	-	-	Perry	3	R	-	-	L	-	M	-	-	-	-	-	-	-
Emperor	4	H	H	H	H	H	M	R	-	-	H	-	-	-	Ranger	3	M	-	S	S	S	S	S	S	S	-	-	-	-
Cargill														NetSeeds															
FQ315	3	H	R	H	H	H	H	R	-	R	H	-	-	-	NetYield500	4	H	R	H	R	H	R	R	-	R	M	-	-	-
Dairyland Seed														NK															
Forecast 1001	4	H	R	R	R	H	-	R	-	R	R	-	H	H	Geneva	4	H	H	H	H	H	R	H	L	R	H	-	-	-
Magnum V	4	H	R	H	R	H	R	R	M	R	M	-	M	M	Pioneer														
Garst														53V08	3	H	H	H	H	H	R	H	M	H	L	-	H	H	
631	4	H	R	H	R	H	R	H	M	R	M	-	-	-	54H55	5	H	H	R	R	H	H	H	R	H	-	-	H	H
6420	4	H	R	H	-	H	R	R	-	R	R	-	H	H	54H69	4	H	R	H	H	H	M	R	S	R	R	-	-	-
645-II	3	H	H	H	H	H	-	R	-	-	H	-	-	-	54Q53	4	H	H	R	R	H	M	M	-	H	M	-	H	H
Golden Harvest														Star															
GH 750	4	H	H	H	H	H	R	R	R	M	H	-	-	-	Sendero	6	M	R	H	H	H	H	H	R	M	-	-	R	R
GH 750	4	H	H	H	H	H	R	R	R	M	H	-	-	-	Spur	4	H	R	H	H	H	R	H	-	M	R	-	M	M
Great Plains														Stamina	4	H	R	H	H	H	H	H	-	H	R	-	H	H	
Cimarron 3i	4	H	R	H	H	R	R	R	-	R	M	R	-	-	W-L Research														
Cimarron SR	4	H	H	H	H	H	R	H	-	R	M	R	-	-	ABT 400SCL	4	H	H	-	H	H	R	H	-	M	H	-	M	M
KS AES & USDA														ABT350	3	H	H	H	H	H	R	R	-	-	H	-	-	-	
Kanza	3	R	-	-	-	-	R	R	-	-	-	-	-	-	Ace	4	H	R	H	H	H	M	R	R	H	R	-	-	-
MBS														WL 232 HQ	2	H	H	H	H	H	R	R	-	R	H	-	L	L	
Gold Plus	4	H	R	H	H	H	H	H	-	H	R	-	-	-	WL 324	3	H	R	H	H	H	R	H	-	M	H	-	-	-
ProGro	4	H	R	H	R	H	R	R	M	-	M	-	-	-	WL 325 HQ	3	H	R	H	H	H	R	R	M	R	R	-	-	-
														WL 326 GZ	4	H	H	H	H	H	R	R	-	R	H	-	-	-	
														WL 327	4	H	R	H	H	-	R	-	-	R	H	-	-	-	

<u>Variety characterization codes:</u>	<u>Fall dormancy ratings:</u>		<u>Pest resistance ratings:</u>		
FD = Fall dormancy rating	<u>Check variety</u>	<u>Rating</u>	<u>Code</u>	<u>Resistance class</u>	<u>% Resistant plants</u>
BW = Bacterial wilt	Norseman	1	S	Susceptible	0-5%
VW = Verticillium wilt	Vernal	2	L	Low Resistance	6-14%
FW = Fusarium wilt	Ranger	3	M	Moderate Resistance	15-30%
AN = Anthracnose race 1	Saranac	4	R	Resistance	31-50%
PRR = Phytophthora root rot	Archer	5	H	High Resistance	>50%
SAA = Spotted alfalfa aphid	ABI 700	6	-	Not adequately tested	
PA = Pea aphid	Dona Ana	7			
BAA = Blue alfalfa aphid	Maricopa	8			
SN = Stem nematode	CUF 101	9			
APH = Aphanomyces root rot race 1	UC 1887	10			
SRKN = Southern root knot nematode					
NRKN = Northern root knot nematode					
PL = Potato leafhopper					

Appendix 2: Entrants in 2001 Kansas Alfalfa Performance Tests.

AgriPro

AgriPro Seed
PO Box 500
Slater, IA 50244
877-247-4776
agripro.com

Great Plains

Great Plains Research Co Inc
3624 Kildaire Farm Rd
Apex, NC 27502
919-362-1583
greatplainsresearch.com

NE AES & USDA

Foundation Seed Division
UNL
3115 North 70th
Lincoln, NE 68507-2104
402-472-4290

Allied

Allied Seed Cooperative
PO Box 945
Angola, IN 46703
800-813-5025

KS AES & USDA

KSU - Foundation Seed
2200 Kimball Ave
Manhattan, KS 66502
785-532-6115

NetSeeds

NetSeeds
9001 Hickman Rd
Suite 320
Urbandale, IA 50322
515-331-0939
netseeds.com

America's Alfalfa

America's Alfalfa
PO Box 404
Princeton, IL 61356-0404
815-875-6426
americasalfalfa.com

MBS

MBS Inc
225 West 1st St
Story City, IA 50248-1657
515-733-5274

NK

Syngenta Seeds, Inc.
1525 Airport Road
Ames, IA 50010
800-258-0498
syngenta.com

Cargill

Mycogen Seed
14125 Amanda Lane
Wamego, KS 66547-9359
785-456-2724
mycogen.com

Monsanto

Monsanto Seed
3100 Sycamore Rd
DeKalb, IL 60115
815-758-9323
farmsource.com

Pioneer

Pioneer Hi-Bred Intl Inc
PO Box 1150
Johnston, IA 50131-1150
515-334-6645
pioneer.com

Dairyland

Dairyland Research
9728 S Clinton Corners Rd
Clinton, WI 53525
608-676-2237
dairylandseed.com

Mycogen

Mycogen Seed
14125 Amanda Lane
Wamego, KS 66547-9359
785-456-2724
mycogen.com

Star

Advanced Genetics
PO Box 504
Beloit, KS 67420
800-782-7611
starseed1.com

Garst

Garst Seed Co
219 E Garfield
Greensburg, KS 67054
620-723-2454
garstseed.com

NC+

NC+ Hybrids
PO Box 4408
1300 N 79th
Lincoln, NE 68504
402-467-2517
nc-plus.com

W-L Research

W-L Research Inc
8701 W US Hwy 14
Evansville, WI 53536
608-882-4100
www.wlresearch.com

Golden Harvest

JC Robinson Seed Co
100 JC Robinson Blvd
Waterloo, NE 68069
800-228-9906

For those interested in accessing crop performance testing information electronically, visit our World Wide Web site. Most of the information contained in this publication is available for viewing or downloading. The URL is <http://www.ksu.edu/kscpt>.

Excerpts from the

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

For those interested in accessing crop performance testing information electronically, visit our World Wide Web site. Most of the information contained in this publication is available for viewing or downloading.

The URL is <http://www.ksu.edu/kscpt>.

Excerpts from the UNIVERSITY RESEARCH POLICY AGREEMENT
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