



2000

KANSAS PERFORMANCE TESTS WITH

ALFALFA VARIETIES

REPORT OF PROGRESS 870

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service

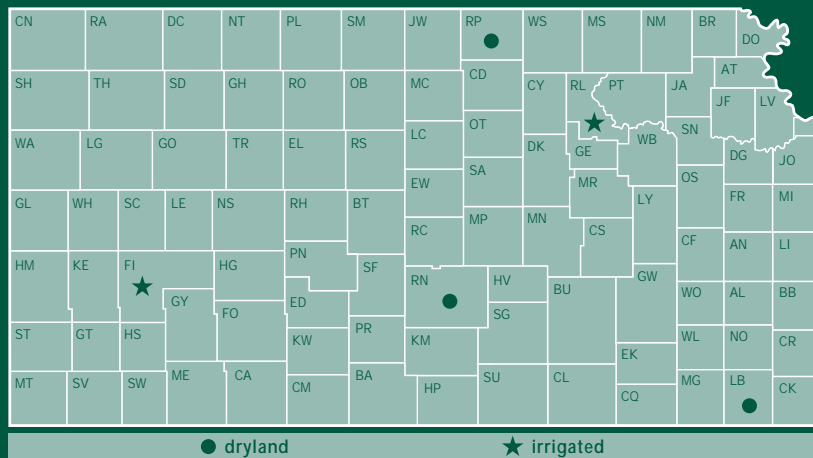


TABLE OF CONTENTS

INTRODUCTION

TEST OBJECTIVES AND PROCEDURES	1
2000 STATEWIDE GROWING CONDITIONS.....	2
VARIETY CHARACTERIZATION.....	3

RESULTS: ALFALFA PERFORMANCE TESTS

NORTHEASTERN KANSAS Powhattan, Brown County	
Table 1.....	4
Manhattan, Riley County Limited Irrigation	
Table 2.....	5
NORTH CENTRAL KANSAS Belleville, Republic County	
Table 3.....	6
SOUTHEAST KANSAS Mound Valley, Labette County	
Table 4.....	7
SOUTH CENTRAL KANSAS Hutchinson, Reno County	
Table 5.....	8
SOUTHWESTERN KANSAS Garden City, Finney County Irrigated	
Table 6.....	9

APPENDIX

Fall dormancy and pest resistance ratings of released varieties.....	11
Entrants in the 2000 Kansas Alfalfa Performance Tests.....	12
Electronic Access and University Research Policy	13

2000 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 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.

2000 STATEWIDE GROWING CONDITIONS

Warm temperatures accelerated alfalfa development for much of the growing season (Figure 1), but soil moisture deficits delayed and reduced late-season harvests (Figure 2). All four harvests started earlier than the average (Figure 3). The first three harvests were completed ahead of last year's and the 5-year average. The fourth harvest was slowed considerably in mid-August by extremely hot, dry weather that delayed regrowth after the third harvest in many areas. Some areas had essentially no regrowth. (From Crop-Weather reports, Kansas Agricultural Statistics, Topeka).

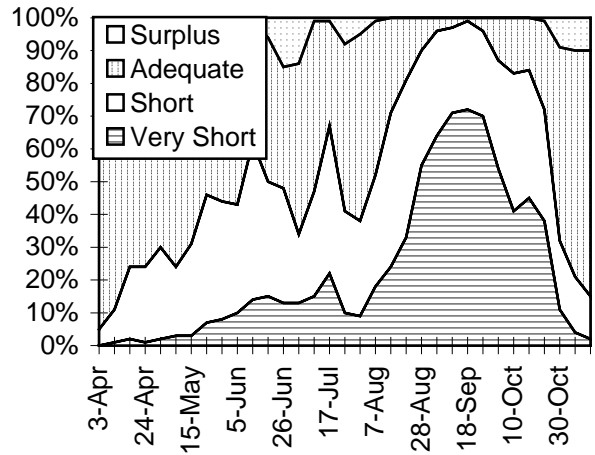


Figure 2. Status of statewide topsoil moisture.

The hot, dry conditions in August and September reduced statewide average yields and total alfalfa hay production compared to last year. The November 9 Kansas Agricultural Statistics report predicted a 0.7 ton per acre decrease in average yield from 4.4 tons per acre in 1999 to 3.7 tons per acre in 2000. Total alfalfa acreage in 2000 was unchanged from that in 1999 at 850,000 acres. The lower yield per acre resulted in a decrease in total alfalfa hay production from 3.7 million tons in 1999 to 3.1 million tons in 2000.

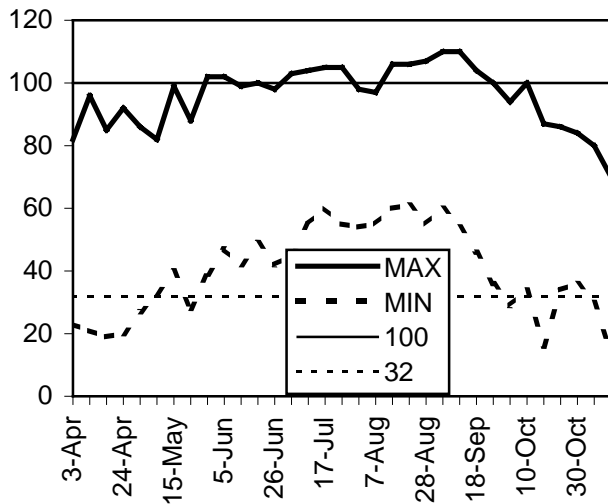


Figure 1. 2000 Kansas weekly maximum and minimum temperatures.

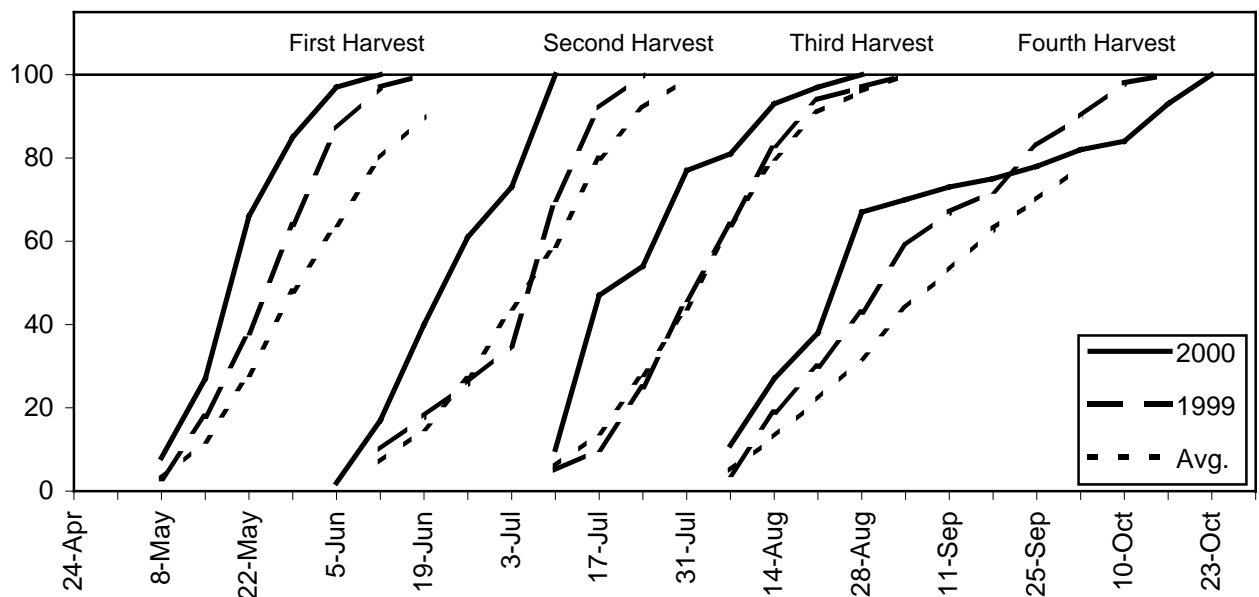


Figure 3. Progress of statewide alfalfa harvest.

Alfalfa weevil remained the insect of most concern to alfalfa growers in 2000. Infestations were first noted in several counties in south central Kansas in early March. Weevils continued to damage alfalfa fields in central and southwest Kansas during late March and April. Army cutworm populations required treatment of some fields in south central and southwest Kansas in early spring. Aphid populations also began to increase in March and April. Pea aphids had reached high levels in some fields by early May, but beneficial parasites appeared to keep them from causing serious damage. In early September, adults of several potential pests of newly seeded alfalfa appeared in insect traps: beet armyworm, fall armyworm, garden webworm, corn earworm, yellow striped armyworm, and alfalfa butterfly. Pest populations varied greatly from field to field. (From Cooperative Economic Insect Survey reports, Kansas Department of Agriculture and Kansas Insect Newsletter, KSU Extension Entomology).

Alfalfa stem nematode (*Ditylenchus dipsaci*) appeared to be more widespread in 2000 than in the past. Tim Todd, KSU plant nematologist, confirmed the alfalfa stem nematode in several south central and southeast counties in March and April. The typical spring diseases, leptosphaerulina leaf spot, spring black stem, and phytophthora root rot, appeared in samples sent to the Plant Disease Diagnostic Clinic in May. Samples sent later in the season showed symptoms of alfalfa mosaic virus, leaf rust, and summer black stem. (From 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 1-6 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 between 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 all released varieties included in the 2000 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, 2000				Total 15% Moist.	Total, % of Mean
	tons/acre					
	Dry Matter			Total		
5-13	6-23	8-1	Total			
RELEASED CULTIVARS						
Dagger+EV	1.81	1.11	1.13	4.05	4.76	105
DK 141	1.81	1.13	1.10	4.04	4.75	105
Geneva	1.73	1.22	1.08	4.03	4.74	104
Pioneer 54H55	1.69	1.11	1.22	4.01	4.72	104
WL 232 HQ	1.67	1.10	1.21	3.98	4.68	103
Spur	1.72	1.09	1.17	3.97	4.67	103
Gold Plus	1.78	1.07	1.11	3.96	4.66	103
WL 325 HQ	1.71	1.09	1.15	3.94	4.64	102
Ace	1.78	1.07	1.05	3.91	4.60	101
Depend+EV	1.59	1.12	1.16	3.87	4.55	100
ProGro	1.61	1.12	1.13	3.86	4.54	100
WL 324	1.60	1.10	1.16	3.86	4.54	100
DK 142	1.67	1.09	1.09	3.85	4.53	100
Pioneer 53V08	1.77	1.00	1.08	3.84	4.52	99
Yielder	1.71	1.00	1.08	3.78	4.45	98
Emperor	1.75	1.01	1.02	3.78	4.45	98
Cimarron 3i	1.62	1.08	1.06	3.76	4.42	97
TMF 4464	1.75	1.02	0.97	3.75	4.41	97
Magnum V	1.67	1.04	1.04	3.74	4.40	97
Kanza	1.52	1.06	1.14	3.72	4.38	96
Amerigraze 401+Z	1.65	1.06	0.99	3.69	4.34	96
ABT350	1.53	1.11	1.04	3.67	4.32	95
Affinity+Z	1.61	0.99	1.03	3.62	4.26	94
Perry	1.50	1.05	0.99	3.55	4.18	92
EXPERIMENTAL STRAINS						
4G70	1.81	1.19	1.11	4.11	4.84	106
C304	1.75	1.09	1.26	4.10	4.82	106
ZC9751A	1.73	1.18	1.19	4.09	4.81	106
C230	1.69	1.08	1.11	3.88	4.56	101
ZC9741A	1.61	1.07	1.12	3.79	4.46	98
ZC9740A	1.68	1.04	1.03	3.76	4.42	97
ZH9731H	1.62	1.05	1.00	3.67	4.32	95
SUMMARY STATISTICS						
Average	1.68	1.08	1.10	3.86	4.54	100
LSD(0.05)	0.15	0.09	NS	0.23	0.27	6
LSD(0.20)	0.08	0.04	0.08	0.12	0.14	3
CV(%)	7.73	6.94	11.07	5.14	5.14	5
MCV(%)	8.93	8.33	NS	5.96	5.96	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>2000 FERTILIZATION: 16.5-72-90 in December</p> <p>2000 PEST CONTROL: An early-season weevil infestation was controlled by the first harvest.</p>	<p>2000 CONDITIONS: The test was clipped in 1999, but no yields are reported because of excessive variability. Dry winter and spring weather didn't replenish soil moisture as much as desired. The dry conditions intensified in late summer and prevented a fourth harvest.</p>
--	---	---

**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								99-00 Total, % of Mean	
					tons/acre									Total, 15% Moist.
					Dry Matter				1999 Total	99-00 Total				
					2000									
9-8	8-1	9-8	Average	6-6	7-3	8-1	9-8	Total	Total	Total				
RELEASED CULTIVARS														
645-II	13	1.6	2.4	2.0	3.46	1.80	2.01	1.30	8.58	1.97	10.55	12.41	113	
NetYield500	12	2.4	4.3	3.4	3.48	2.05	1.85	1.21	8.59	1.91	10.50	12.35	112	
Kanza	17	2.5	2.7	2.6	2.62	1.83	1.80	1.51	7.76	2.23	9.99	11.75	107	
Abilene+Z	13	1.7	2.8	2.2	2.57	2.15	1.68	1.33	7.74	1.99	9.73	11.45	104	
Jade II	13	2.4	3.2	2.8	2.67	2.00	1.66	1.35	7.67	1.99	9.66	11.36	103	
Pioneer 54H69	17	1.6	2.4	2.0	2.87	1.75	1.40	1.55	7.56	1.97	9.53	11.21	102	
Feast+EV	14	2.0	3.3	2.6	2.91	1.89	1.45	1.16	7.41	2.11	9.52	11.20	102	
ABT 400SCL	15	1.7	2.4	2.1	2.77	1.87	1.48	1.40	7.53	1.95	9.48	11.15	101	
Dagger+EV	14	1.5	3.1	2.3	2.58	1.96	1.71	1.31	7.56	1.73	9.29	10.93	99	
Geneva	14	2.0	2.9	2.4	2.64	1.84	1.41	1.36	7.25	1.94	9.19	10.81	98	
Ameriguard 302+Z	16	1.9	2.2	2.0	2.68	1.73	1.51	1.40	7.32	1.80	9.12	10.73	97	
Defense+EV	15	1.8	2.1	1.9	2.42	1.71	1.55	1.32	7.00	1.99	8.99	10.58	96	
Perry	15	1.6	2.4	2.0	2.69	1.68	1.49	1.40	7.25	1.71	8.96	10.54	96	
DK 131HG	16	1.1	1.3	1.2	2.21	1.64	1.50	1.40	6.75	1.93	8.68	10.21	93	
Ranger	12	2.6	4.2	3.4	2.48	1.55	1.28	1.08	6.39	1.54	7.93	9.33	85	
EXPERIMENTAL STRAINS														
ZG9840	13	1.5	2.7	2.2	3.03	1.84	1.78	1.32	7.97	1.96	9.93	11.68	106	
ZC9842A	13	2.2	2.7	2.5	2.78	1.81	1.85	1.23	7.67	2.02	9.69	11.40	103	
ZC9851A	15	1.1	2.2	1.6	2.70	1.94	1.84	1.30	7.79	1.76	9.55	11.24	102	
W326	15	2.3	3.1	2.7	2.40	2.07	1.68	1.39	7.54	1.96	9.50	11.18	101	
ZC9840A	13	1.4	2.7	2.0	2.95	1.76	1.58	1.41	7.70	1.75	9.45	11.12	101	
ZC9650	16	1.4	2.4	1.9	2.62	1.83	1.55	1.46	7.47	1.96	9.43	11.09	101	
ZC9841A	12	1.5	2.4	2.0	2.42	2.08	1.57	1.29	7.36	1.90	9.26	10.89	99	
ZH9844H	14	1.1	1.1	1.0	2.41	1.58	1.57	1.41	6.97	2.17	9.14	10.75	98	
ZH9841H	14	0.9	1.4	1.1	2.67	1.57	1.31	1.15	6.70	1.83	8.53	10.04	91	
KS224	14	2.3	3.4	2.9	2.64	1.74	1.37	1.13	6.88	1.59	8.47	9.96	90	
SUMMARY STATISTICS														
Average	14	1.8	2.6	2.2	2.71	1.83	1.59	1.33	7.46	1.91	9.37	11.02	100	
LSD(0.05)	2	0.6	0.7	0.5	0.28	0.19	0.24	0.19	0.57	0.19	0.77	0.91	8	
LSD(0.20)	1	0.3	0.4	0.2	0.14	0.10	0.12	0.10	0.29	0.15	0.39	0.46	4	
CV(%)	11	27.9	23.5	17.9	8.67	9.03	12.76	12.35	6.43	8.60	5.44	5.44	5	
MCV(%)	13	32.9	27.7	21.0	10.21	10.63	15.09	14.52	7.58	10.11	8.22	8.22	8	

*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>2000 FERTILIZATION: None</p> <p>2000 PEST CONTROL: Insect infestations were not controlled, so that inherent resistance to insects could be evaluated.</p>	<p>2000 CONDITIONS: Weevils caused moderate damage to the first harvest. Leaf hoppers caused noticeable damage to the third and fourth harvests. Two irrigations of 2 inches each were applied after the each of the last three cuttings. The first harvest was taken at 20% bloom, and the other harvests at 10% bloom.</p>
---	---	---

Table 3. North Central Kansas, Belleville Alfalfa Performance Test, Seeded Sept. 1997.

NAME	Forage Yield							98-00 Total, % of Mean
	tons/acre							
	Dry Matter						Total, 15% Moist.	
	2000		1999 Total	1998 Total	98-00 Total	Total, 15% Moist.		
6-1	7-2	Total						
Released Cultivars								
Dominator	2.01	0.96	2.97	8.41	6.44	17.82	20.96	110
DK 142	2.02	1.00	3.02	7.98	6.28	17.28	20.33	107
DK 127	1.78	0.81	2.59	8.08	6.29	16.96	19.95	105
WL 324	1.71	0.82	2.53	7.86	6.21	16.60	19.53	103
WL 325 HQ	1.89	0.80	2.69	7.79	6.01	16.49	19.40	102
Pioneer 5454	1.82	0.83	2.65	7.75	6.07	16.47	19.38	102
Spur	1.66	0.81	2.46	7.78	6.03	16.27	19.14	101
Asset	1.78	0.82	2.60	7.43	6.04	16.07	18.91	99
Perry	2.00	0.93	2.94	7.29	5.72	15.95	18.76	99
Depend+EV	1.65	0.74	2.39	7.33	6.06	15.78	18.56	98
Kanza	1.83	0.76	2.59	7.45	5.50	15.54	18.28	96
Experimental Strains								
ZN9541	1.80	0.78	2.57	7.35	5.65	15.57	18.32	96
ZN9540	1.86	0.82	2.68	7.20	5.64	15.52	18.26	96
ZN9646	1.65	0.73	2.38	7.33	5.74	15.45	18.18	96
ZC9641	2.36	1.04	3.40	6.20	5.09	14.69	17.28	91
Summary Statistics								
Average	1.85	0.84	2.70	7.55	5.92	16.17	19.02	100
LSD(0.05)	0.18	0.13	0.27	0.52	0.33	1.13	1.33	7
LSD(0.20)	0.09	0.06	0.14	0.40	0.26	0.57	0.67	4
CV(%)	8.20	12.63	8.53	5.77	4.71	3.50	3.50	4
MCV(%)	9.76	15.02	10.14	6.86	5.60	6.99	6.99	7

<p>LOCATION: North Central Kansas Site: North Central Kansas Exp. Field County: Republic Town: Belleville Soil: Crete silt loam</p>	<p>2000 FERTILIZATION: 18-46-0 in February and again after first harvest</p>	<p>2000 CONDITIONS: Drought conditions extending back to August of 1999 severely limited growth. Precipitation was less than 50% of normal during the spring and summer. Temperatures in August and September were much above normal. Very little regrowth occurred after the second harvest.</p>
<p>ESTABLISHMENT: 9/6/97; RCBD, 4 reps Plots 5'x15'; 3'x15' harvested 18 lb. seed/acre</p>	<p>2000 PEST CONTROL: None</p>	

Table 4. Southeast Kansas, Mound Valley Alfalfa Performance Test, Seeded April 1998.

NAME	Forage Yield									98-00 Total, % of Mean			
	tons/acre												
	Dry Matter					1999 Total	1998 Total	98-00 Total	Total 15% Moist.				
	2000				Total								
5-5	6-13	7-11	8-14	Total	Total	Total	Total	Total	Total				
RELEASED CULTIVARS													
Cimarron 3i	2.03	2.03	1.55	0.68	6.28	5.36	2.15	13.79	16.22	106			
WL 324	1.92	1.94	1.50	0.81	6.16	4.95	2.25	13.36	15.72	103			
Pioneer 54H55	2.05	2.06	1.56	0.78	6.43	4.72	2.18	13.33	15.68	103			
WL 326 GZ	1.96	2.05	1.58	0.77	6.35	4.76	2.17	13.28	15.62	102			
Emperor	1.94	2.02	1.53	0.75	6.25	4.80	2.19	13.24	15.58	102			
6420	1.93	1.97	1.48	0.78	6.15	5.01	2.08	13.24	15.58	102			
Amerigraze 401+Z	1.89	1.96	1.46	0.75	6.05	5.06	2.12	13.23	15.56	102			
ProGro	1.96	2.01	1.42	0.78	6.17	4.83	2.19	13.19	15.52	102			
DK 141	2.01	1.97	1.43	0.73	6.14	4.79	2.25	13.18	15.51	102			
631	1.88	1.83	1.47	0.75	5.93	4.91	2.21	13.05	15.35	101			
Stamina	1.81	1.97	1.48	0.76	6.02	5.05	1.98	13.05	15.35	101			
Sendero	1.75	1.96	1.45	0.80	5.96	4.84	2.19	12.99	15.28	100			
Perry	1.97	1.82	1.32	0.62	5.72	5.04	2.15	12.91	15.19	100			
Kanza	1.93	1.79	1.48	0.83	6.03	4.66	2.19	12.88	15.15	99			
DK 142	1.87	1.86	1.49	0.67	5.89	4.85	2.11	12.85	15.12	99			
Spur	1.78	1.90	1.41	0.76	5.86	4.72	1.97	12.55	14.76	97			
Gold Plus	1.77	1.93	1.38	0.75	5.82	4.61	2.09	12.52	14.73	97			
WL 325 HQ	1.83	1.80	1.41	0.77	5.80	4.38	2.03	12.21	14.36	94			
EXPERIMENTAL STRAINS													
ZC9751A	1.87	1.96	1.54	0.73	6.11	4.92	2.12	13.15	15.47	101			
CW 74013	1.87	2.04	1.40	0.73	6.04	4.83	2.20	13.07	15.38	101			
ZC9650	1.89	1.90	1.47	0.74	6.01	4.80	2.10	12.91	15.19	100			
CW 74031	1.87	1.86	1.52	0.72	5.97	4.78	2.12	12.87	15.14	99			
ZC9651	1.84	1.92	1.46	0.80	6.02	4.77	2.07	12.86	15.13	99			
CW 74034	1.86	1.85	1.51	0.80	6.01	4.83	2.00	12.84	15.11	99			
ZC9750A	1.95	1.74	1.52	0.84	6.05	4.72	2.03	12.80	15.06	99			
CW 5426	1.78	1.83	1.54	0.67	5.83	4.85	2.04	12.72	14.96	98			
CW 6408	1.79	1.96	1.48	0.71	5.93	4.72	2.04	12.69	14.93	98			
CW 75044	1.78	1.82	1.55	0.79	5.94	4.63	2.00	12.57	14.79	97			
SUMMARY STATISTICS													
Average	1.88	1.92	1.48	0.75	6.03	4.83	2.11	12.97	15.26	100			
LSD(0.05)	0.13	0.15	NS	0.09	0.31	0.29	0.14	0.73	0.86	6			
LSD(0.20)	0.07	0.08	NS	0.05	0.16	0.23	0.11	0.37	0.44	3			
CV(%)	6.08	6.54	8.22	10.21	4.31	5.12	5.73	2.88	2.88	3			
MCV(%)	7.16	7.70	NS	12.01	5.07	6.02	6.74	5.63	5.63	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;"> 2000 FERTILIZATION: February 9, 2000; 20-50-200 2000 PEST CONTROL: Treated with Lorsban on April 6 to control alfalfa weevil. Treated with Poast Plus on July 26 to control bluegrass. </td> <td style="width:33%; vertical-align: top;"> 2000 CONDITIONS: May and June rainfall was above normal with a total of 18.84 inches. The extremely wet spring conditions gave way to very hot, dry conditions in August and September. The rainfall total for August and September was 1.72 inches, with nearly all of that coming in September. As a result, the alfalfa did not regrow after the August cutting. </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	2000 FERTILIZATION: February 9, 2000; 20-50-200 2000 PEST CONTROL: Treated with Lorsban on April 6 to control alfalfa weevil. Treated with Poast Plus on July 26 to control bluegrass.	2000 CONDITIONS: May and June rainfall was above normal with a total of 18.84 inches. The extremely wet spring conditions gave way to very hot, dry conditions in August and September. The rainfall total for August and September was 1.72 inches, with nearly all of that coming in September. As a result, the alfalfa did not regrow after the August cutting.
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	2000 FERTILIZATION: February 9, 2000; 20-50-200 2000 PEST CONTROL: Treated with Lorsban on April 6 to control alfalfa weevil. Treated with Poast Plus on July 26 to control bluegrass.	2000 CONDITIONS: May and June rainfall was above normal with a total of 18.84 inches. The extremely wet spring conditions gave way to very hot, dry conditions in August and September. The rainfall total for August and September was 1.72 inches, with nearly all of that coming in September. As a result, the alfalfa did not regrow after the August cutting.											

Table 5. South Central Kansas, Hutchinson Alfalfa Performance Test, Seeded Sept. 1999.

NAME	Plant Height inches				Forage Yield, 2000						
					tons/acre					Total 15% Moist.	Total, % of Mean
					Dry Matter						
	5-24	6-16	7-21	9-5	5-24	6-16	7-21	9-5	Total		
RELEASED CULTIVARS											
WL 327	20	13	20	18	1.72	1.04	1.85	1.28	5.89	6.93	116
Magnum V	21	15	18	19	1.54	1.13	1.61	1.39	5.66	6.66	112
Aspire	21	16	18	20	1.52	1.16	1.63	1.34	5.65	6.65	112
Pioneer 54Q53	20	14	18	17	1.49	1.09	1.62	1.21	5.41	6.36	107
Forecast 1001	21	14	18	17	1.61	1.03	1.47	1.17	5.28	6.21	104
Kanza	20	15	18	21	1.35	1.02	1.56	1.23	5.16	6.07	102
DK 142	20	14	17	17	1.53	1.05	1.47	1.09	5.15	6.06	102
6420	20	13	17	17	1.48	0.92	1.60	1.12	5.12	6.02	101
Dagger+EV	19	13	17	17	1.50	0.97	1.34	1.20	5.01	5.89	99
Cimarron 3i	22	13	16	16	1.55	0.93	1.36	1.11	4.96	5.84	98
TMF 4464	19	13	17	18	1.48	0.95	1.44	1.07	4.94	5.81	98
WL 232 HQ	19	13	15	16	1.54	0.87	1.48	1.05	4.94	5.81	98
ABT350	20	15	17	17	1.41	0.98	1.45	1.08	4.90	5.76	97
Cimarron SR	21	14	16	17	1.43	0.90	1.52	1.03	4.88	5.74	96
DK 140	19	14	17	18	1.37	0.95	1.55	1.01	4.88	5.74	96
Abilene+Z	19	13	16	18	1.43	0.98	1.37	1.09	4.87	5.73	96
Award	20	15	17	17	1.53	0.97	1.36	0.99	4.86	5.72	96
Perry	20	13	16	17	1.51	0.86	1.40	1.00	4.77	5.61	94
Macon	19	14	18	17	1.05	0.87	1.50	0.95	4.37	5.14	86
EXPERIMENTAL STRAINS											
ZC9650	21	14	17	19	1.57	0.98	1.54	1.16	5.25	6.18	104
ZC9850A	19	12	17	16	1.36	0.88	1.52	1.15	4.92	5.79	97
SUMMARY STATISTICS											
Average	20	14	17	18	1.47	0.97	1.50	1.12	5.06	5.95	100
LSD(0.05)	1	1	2	2	0.18	0.10	0.22	0.17	0.46	0.54	9
LSD(0.20)	1	1	1	1	0.09	0.05	0.11	0.08	0.23	0.27	5
CV(%)	6	9	9	8	10.63	8.70	12.71	12.97	7.64	7.64	8
MCV(%)	7	11	11	9	12.53	10.27	NS	15.29	9.02	9.02	9
LOCATION: South Central Kansas Site: South Central Experiment Field County: Reno Town: Hutchinson Soil: Ost silt loam			2000 FERTILIZATION: 75-40-40 prior to planting			2000 CONDITIONS: The fall and winter of 1999-2000 were warmer than normal with above-normal precipitation in some months. The spring was cool and moist with uneven precipitation. Heavy rains in late July recharged soil moisture after the first two cuttings. Extremely hot, dry weather characterized August and September.					
ESTABLISHMENT: 9/14/99; RCBD, 4 reps Plots 5'x20', 3'x20' harvested 18 lb. seed/acre			2000 PEST CONTROL: Poast Plus was applied on November 29, 1999 to control volunteer oats. Treated with insecticide on April 8 to control alfalfa weevil and again on August 18 to control a severe infestation of armyworm.								

**Table 6. Southwest Kansas, Garden City Alfalfa Performance Test, Seeded August 1999.
Irrigated**

NAME	Forage Yield, 2000					Total 15% Moist.	Total, % of Mean
	tons/acre						
	5-30	7-5	8-14	9-19	Total		
RELEASED CULTIVARS							
WL 327	4.46	2.75	2.84	2.17	12.21	14.36	104
TMF 4464	4.47	2.74	2.81	2.16	12.16	14.31	104
Magnum V	4.53	2.72	2.76	2.14	12.15	14.29	104
Pioneer 54Q53	4.43	2.69	2.79	2.19	12.08	14.21	103
Jade II	4.53	2.64	2.77	2.08	12.01	14.13	103
Emperor	4.40	2.68	2.79	2.10	11.97	14.08	102
Cimarron 3i	4.47	2.68	2.76	2.07	11.97	14.08	102
Forecast 1001	4.28	2.67	2.77	2.16	11.87	13.96	101
ABT 400SCL	4.29	2.71	2.76	2.12	11.87	13.96	101
Pioneer 53V08	4.30	2.71	2.77	2.09	11.85	13.94	101
Affinity+Z	4.44	2.63	2.76	2.03	11.84	13.93	101
GH 750	4.36	2.65	2.74	2.04	11.77	13.85	101
Aspire	4.09	2.69	2.82	2.18	11.77	13.85	101
Dagger+EV	4.38	2.73	2.61	2.04	11.75	13.82	100
Cimarron SR	4.33	2.70	2.68	2.04	11.73	13.80	100
Abilene+Z	4.31	2.59	2.69	2.10	11.68	13.74	100
FQ315	4.27	2.63	2.67	2.05	11.62	13.67	99
6420	4.32	2.58	2.66	2.04	11.60	13.65	99
DK 140	4.23	2.65	2.66	1.95	11.47	13.49	98
DK 142	4.29	2.53	2.63	1.99	11.43	13.45	98
ABT350	4.02	2.64	2.67	2.02	11.34	13.34	97
Perry	4.32	2.54	2.54	1.91	11.30	13.29	96
Award	4.09	2.49	2.59	2.02	11.18	13.15	95
Kanza	3.84	2.42	2.49	2.09	10.83	12.74	92

(continued)

**Table 6. Southwest Kansas, Garden City Alfalfa Performance Test, Seeded August 1999.
Irrigated**

NAME	Forage Yield, 2000						Total, % of Mean
	tons/acre					Total 15% Moist.	
	Dry Matter			Total			
5-30	7-5	8-14	9-19		Total		
EXPERIMENTAL STRAINS							
ZC9850A	4.48	2.65	2.74	2.23	12.10	14.24	103
DS9705 HYB	4.43	2.69	2.73	2.13	11.98	14.09	102
ZC9650	4.41	2.70	2.73	2.09	11.92	14.02	102
DS9707 HYB	4.32	2.68	2.80	2.12	11.92	14.02	102
ZC9853A	4.47	2.57	2.76	2.06	11.85	13.94	101
ZC9851A	4.43	2.61	2.67	2.12	11.81	13.89	101
DS9704 HYB	4.47	2.62	2.72	1.99	11.79	13.87	101
CW 64025	4.24	2.63	2.69	2.11	11.67	13.73	100
ZC9854A	4.43	2.58	2.65	1.99	11.64	13.69	99
CW 84024	4.28	2.61	2.69	2.08	11.64	13.69	99
CW 74033	4.10	2.65	2.64	2.10	11.48	13.51	98
CW 74043	4.32	2.54	2.63	1.93	11.41	13.42	97
ZC9840A	4.33	2.55	2.58	1.94	11.40	13.41	97
CW 64018	4.21	2.53	2.61	2.06	11.40	13.41	97
CW 84025	3.89	2.55	2.70	2.11	11.24	13.22	96
ZC9841A	4.17	2.45	2.61	1.91	11.13	13.09	95
ZC9842A	4.06	2.47	2.57	1.98	11.07	13.02	94
SUMMARY STATISTICS							
Average	4.32	2.63	2.70	2.07	11.71	13.78	100
LSD(0.05)	0.19	0.11	0.13	0.12	0.43	0.51	4
LSD(0.20)	0.10	0.05	0.07	0.06	0.22	0.26	2
CV(%)	3.82	3.43	4.25	4.87	3.17	3.17	3
MCV(%)	4.47	4.02	4.98	5.71	3.71	3.71	4

<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>2000 FERTILIZATION: 22-104-0 applied at planting</p> <p>2000 PEST CONTROL: None</p>	<p>2000 CONDITIONS: Early crop development was accelerated by the warm spring temperatures. Hot, dry conditions in August and September caused some stress to the fourth cutting.</p>
--	--	---

**Appendix 1: Varieties in 2000 Kansas Alfalfa Performance Tests
with unverified fall dormancy and disease and insect resistance**

COMPANY NAME	S N													COMPANY NAME	S N															
	F	B	V	F	A	R	A	P	A	S	P	K	K		P	F	D	W	W	N	R	A	A	A	N	H	N	N	L	
AgriPro														DK 127	3	H	R	R	H	H	H	H	M	R	H	-	R	R		
Dagger+EV	5	H	H	H	H	H	M	H	M	R	-	-	L	L	DK 131HG	3	H	H	H	H	H	R	R	L	M	R	-	R	R	
Defense+EV	3	H	H	H	H	H	-	R	-	-	H	-	-	-	DK 140	4	H	R	H	H	H	H	R	M	M	H	-	M	M	
Depend+EV	4	H	H	H	H	H	M	R	S	M	R	-	-	-	DK 141	4	H	H	H	H	H	R	R	-	M	H	-	-	-	
Dominator	4	H	R	H	H	H	-	R	-	M	R	-	-	-	DK 142	4	H	R	H	R	H	R	H	-	R	H	-	-	-	
Feast+EV	3	H	H	H	R	H	-	M	-	-	H	-	-	-	Mycogen															
Yielder	3	H	H	H	R	H	-	R	-	-	-	-	-	-	TMF 4464	4	H	H	H	H	H	-	R	-	M	R	-	-	-	
ALLIED														NC+																
Macon	4	H	H	H	H	H	H	H	-	-	-	-	-	-	Jade II	4	H	R	H	R	H	R	R	M	-	M	-	M	M	
America's Alfalfa														NE AES & USDA																
Abilene+Z	5	H	H	H	H	H	M	H	M	R	R	-	-	-	Perry	3	R	-	R	L	M	-	-	-	-	-	-	-	-	
Affinity+Z	4	H	H	H	H	H	-	R	-	R	R	-	-	-	Ranger	3	M	-	S	S	S	S	S	S	S	S	-	-	-	-
Amerigraze 401+Z	4	H	H	H	H	H	-	R	-	R	R	-	-	-	NetSeeds															
Ameriguard 302+Z	3	H	H	H	H	H	-	R	-	R	H	-	-	-	NetYield500	4	H	R	H	R	H	R	R	-	R	M	-	-	-	
Emperor	4	H	H	H	H	H	M	R	-	-	H	-	-	-	NK															
Cargill														Geneva	4	H	H	H	H	H	R	H	L	R	H	-	-	-		
FQ315	3	H	R	H	H	H	H	R	-	R	H	-	-	-	Pioneer															
Dairyland Seed														53V08	3	H	H	H	H	H	R	H	M	H	L	-	H	H		
Forecast 1001	4	H	R	R	R	H	-	R	-	R	R	-	H	H	5454	4	R	M	H	H	H	R	R	S	M	L	-	-	-	
Magnum V	4	H	R	H	R	H	R	R	M	R	M	-	M	M	54H55	5	H	H	R	R	H	H	H	R	H	-	-	H	H	
Garst														54H69	4	H	R	H	H	H	M	R	-	R	R	-	-	-		
631	4	H	R	H	R	H	R	H	M	R	M	-	-	-	54Q53	4	H	H	R	R	H	M	M	-	H	M	-	H	H	
6420	4	H	R	H	-	H	R	R	-	R	R	-	H	H	Star															
645-II	3	H	H	H	H	H	-	R	-	-	H	-	-	-	Asset	4	H	R	R	R	H	R	R	-	-	M	-	-	-	
Golden Harvest														Sendero	6	M	R	H	H	H	H	H	R	M	-	-	R	R		
GH 750	4	H	H	H	H	H	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	M	R	R	-	-	-	-	
Monsanto														WL 326 GZ	4	H	H	H	H	H	R	R	-	R	H	-	-	-		
Aspire	6	M	R	H	H	H	H	H	R	H	-	-	-	-	WL 327	4	H	R	H	H	-	R	-	-	R	H	-	-	-	
Award	4	H	H	H	H	H	H	H	R	R	R	-	-	-																

Variety characterization codes:

FD = Fall dormancy rating
BW = Bacterial wilt
VW = Verticillium wilt
FW = Fusarium wilt
AN = Anthracnose race 1
PRR = Phytophthora root rot
SAA = Spotted alfalfa aphid
PA = Pea aphid
BAA = Blue alfalfa aphid
SN = Stem nematode
APH = Aphanomyces root rot race 1
SRKN = Southern root knot nematode
NRKN = Northern root knot nematode
PL = Potato leafhopper

Fall dormancy ratings:

<u>Check variety</u>	<u>Rating</u>
Norseman	1
Vernal	2
Ranger	3
Saranac	4
Archer	5
ABI 700	6
Dona Ana	7
Maricopa	8
CUF 101	9
UC 1887	10

Pest resistance ratings:

<u>Code</u>	<u>Resistance class</u>	<u>% Resistant plants</u>
S	Susceptible	0-5%
L	Low Resistance	6-14%
M	Moderate Resistance	15-30%
R	Resistance	31-50%
H	High Resistance	>50%
-	Not adequately tested	

Fall dormancy and disease and insect resistance ratings are from Alfalfa Varieties, a publication of the Certified Alfalfa Seed Council, NAAIC cultivar descriptions, or from developers of the varieties. Blank spaces indicate that the variety has not been tested adequately for that trait.

Appendix 2: Entrants in 2000 Kansas Alfalfa Performance Tests.

AgriPro

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

Great Plains

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

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
www.netseeds.com

America's Alfalfa

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

MBS

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

NK

Novartis Seeds Inc
1060 Wheatland Dr
Buhler, KS 67522
316-543-2707
www.nk.com

Cargill

Cargill Hybrid Seeds
PO Box 5645
Minneapolis, MN 55440
612-742-6731
www.seed.cargill.com

Monsanto

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

Pioneer

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

Dairyland

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

Mycogen

Mycogen Seeds
301 Campus Drive
Huxley, IA 50124
515-597-3284
www.mycogen.com

Star

Advanced Genetics
PO Box 414
Beloit, KS 67420
800-782-7611

Garst

Garst Seed Co
219 E Garfield
Greensburg, KS 67054
316-723-2454
www.garstseed.com

NC+

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

I understand that all results from Kansas Crop Performance Tests belong to the University and the public and shall be controlled by the University so as to produce the greatest benefit to the public. Performance data may be used in the following ways: 1) Tables may be reproduced in their entirety provided the source is referenced and data are not manipulated or reinterpreted; 2) Advertising statements by an individual company about the performance of its entries may be made as long as they are accurate statements about the data as published, with no reference to other companies' names or cultivars. In both cases, the following must be included with the reprint or ad citing the appropriate publication number and title: "See the official Kansas State University Agricultural Experiment Station and Cooperative Extension Service Report of Progress 860 '2000 Kansas Performance Tests with Corn Hybrids', or the Kansas Crop Performance Test website, <http://www.ksu.edu/kscpt>, for details. Endorsement or recommendation by Kansas State University is not implied."

These materials may be freely reproduced for educational purposes. All other rights reserved. In each case, give credit to the author(s), name of work, Kansas State University, and the date the work was published.

CONTRIBUTORS

MAIN STATION, MANHATTAN

Kraig Roozeboom, Associate
Agronomist (Senior Author)
Paul St. Amand, Assistant Professor
Alfalfa Breeding and Genetics

RESEARCH CENTERS

Joseph Moyer, Mound Valley
Merle Witt, Garden City

EXPERIMENT FIELDS

William Heer, Hutchinson
W. Barney Gordon, Belleville
Larry Maddux, Powhattan

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

Kansas State University Agricultural Experiment Station and Cooperative Extension Service, Manhattan 66506
SRP870 January 2001

It is the policy of Kansas State University Agricultural Experiment Station and Cooperative Extension Service that all persons shall have equal opportunity and access to its educational programs, services, activities, and materials without regard to race, color, religion, national origin, sex, age, or disability. Kansas State University is an equal opportunity organization. These materials may be available in alternative formats. 3.6M