

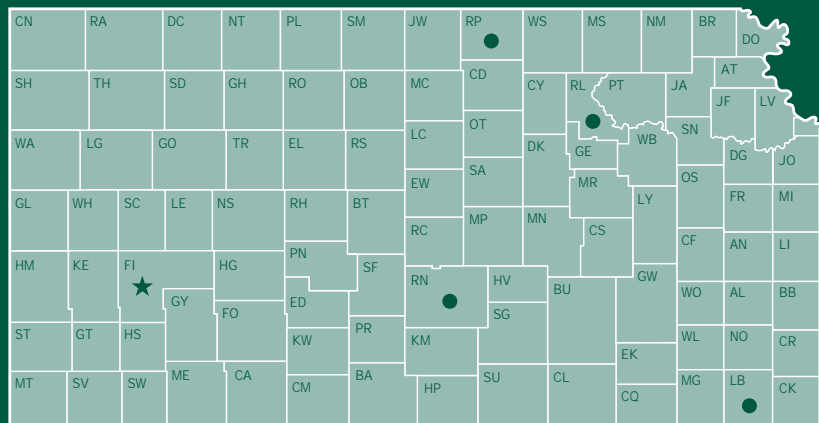
1998

KANSAS PERFORMANCE TESTS WITH

ALFALFA VARIETIES

REPORT OF PROGRESS 828

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service



● dryland

★ irrigated

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1998 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 or 4 years. New tests are established during the final production year of the previous test.

Alfalfa tests are currently in progress at 7 locations around the state. This year, no results are included from the Sandyland Experiment Field near St. John or the Cornbelt Experiment Field near Powhattan because of stand establishment problems or delays. The other testing sites include the Southwest Research-Extension Center at Garden City, the Southeast Agricultural Research Center at Parsons, the South Central Kansas Experiment Field near Hutchinson, the North Central Experiment Field near Belleville, and the Agronomy North Farm at Manhattan.

Descriptive information is presented with the results for each test (Tables 1-5). 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 1-5. 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.

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 a 1 in 20 chance of not being real. Differences equal to or greater than the 0.20 LSD have a 1 in 5 chance of not being real.

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 no benefit.

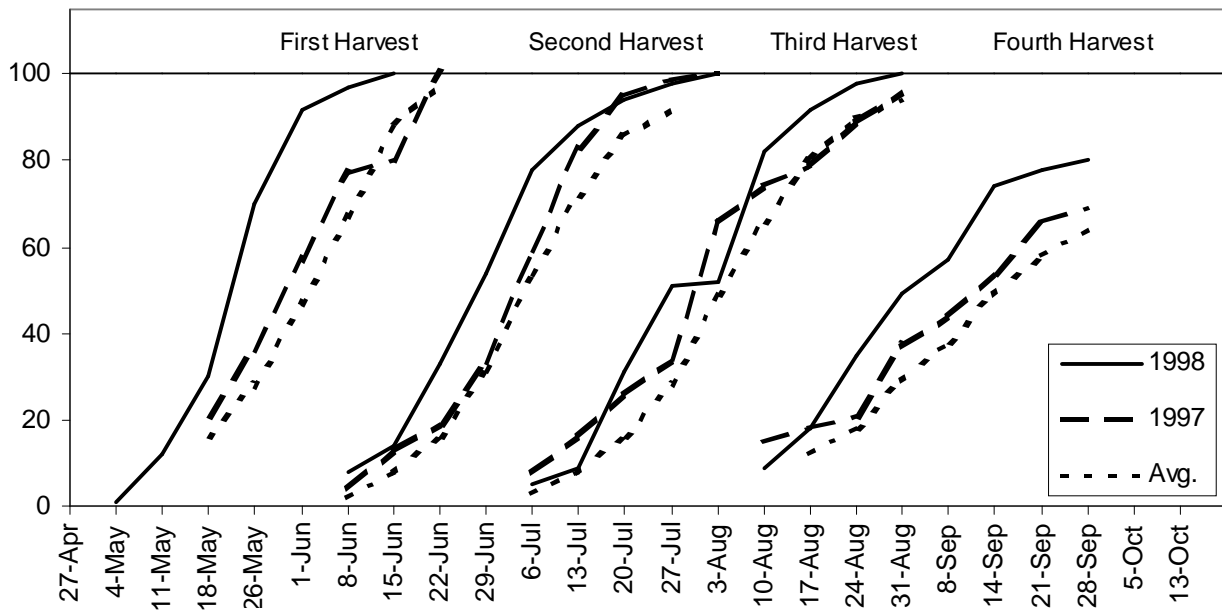


Figure 1. Statewide alfalfa harvest progress.

1998 STATEWIDE GROWING CONDITIONS

Alfalfa harvests were generally ahead of normal during the entire season (Figure 1). Warm temperatures early in May enabled producers to start the first harvest ahead of schedule, and low rainfall in the second half of the month facilitated a rapid finish (Figures 2 and 3). Continued warm temperatures caused the second and third cuttings to be slightly ahead of average as well. The fourth cutting started slightly behind last year's but progressed more rapidly because of very dry conditions in late August and all of

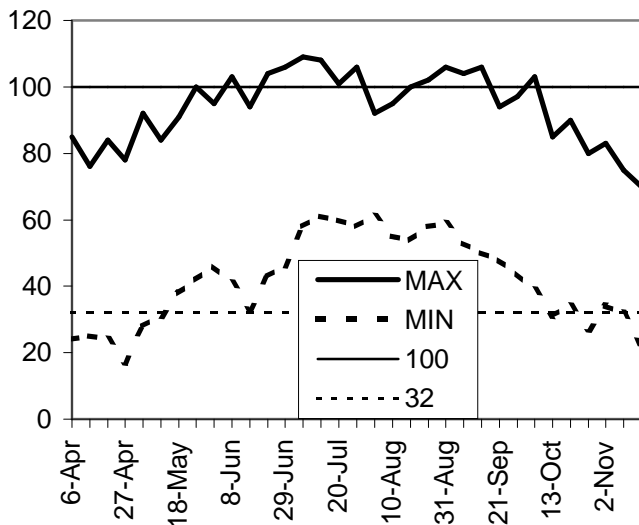


Figure 2. 1998 Kansas weekly maximum and minimum temperatures.

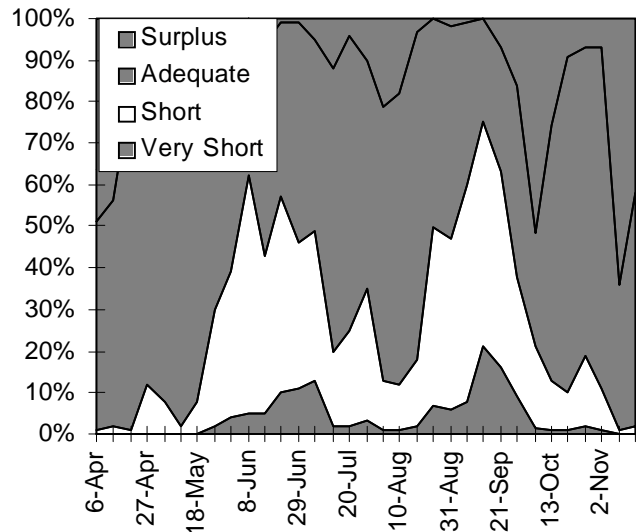


Figure 3. Statewide topsoil moisture status.

September. (From Crop-Weather reports, Kansas Agricultural Statistics, Topeka).

Entomologists found several insect pests in alfalfa fields in 1998. Weevils caused extensive damage in the eastern two thirds of the state before the first harvest. Several producers applied insecticides to control weevils in late April and early May. Pea aphids prompted insecticide applications in some south-central fields during the same period. Grasshoppers caused some concern in June and July, especially in south central Kansas, much of which suffered from drought conditions. Gray and black blister

beetles appeared sporadically beginning in mid-June through September. Several species of insect larvae damaged alfalfa late in the season (beet armyworm, fall armyworm, yellow striped armyworm, green cloverworm, corn earworm, various webworms). These worms completely destroyed some new plantings. (From Cooperative Economic Insect Survey reports, Kansas Department of Agriculture).

No significant disease problems were reported in 1998. The lack of disease pressure was most likely due to the relatively hot, dry weather in May when most of the foliar diseases develop. (From Plant Disease Survey Reports, Kansas Department of Agriculture).

The November 10 Kansas Agricultural Statistics report predicted total 1998 alfalfa hay production of 4.18 million tons from 950,000 acres. This is up from 3.6 million tons produced from 900,000 acres in 1997. The predicted average yield of 4.4 tons per acre exceeded the final 1997 average by 0.4 tons/acre.

Contact Kraig Roozeboom for alfalfa test information on disk or via e-mail. Text and tables can be sent in a variety of formats (txt, Excel, dBase). See note on page 13 about electronic access.

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. The appendix contains additional descriptive information and marketing contacts for all varieties included in the 1998 Kansas Alfalfa Performance Tests. Fall dormancy, disease resistance, and insect resistance ratings were provided by developers of each variety and were reviewed by the Association of Official Seed Certifying Agencies (AOSCA) National Alfalfa Variety Review Board (NAVRB). The Alfalfa Council uses that information to publish its annual Fall Dormancy & Pest Resistance Ratings for Alfalfa Varieties, which was used as the source of the information in the appendix. Entrants provided ratings for those varieties not included in the Alfalfa Council publication.

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

TABLE 1. RILEY CO. ALFALFA PERFORMANCE TEST RESULTS, 1995-1998.

BRAND	NAME	Plant Height inches	Forage Yield											95-98 Total, Total, 15% % of Moist. Mean
			tons/acre											
			Dry Matter											
			1998				1997				1996			
8-18	5-11	6-17	7-13	8-18	10-21	Total	Total	Total	Total	Total	Total	Total		
Released Cultivars														
Dairyland Seeds	Magnum IV	21	2.19	1.28	1.21	2.30	1.14	8.12	11.37	7.61	7.05	34.15	40.18	107
Garst	630	21	2.20	1.39	1.08	1.81	0.91	7.39	11.29	7.68	7.47	33.83	39.80	106
Hobart Seed	SuperCuts	21	2.24	1.25	1.08	1.80	0.97	7.35	11.26	7.05	7.34	33.00	38.82	103
NK	Ciba 2444	20	2.21	1.17	1.04	1.59	0.96	6.96	11.20	7.66	7.00	32.82	38.61	103
Cal/West	OK49	23	2.05	1.29	1.02	1.69	1.02	7.08	10.84	7.53	7.26	32.71	38.48	102
DSS	Reward	22	2.12	1.36	1.11	1.85	1.11	7.54	10.46	7.52	7.10	32.62	38.38	102
W-L Research	WL 323	21	1.99	1.34	1.01	2.03	1.00	7.37	10.96	6.68	7.61	32.62	38.38	102
America's Alfalfa	Archer	22	2.03	1.29	1.10	1.64	1.10	7.16	10.72	7.52	6.97	32.37	38.08	101
KS AES & USDA	Riley	21	2.07	1.15	1.10	2.03	1.04	7.39	10.91	6.64	7.42	32.36	38.07	101
DeKalb	DK 133	20	1.77	1.31	1.03	2.42	1.40	7.93	10.12	6.97	7.26	32.28	37.98	101
Star	Asset	19	2.01	1.09	0.89	1.45	1.14	6.59	11.29	6.74	7.52	32.14	37.81	101
America's Alfalfa	Aggressor	22	2.06	1.27	1.03	1.73	1.04	7.13	10.61	7.25	6.91	31.90	37.53	100
Garst	645	21	2.32	1.27	0.97	1.71	0.96	7.23	10.69	6.77	7.14	31.83	37.45	100
Cargill	Crown II	22	1.95	1.14	1.01	1.82	1.04	6.97	10.44	6.87	7.54	31.82	37.44	100
Mycogen	TMF Generation	20	2.17	1.19	0.91	1.95	0.88	7.09	10.79	6.66	7.04	31.58	37.15	99
NE AES & USDA	Perry	21	1.80	1.06	0.93	1.71	1.02	6.53	10.77	6.58	7.28	31.16	36.66	98
America's Alfalfa	Apollo Supreme	22	2.36	1.09	0.91	1.83	0.87	7.05	10.57	6.72	6.81	31.15	36.65	98
Star	A-100	21	1.97	1.23	0.84	1.64	1.08	6.76	10.72	6.34	7.28	31.10	36.59	97
W-L Research	WL 322 HQ	22	2.13	1.17	1.03	1.90	0.91	7.14	10.68	6.99	6.27	31.08	36.56	97
KS AES & USDA	Kanza	22	2.03	0.87	0.91	1.75	0.82	6.38	10.49	7.02	6.94	30.83	36.27	97
NK	Fortress	22	1.93	1.06	0.83	1.56	0.99	6.38	9.88	6.29	6.45	29.00	34.12	91
Experimental Strains														
Pioneer	90W3PR1 Exp	23	2.34	1.16	0.90	1.72	1.04	7.17	11.21	8.06	8.12	34.56	40.66	108
Pioneer	91112PJ1 Exp	22	2.08	1.46	1.05	1.83	1.05	7.48	11.43	7.46	6.68	33.05	38.88	104
ABI	ABI 9142	20	1.98	1.15	0.90	1.71	1.08	6.82	11.07	7.18	7.74	32.81	38.60	103
ABI	ABI 9141 Exp	20	2.15	1.20	1.16	1.85	1.12	7.49	11.24	7.10	6.82	32.65	38.41	102
MBS	PGI3212 Exp	20	2.06	1.31	1.06	1.80	0.96	7.19	11.28	7.35	6.77	32.59	38.34	102
ABI	ABI 923DD Exp	21	2.21	1.19	1.13	1.93	0.99	7.46	11.03	7.00	6.51	32.00	37.65	100
Pioneer	91CO2PR1 Exp	21	2.21	1.19	0.98	1.69	0.87	6.94	11.01	7.13	6.77	31.85	37.47	100
Pioneer	88C2PI2 Exp	22	1.87	1.36	1.17	2.02	0.99	7.41	10.11	7.07	6.45	31.04	36.52	97
Cal/West	1346 Exp	20	2.02	1.28	1.02	1.72	0.96	6.99	10.18	7.33	6.50	31.00	36.47	97
Pioneer	91CO1PR1 Exp	22	1.93	1.10	1.06	1.71	0.94	6.75	10.10	7.60	6.30	30.75	36.18	96
Cal/West	1344 Exp	20	2.30	1.07	0.82	1.68	0.92	6.80	10.20	6.68	6.96	30.64	36.05	96
Cal/West	1469 Exp	21	1.93	1.03	1.09	1.93	0.94	6.92	9.99	7.17	6.44	30.52	35.91	96
MBS	PGI3392 Exp	21	1.79	1.18	1.00	1.78	0.90	6.65	10.03	6.80	6.78	30.26	35.60	95
Summary Statistics														
Average	Average	21	2.07	1.21	1.01	1.81	1.01	7.10	10.73	7.10	7.00	31.93	37.56	100
LSD(0.05)	LSD(0.05)	1	0.17	0.18	0.16	0.24	NS	0.56	0.65	0.34	0.60	1.25	1.47	4
LSD(0.20)	LSD(0.20)	1	0.13	0.14	0.12	0.19	0.15	0.44	0.43	0.22	0.46	0.80	0.94	3
CV(%)	CV(%)	6	6.95	12.64	13.44	11.53	15.96	6.68	4.31	3.45	7.27	2.73	--	--
MCV(%)	MCV(%)	7	8.17	14.78	15.72	13.52	18.68	7.85	6.10	4.79	8.57	3.91	3.91	4
LOCATION: Northeast Kansas		1998 FERTILIZATION:					1998 CONDITIONS:							
Site: Agronomy North Farm		None; soil tested high in P and K					The first harvest was made early to prevent excessive weevil damage.							
County: Riley		1998 PEST CONTROL:					Second harvest yields were depressed by hot, dry conditions in May and June. Good rains in July and early August enabled yields to rebound for the 4th cutting. Dry weather in August and September stunted regrowth and reduced 5th cutting yields.							
Town: Manhattan		Insecticide after first cutting to control weevils and leaf hoppers.												
Soil: Smolan silt loam														
ESTABLISHMENT:														
3/17/94 ; RCBD, 4 reps														
Plots 3'x12'; 3'x12' harvested														
15 lb seed/acre														

TABLE 2. REPUBLIC CO. ALFALFA PERFORMANCE TEST RESULTS, 1998.

BRAND	NAME	Forage Yield				Total, 15% Moist.	1998 Total, % of Mean
		tons/acre					
		1998 Dry Matter			Total		
5-28	7-13	8-15					
Released Cultivars							
AgriPro	Dominator	2.98	1.51	1.95	6.44	7.58	109
DeKalb	DK 127	2.74	1.53	2.02	6.29	7.40	106
DeKalb	DK 142	2.81	1.64	1.83	6.28	7.39	106
Germaines	WL 324	2.81	1.62	1.78	6.21	7.31	105
Pioneer	5454	2.76	1.44	1.87	6.07	7.14	103
AgriPro	Depend+EV	2.85	1.43	1.78	6.06	7.13	102
Star	Asset	2.75	1.62	1.66	6.04	7.11	102
Star	Spur	2.76	1.49	1.77	6.03	7.09	102
Germaines	WL 325 HQ	2.69	1.54	1.77	6.01	7.07	102
NE AES & USDA	Perry	2.56	1.45	1.71	5.72	6.73	97
KS AES & USDA	Kanza	2.04	1.46	2.00	5.50	6.47	93
Experimental Strains							
ABI	ZN9646 Exp	2.92	1.37	1.45	5.74	6.75	97
ABI	ZN9541 Exp	2.80	1.39	1.46	5.65	6.65	95
ABI	ZN9540 Exp	2.68	1.42	1.54	5.64	6.64	95
ABI	ZC9641 Exp	2.25	1.19	1.65	5.09	5.99	86
Summary Statistics							
	Average	2.69	1.47	1.75	5.92	6.96	100
	LSD(0.05)	0.19	0.14	0.21	0.33	0.39	6
	LSD(0.20)	0.15	0.11	0.16	0.26	0.31	4
	CV(%)	6.03	7.81	10.11	4.71	--	--
	MCV(%)	7.18	9.31	12.03	5.60	5.60	6

LOCATION: North Central Kansas
Site: North Central Kansas Exp. Field
County: Republic
Town: Belleville
Soil: Crete silt loam

ESTABLISHMENT:
 9/6/97 ; RCBD, 4 reps
 Plots 5'x15'; 3'x15' harvested
 18 lb seed/acre

1998 FERTILIZATION:
 September, 1997; 0-100-0

1998 PEST CONTROL:
 Herbicide applied preplant to control grasses. Insecticide applied on May 1 for armyworm control.

1998 CONDITIONS:
 April was wetter than normal, but May and the first part of June were very dry. A high temperature of 100 F was recorded in the first week of May. High temperatures in the first week of June were only in the 50's. Temperatures in July-September were very warm. Rainfall in July was ideal, but little rain fell in August and September.

TABLE 3. LABETTE CO. ALFALFA PERFORMANCE TEST RESULTS, 1995-1998.

		tons/acre											
		Dry Matter											Total, 15% Moist.
		6-4	7-8	8-6	10-22	Total	1997 Total	1996 Total	1995 Total	95-98 Total			
Released Cultivars													
Hobart Seed	SuperCuts	2.72	1.44	0.70	0.54	1.12	6.52	9.13	4.98	3.48	24.11	28.36	104
AgriPro	Depend+EV	2.68	1.49	0.68	0.44	1.19	6.48	9.30	4.79	3.23	23.80	28.00	103
Mycogen	TMF Generation	2.77	1.43	0.58	0.44	1.29	6.51	9.18	4.94	3.13	23.76	27.95	103
America's Alfalfa	Total+Z	2.79	1.41	0.58	0.37	1.26	6.41	8.84	5.28	3.22	23.75	27.94	102
America's Alfalfa	Affinity+Z	2.77	1.40	0.64	0.45	1.20	6.46	9.14	4.83	3.16	23.59	27.75	102
Dairyland Seeds	Magnum IV	2.57	1.48	0.74	0.54	1.31	6.64	8.93	5.19	2.74	23.50	27.65	101
DeKalb	DK 133	2.67	1.34	0.60	0.47	1.12	6.20	8.91	5.10	3.27	23.48	27.62	101
Great Plains	Haygrazer	2.83	1.30	0.57	0.42	1.31	6.43	9.22	4.82	2.86	23.33	27.45	101
W-L Research	WL 323	2.72	1.37	0.59	0.39	1.27	6.34	8.77	4.92	3.24	23.27	27.38	100
W-L Research	WL 252 HQ	2.65	1.29	0.67	0.50	1.30	6.41	8.87	4.82	3.14	23.24	27.34	100
America's Alfalfa	Innovator+Z	2.66	1.40	0.58	0.43	1.31	6.38	8.68	4.62	3.42	23.10	27.18	100
DeKalb	DK 127	2.71	1.34	0.59	0.33	1.26	6.23	8.96	4.53	3.09	22.81	26.84	98
NK	Rushmore	2.57	1.33	0.59	0.49	1.16	6.14	8.67	4.78	3.06	22.65	26.65	98
NE AES & USDA	Perry	2.84	1.30	0.47	0.25	1.32	6.18	8.58	4.75	2.75	22.26	26.19	96
KS AES & USDA	Riley	2.59	1.35	0.58	0.36	1.26	6.14	8.69	4.72	2.57	22.12	26.02	95
KS AES & USDA	Kanza	2.47	1.35	0.59	0.36	1.10	5.87	8.29	4.89	2.54	21.59	25.40	93
Experimental Strains													
ABI	ABI 9141 Exp	2.68	1.45	0.72	0.46	1.35	6.66	9.22	5.01	3.29	24.18	28.45	104
Forage Genetics	3T26 Exp	2.65	1.45	0.62	0.40	1.09	6.21	8.78	4.61	3.22	22.82	26.85	98
Summary Statistics													
Average		2.69	1.38	0.61	0.42	1.23	6.33	8.90	4.88	3.07	23.18	27.27	100
LSD(0.05)		0.16	0.10	NS	0.10	0.11	0.32	0.41	NS	0.35	0.75	0.88	3
LSD(0.20)		0.12	0.08	0.09	0.08	0.09	0.21	0.27	0.28	0.23	0.49	0.58	2
CV(%)		4.93	5.97	16.31	19.12	7.64	3.53	3.25	6.21	9.20	2.29	--	--
MCV(%)		5.83	7.09	19.48	22.90	9.09	5.02	4.60	NS	11.40	3.24	3.24	3

LOCATION: Southeast Kansas
Site: Southeast Ag. Research Center
County: Labette
Town: Mound Valley
Soil: Parsons silty clay loam
ESTABLISHMENT:
 4/6/95 ; RCBD, 4 reps
 Plots 5'x30'; 3'x20' harvested
 15 lb seed/acre

1998 FERTILIZATION:
 May; 21-54-182
1998 PEST CONTROL:
 No pesticides needed; a transient
 swarm of blister beetles appeared
 just prior to the first cutting but

1998 CONDITIONS:
 Growth after the August 6 cutting was
 suppressed by dry conditions that were
 not alleviated until the rains returned on
 September 13.

TABLE 4. RENO CO. ALFALFA PERFORMANCE TEST RESULTS, 1998.

BRAND	NAME	Plant Height inches			Forage Yield							
					tons/acre						97-98	
		5-21 6-26 7-22			Dry Matter				1997 Total	97-98 Total	Total, 15% Moist.	Total, % of Mean
					1998			Total				
5-21	6-26	7-22	5-21	6-26	7-22	Total	1997 Total	97-98 Total	Total, 15% Moist.	Total, % of Mean		
Released Cultivars												
Mycogen	TMF Generation	24	12	18	2.58	1.15	1.10	4.83	5.13	9.96	11.72	105
Star	Spur	24	13	17	2.44	1.29	1.17	4.90	5.12	10.02	11.79	106
Germaines	WL 324	24	13	18	2.40	1.24	1.31	4.95	5.04	9.99	11.75	105
Casterline	ProGro 424	24	12	19	2.27	1.26	1.30	4.83	4.98	9.81	11.54	103
Garst	645	24	12	16	2.45	1.22	1.14	4.81	4.97	9.78	11.51	103
Great Plains	Key	25	14	18	2.56	1.30	1.18	5.04	4.97	10.01	11.78	105
Star	Asset	25	13	17	2.54	1.24	1.32	5.10	4.87	9.97	11.73	105
Star	A-100	25	12	17	2.48	1.06	1.08	4.62	4.87	9.49	11.16	100
Germaines	WL 325 HQ	23	14	19	2.22	1.32	1.32	4.86	4.83	9.69	11.40	102
Mycogen	TMF Multiplier II	25	14	19	2.46	1.21	1.25	4.92	4.81	9.73	11.45	103
America's Alfalfa	Affinity+Z	25	12	18	2.49	1.13	1.20	4.82	4.80	9.62	11.32	101
Dairyland Seeds	Magnum IV	22	12	17	2.56	1.11	1.12	4.79	4.80	9.59	11.28	101
Great Plains	Haygrazer	24	12	18	2.56	1.13	1.14	4.83	4.80	9.63	11.33	101
DeKalb	DK 127	24	13	17	2.51	1.12	1.21	4.84	4.78	9.62	11.32	101
W-L Research	WL 414	23	12	18	1.93	1.15	1.23	4.31	4.73	9.04	10.64	95
AgriPro	Depend+EV	22	11	18	2.39	1.18	1.20	4.77	4.72	9.49	11.16	100
America's Alfalfa	Archer	24	13	18	2.23	1.25	1.24	4.72	4.69	9.41	11.07	99
KS AES & USDA	Riley	25	12	17	2.40	1.07	1.04	4.51	4.68	9.19	10.81	97
Star	Excalibur II	24	13	19	2.29	1.20	1.25	4.74	4.67	9.41	11.07	99
W-L Research	WL 252 HQ	23	12	19	2.43	1.04	1.15	4.62	4.65	9.27	10.91	98
Sharp	AlfaLeaf II	25	11	18	2.40	1.16	1.08	4.64	4.60	9.24	10.87	97
NE AES & USDA	Perry	24	12	16	2.42	1.04	1.12	4.58	4.58	9.16	10.78	97
Sharp	Shamrock	25	13	18	2.40	1.06	1.23	4.69	4.57	9.26	10.89	98
Star	Stamina	25	12	16	2.35	1.14	1.17	4.66	4.48	9.14	10.75	96
KS AES & USDA	Kanza	26	13	18	2.06	1.17	1.11	4.34	4.35	8.69	10.22	92
W-L Research	Ace	22	12	18	2.03	1.24	1.37	4.64	4.26	8.90	10.47	94
Experimental Strains												
Cal/West	CW 5440 Exp	23	13	19	2.16	1.35	1.38	4.89	4.71	9.60	11.29	101
Cal/West	CW 5406 Exp	23	12	18	2.25	1.21	1.32	4.78	4.63	9.41	11.07	99
Cal/West	CW 4429 Exp	23	14	18	2.25	1.21	1.28	4.74	4.62	9.36	11.01	99
Summary Statistics												
Average		24	12	18	2.36	1.18	1.21	4.75	4.74	9.49	11.16	100
LSD(0.05)		NS	NS	NS	0.22	0.12	0.13	0.34	0.35	0.49	0.58	5
LSD(0.20)		2	NS	NS	0.17	0.09	0.10	0.22	0.23	0.32	0.38	3
CV(%)		7	14	9	7.89	8.38	9.33	5.03	5.25	3.64	--	--
MCV(%)		NS	NS	NS	9.28	9.87	10.94	7.16	7.38	5.16	5.16	5
LOCATION: South Central Kansas Site: South Central Experiment Field County: Reno Town: Hutchinson Soil: Ost silt loam ESTABLISHMENT: 9/1/96 ; RCBD, 4 reps Plots 5'x20, 3x20' harvested 18 lb seed/acre		1998 FERTILIZATION: None; soil tested high in P and K 1998 PEST CONTROL: Herbicide applied on January 27 to control grasses. Insecticide applied in April to control alfalfa weevils.			1998 CONDITIONS: The test was cut four times. Hot, dry conditions after the 3rd cutting severely stunted the alfalfa, making 4th-cutting yields so variable that they were not recorded.							

TABLE 5. FINNEY CO. IRRIGATED ALFALFA PERFORMANCE TEST RESULTS, 1998.

BRAND	NAME	Forage Yield							97 -98 Total, 15% Moist.	97 -98 Total, % of Mean
		tons/acre					1997 Total	97-98 Total		
		Dry Matter								
6-5	7-14	8-19	9-25	Total	1998 Total	1997 Total	97-98 Total	15% Moist.	% of Mean	
Released Cultivars										
W-L Research	WL 414	3.72	2.15	2.74	2.37	10.98	9.62	20.60	24.24	103
Germaines	WL 324	4.04	2.19	2.52	2.29	11.02	9.46	20.48	24.09	103
Mycogen	TMF Multiplier II	4.03	2.18	2.54	2.31	11.05	9.29	20.34	23.93	102
Germaines	WL 325 HQ	4.13	2.18	2.57	2.26	11.12	9.21	20.33	23.92	102
Star	Stamina	3.94	2.22	2.52	2.32	10.99	9.34	20.33	23.92	102
Casterline	ProGro 424	3.99	2.29	2.55	2.39	11.20	9.08	20.28	23.86	102
Golden Harvest	GH-755	3.99	2.25	2.53	2.31	11.07	8.99	20.06	23.60	101
DSS	Enhancer	3.82	2.26	2.55	2.40	11.02	9.02	20.04	23.58	101
KS AES & USDA	Riley	3.75	2.22	2.57	2.30	10.83	9.21	20.04	23.58	101
Garst	630	3.87	2.32	2.69	2.28	11.16	8.81	19.97	23.49	100
Cargill	Big Horn	3.94	2.14	2.48	2.24	10.79	9.15	19.94	23.46	100
Star	Spur	3.99	2.11	2.46	2.24	10.78	9.14	19.92	23.44	100
Sharp	AlfaLeaf II	3.97	2.08	2.37	2.23	10.64	9.22	19.86	23.36	100
W-L Research	WL 323	3.93	2.11	2.42	2.26	10.72	9.14	19.86	23.36	100
DeKalb	DK 127	3.82	2.17	2.54	2.21	10.73	9.12	19.85	23.35	100
Garst	645	3.73	2.19	2.45	2.17	10.54	9.22	19.76	23.25	99
Star	A-100	3.90	2.16	2.34	2.19	10.58	9.17	19.75	23.24	99
Golden Harvest	GH-766	3.96	2.18	2.46	2.22	10.82	8.78	19.60	23.06	98
W-L Research	Ace	3.73	2.23	2.49	2.20	10.64	8.93	19.57	23.02	98
Dairyland Seeds	Magnum III	3.84	2.13	2.51	2.30	10.78	8.71	19.49	22.93	98
NE AES & USDA	Perry	3.99	2.09	2.43	2.19	10.69	8.80	19.49	22.93	98
Star	Asset	3.80	2.13	2.46	2.22	10.59	8.69	19.28	22.68	97
Sharp	Sure	3.80	2.12	2.42	2.22	10.54	8.68	19.22	22.61	96
KS AES & USDA	Kanza	3.87	2.27	2.53	2.31	10.96	8.13	19.09	22.46	96
Sharp	Shamrock	3.81	2.00	2.12	2.11	10.03	9.02	19.05	22.41	96
Star	Excalibur II	3.66	2.07	2.39	2.24	10.36	8.59	18.95	22.29	95
DeKalb	DK 133	3.75	1.93	2.38	2.21	10.25	8.68	18.93	22.27	95
Experimental Strains										
DSS	DSS 5211X Exp	4.35	2.35	2.72	2.41	11.81	9.71	21.52	25.32	108
Cal/West	CW 5406 Exp	3.95	2.21	2.58	2.38	11.11	9.89	21.00	24.71	105
Cal/West	CW 4598 Exp	3.86	2.32	2.59	2.37	11.12	9.56	20.68	24.33	104
Cal/West	CW 5440 Exp	3.86	2.22	2.61	2.42	11.10	9.55	20.65	24.29	104
Cal/West	CW 4429 Exp	3.71	2.19	2.46	2.27	10.62	9.37	19.99	23.52	100
DSS	DSS 5106X Exp	3.80	2.15	2.50	2.29	10.73	9.01	19.74	23.22	99
Summary Statistics										
Average		3.89	2.17	2.50	2.28	10.83	9.10	19.93	23.45	100
LSD(0.05)		NS	0.12	0.16	0.11	0.50	0.27	0.49	0.58	2
LSD(0.20)		NS	0.10	0.13	0.08	0.39	0.17	0.32	0.38	2
CV(%)		6.44	4.85	5.57	3.95	3.90	2.09	1.73	1.73	2
MCV(%)		7.57	5.69	6.54	4.63	4.58	2.95	2.46	2.46	2
LOCATION: Southwest Kansas Site: Southwest Res.-Ext. Center County: Finney Town: Garden City Soil: Keith silt loam ESTABLISHMENT: 8/29/96 ; RCBD, 4 reps Plots 3'x20'; 3'x20' harvested 32 lb seed/acre		1998 FERTILIZATION: None needed 1998 PEST CONTROL: Insecticide applied on April 11 to control aphids.			1998 CONDITIONS: Extremely hot, dry weather in June appeared to lower 2nd-cutting yields from typical levels. Flood irrigations were applied five times during the season. Very wet conditions in July reduced the need for irrigations during that part of the summer.					

Appendix: Entrants and entries in 1998 Kansas Alfalfa Performance Tests with unverified fall dormancy and disease and insect resistance ratings

ABI 515-292-2432

ABI Alfalfa
2316 259th St.
Ames, IA 50014

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
ABI 9141 Exp	4	H	H	H	H	H	-	R	-	M	R	-	-
ABI 9142	4	H	R	H	H	H	-	R	-	M	R	-	-
ABI 923DD Exp	3	H	H	H	H	H	M	R	-	R	R	-	-
ZC9641 Exp	-	-	-	-	-	-	-	-	-	-	-	-	-
ZN9540 Exp	-	-	-	-	-	-	-	-	-	-	-	-	-
ZN9541 Exp	-	-	-	-	-	-	-	-	-	-	-	-	-
ZN9646 Exp	-	-	-	-	-	-	-	-	-	-	-	-	-

Cal/West 608-786-1554

Cal/West Seeds
R.R. 1, Box 70
West Salem, WI 54669

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
1344 Exp	-	-	-	-	-	-	-	-	-	-	-	-	-
1346 Exp	-	-	-	-	-	-	-	-	-	-	-	-	-
1469 Exp	-	-	-	-	-	-	-	-	-	-	-	-	-
CW 4429 Exp	-	-	-	-	-	-	-	-	-	-	-	-	-
CW 4598 Exp	-	-	-	-	-	-	-	-	-	-	-	-	-
CW 5406 Exp	-	-	-	-	-	-	-	-	-	-	-	-	-
CW 5440 Exp	-	-	-	-	-	-	-	-	-	-	-	-	-
OK49	-	-	-	-	-	-	-	-	-	-	-	-	-

AgriPro 800-334-4730

PO Box 2962
Shawnee Mission, KS 66201-1302

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
Depend+EV	4	H	H	H	H	H	-	R	-	-	R	-	-
Dominator	4	H	R	H	H	H	-	R	-	M	R	-	-

Cargill 612-742-6743

Cargill Hybrid Seeds
P.O. Box 5645
Minneapolis, MN 55440

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
Big Horn	4	H	R	H	H	H	R	R	H	R	H	-	-
Crown II	3	H	R	H	H	H	M	R	-	-	-	-	-

America's Alfalfa 913-384-4940

America's Alfalfa
P.O. Box 2955
6700 Antioch
Shawnee Mission, KS 66201

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
Affinity+Z	4	H	H	H	H	H	-	R	-	R	R	-	-
Aggressor	4	H	R	H	H	H	M	H	M	M	M	-	-
Apollo Supreme	4	H	R	H	H	R	-	H	-	-	-	-	-
Archer	5	M	M	H	R	R	H	H	R	R	-	-	R
Innovator+Z	3	H	H	H	H	H	M	R	S	R	R	-	-
Total+Z	3	H	H	H	H	H	M	R	S	M	R	-	-

Casterline 800-444-4137

Casterline Seeds, Inc.
Box 1377
1st & Maple
Dodge City, KS 67801

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
ProGro 424	4	H	R	H	R	H	R	R	M	-	M	-	-

Variety characterization codes:

- 1 = Fall dormancy rating
- 2 = Bacterial wilt
- 3 = Verticillium wilt
- 4 = Fusarium wilt
- 5 = Anthracnose race 1
- 6 = Phytophthora root rot
- 7 = Spotted alfalfa aphid
- 8 = Pea aphid
- 9 = Blue alfalfa aphid
- 10 = Stem nematode
- 11 = Aphanomyces root rot race 1
- 12 = Southern root knot nematode
- 13 = Northern root knot nematode

Fall dormancy ratings:

<u>Check variety</u>	<u>Rating</u>
Norseman	1
Vernal	2
Ranger	3
Saranac	4
DuPuits	5
Lahontan	6
Mesilla	7
Moapa 69	8
CUF 101	9

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, or from developers of the varieties. Blank spaces indicate that the variety has not been adequately tested.

(continued)

Appendix: Entrants and entries in 1998 Kansas Alfalfa Performance Tests with unverified fall dormancy and disease and insect resistance ratings

DSS 316-275-2359
 Drussel Seed and Supply
 2197 W. Parallel Road
 Garden City, KS 67846

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
DSS 5106X Exp	-	-	-	-	-	-	-	-	-	-	-	-	-
DSS 5211X Exp	-	-	-	-	-	-	-	-	-	-	-	-	-
Enhancer	4	H	R	H	R	H	R	-	-	-	M	-	-
Reward	4	H	R	H	R	H	R	H	M	M	M	-	-

Dairyland Seeds 800-236-0163
 Dairyland Seed Co.
 P.O. Box 958
 West Bend, WI 53095

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
Magnum III	4	R	M	R	M	R	M	R	M	M	L	-	-
Magnum IV	4	H	R	H	R	H	M	-	M	R	M	-	M

DeKalb 815-758-9323
 DeKalb Plant Genetics Corp.
 3100 Sycamore Rd.
 DeKalb, IL 60115

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
DK 127	3	H	R	R	H	H	H	H	-	R	H	-	R
DK 133	4	H	R	H	H	H	R	R	-	M	R	-	-
DK 142	4	H	R	H	R	H	H	H	-	R	H	-	-

Forage Genetics 608-786-2121
 Forage Genetics
 N 5292 South Gills Coulee Rd.
 West Salem, WI 54669

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
3T26 Exp	-	-	-	-	-	-	-	-	-	-	-	-	-

Garst 608-249-8977
 Garst Seed Co.
 P.O. Box 7790
 Madison, WI 53707-7790

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
630	4	H	M	R	M	R	M	R	M	M	-	-	-
645	3	H	R	R	H	H	M	R	-	M	M	-	-

Germain's 785-674-2062
 Germain's Seed Co.
 P.O. Box 373
 Hill City, KS 67642

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
WL 324	3	H	R	H	H	H	R	H	-	M	H	-	-
WL 325 HQ	3	H	R	H	H	H	R	R	M	R	R	-	-

Golden Harvest 800-228-9906
 J.C. Robinson Seed Co.
 100 J.C. Robinson Blvd.
 P.O. Box A
 Waterloo, NE 68069

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
GH-755	4	H	R	H	H	H	R	R	R	R	R	-	-
GH-766	3	H	R	H	H	H	R	R	-	R	R	-	-

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

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
Haygrazer	4	H	R	H	R	R	R	R	-	R	M	M	-
Key	4	H	H	H	H	H	H	M	M	M	M	-	-

Variety characterization codes:

- 1 = Fall dormancy rating
- 2 = Bacterial wilt
- 3 = Verticillium wilt
- 4 = Fusarium wilt
- 5 = Anthracnose race 1
- 6 = Phytophthora root rot
- 7 = Spotted alfalfa aphid
- 8 = Pea aphid
- 9 = Blue alfalfa aphid
- 10 = Stem nematode
- 11 = Aphanomyces root rot race 1
- 12 = Southern root knot nematode
- 13 = Northern root knot nematode

Fall dormancy ratings:

<u>Check variety</u>	<u>Rating</u>
Norseman	1
Vernal	2
Ranger	3
Saranac	4
DuPuits	5
Lahontan	6
Mesilla	7
Moapa 69	8
CUF 101	9

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, or from developers of the varieties. Blank spaces indicate that the variety has not been adequately tested.

(continued)

Appendix: Entrants and entries in 1998 Kansas Alfalfa Performance Tests with unverified fall dormancy and disease and insect resistance ratings

Hobart Seed 800-866-6074
 Hobart Seed
 530 S. Main
 Hobart, OK 73651

1 2 3 4 5 6 7 8 9 10 11 12 13

SuperCuts 4 H H H H H - R - L R - -

KS AES & USDA 785-532-6115
 KSU - Foundation Seed
 2200 Kimball Ave.
 Manhattan, KS 66502

1 2 3 4 5 6 7 8 9 10 11 12 13

Kanza - - - - - - - - - - - - -
 Riley 4 H L - M - H H - - - - -

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

1 2 3 4 5 6 7 8 9 10 11 12 13

PGI3212 Exp - - - - - - - - - - - - -
 PGI3392 Exp - - - - - - - - - - - - -

Mycogen 800-692-6436
 Mycogen Seeds
 1340 Corporate Center Curve
 P.O. Box 21428
 St. Paul, MN 55121-1428

1 2 3 4 5 6 7 8 9 10 11 12 13

TMF Generation 4 H H H H H - R - - R - -
 TMF Multiplier II - - - - - - - - - - - - -

NE AES & USDA 402-472-4290
 Foundation Seed Division
 University of Nebraska-Lincoln
 3115 North 70th
 Lincoln, NE 68507-2104

1 2 3 4 5 6 7 8 9 10 11 12 13

Perry 3 R - - L - M R - - - - -

NK 316-543-2707
 Novartis Seeds, Inc.
 1060 Wheatland Dr.
 Buhler, KS 67522

1 2 3 4 5 6 7 8 9 10 11 12 13

Ciba 2444 3 H R H H H - M - M R - -
 Fortress 4 R R R - H H R - H - - -
 Rushmore 4 H R H H H H R - - H - -

Pioneer 515-270-3342
 Pioneer Hi-Bred Intl., Inc.
 Box 287
 7305 NW 62nd
 Johnston, IA 50131

1 2 3 4 5 6 7 8 9 10 11 12 13

5454 4 R M H H H R R S M L - -
 88C2PI2 Exp - - - - - - - - - - - - -
 90W3PR1 Exp - - - - - - - - - - - - -
 91CO1PR1 Exp - - - - - - - - - - - - -
 91CO2PR1 Exp - - - - - - - - - - - - -
 91I12PJ1 Exp - - - - - - - - - - - - -

<u>Variety characterization codes:</u>	<u>Fall dormancy ratings:</u>	<u>Pest resistance ratings:</u>
	<u>Check variety</u> <u>Rating</u>	<u>Code</u> <u>Resistance class</u> <u>% Resistant plants</u>
1 = Fall dormancy rating	Norseman 1	S Susceptible 0-5%
2 = Bacterial wilt	Vernal 2	L Low resistance 6-14%
3 = Verticillium wilt	Ranger 3	M Moderate resistance 15-30%
4 = Fusarium wilt	Saranac 4	R Resistance 31-50%
5 = Anthracnose race 1	DuPuits 5	H High resistance >50%
6 = Phytophthora root rot	Lahontan 6	- Not adequately tested
7 = Spotted alfalfa aphid	Mesilla 7	
8 = Pea aphid	Moapa 69 8	
9 = Blue alfalfa aphid	CUF 101 9	
10 = Stem nematode		
11 = Aphanomyces root rot race 1		
12 = Southern root knot nematode		
13 = Northern root knot nematode		

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

(continued)

Appendix: Entrants and entries in 1998 Kansas Alfalfa Performance Tests with unverified fall dormancy and disease and insect resistance ratings

Sharp 316-398-2231
 Sharp Bros. Seed Company
 Box 140
 Healy, KS 67850

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
AlfaLeaf II	4	R	R	H	H	H	R	H	-	R	R	-	-
Shamrock	-	-	-	-	-	-	-	-	-	-	-	-	-
Sure	-	-	-	-	-	-	-	-	-	-	-	-	-

Star 785-346-5447
 Star Seed
 101 Industrial Ave.
 Osborne, KS 67473

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
A-100	-	-	-	-	-	-	-	-	-	-	-	-	-
Asset	4	H	R	R	R	H	R	R	-	-	M	-	-
Excalibur II	-	-	-	-	-	-	-	-	-	-	-	-	-
Spur	4	H	R	H	H	H	R	H	-	M	R	-	M
Stamina	4	H	R	H	H	H	H	H	-	H	R	-	H

W-L Research 608-882-4100
 W-L Research, Inc.
 8701 Hwy. 14
 Evansville, WI 53536-8752

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
Ace	4	H	R	H	H	H	M	R	R	H	R	-	-
WL 252 HQ	2	H	R	H	H	H	M	R	L	R	L	-	-
WL 322 HQ	4	H	R	H	M	R	H	H	R	L	-	-	L
WL 323	4	H	R	H	H	H	M	R	-	H	R	-	-
WL 414	6	R	R	H	R	H	H	H	H	R	-	R	-

<u>Variety characterization codes:</u>	<u>Fall dormancy ratings:</u>		<u>Pest resistance ratings:</u>		
	<u>Check variety</u>	<u>Rating</u>	<u>Code</u>	<u>Resistance class</u>	<u>% Resistant plants</u>
1 = Fall dormancy rating	Norseman	1	S	Susceptible	0-5%
2 = Bacterial wilt	Vernal	2	L	Low resistance	6-14%
3 = Verticillium wilt	Ranger	3	M	Moderate resistance	15-30%
4 = Fusarium wilt	Saranac	4	R	Resistance	31-50%
5 = Anthracnose race 1	DuPuits	5	H	High resistance	>50%
6 = Phytophthora root rot	Lahontan	6	-	Not adequately tested	
7 = Spotted alfalfa aphid	Mesilla	7			
8 = Pea aphid	Moapa 69	8			
9 = Blue alfalfa aphid	CUF 101	9			
10 = Stem nematode					
11 = Aphanomyces root rot race 1					
12 = Southern root knot nematode					
13 = Northern root knot nematode					

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

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