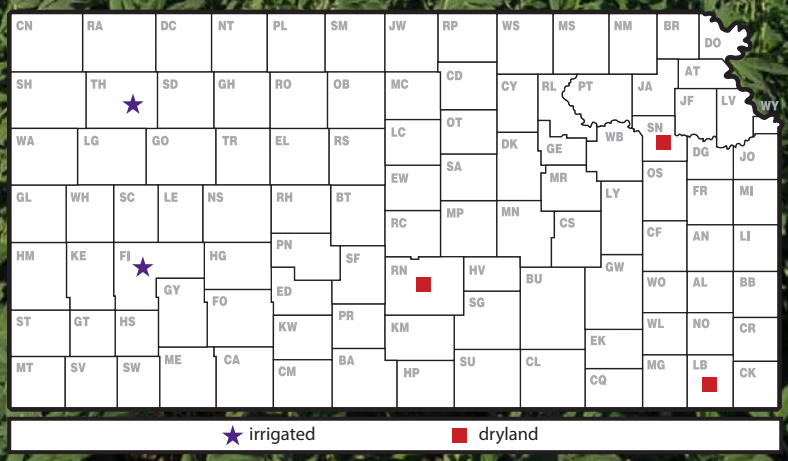
2011

Kansas Performance Tests with

Alfalfa Varieties

Report of Progress 1061



K-STATE
Research and Extension

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service

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2011 Performance Tests

Entrants in 2011 Kansas Alfalfa Performance Tests

Allied Seed, LLC
(Allied, Farm Science Genetics)
Nampa, ID
208-466-6700
alliedseed.com

Dairyland Seed Co.
West Bend, WI
800-236-0163
dairylandseed.com

KSU AES
Foundation Seed
Manhattan, KS
785-532-6115
agronomy.ksu.edu

NE AES and USDA
Foundation Seed
Division
Lincoln, NE
877-229-1363

WI AES
Madison, WI
608-262-6203
uwex.edu/ces/forage

America's Alfalfa
Nampa, ID
800-873-2532
Americasalfalfa.com

Forage Genetics
Boone, IA
515-432-9115
Foragegenetics.com

Monsanto Seed
(Dekalb)
St. Louis, MO
800-335-2676

PGI Alfalfa, Inc.
Woodland, CA
866-744-5710

W-L Research, Inc.
Madison, WI
608-295-3566
wlresearch.com

Crop Production Srv.
Fresno, CA
559-436-2941

Garst Seed Co.
Greensburg, KS
620-546-5955
garstseed.com

Mycogen Seeds
Indianapolis, IN
317-337-7568
Dow.com

Pioneer Hi-Bred Intl., Inc.
Johnston, IA
800-247-6803
pioneer.com

Croplan Genetics
St. Paul, MN
800-851-8810
croplangenetics.com

Great Plains Research Co.
(Cimarron USA)
Cary, NC
800-874-7945
CimarronUSA.com

NC+ Hybrids
Lincoln, NE
800-365-9804
nc-plus.com

Syngenta Seeds, Inc.
(Golden Harvest, NK)
Minneapolis, MN
800-445-0956
syngentaseeds.com

Contribution no. 12-246-S from the Kansas Agricultural Experiment Station.

2011 PERFORMANCE TESTS

Objectives and Procedures

The Kansas Agricultural Experiment Station established an official alfalfa testing program in 1980 to provide Kansas growers with unbiased performance comparisons of alfalfa varieties marketed in the state. Every three years, 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, but the southeast Kansas test usually is planted in the spring. Individual tests are conducted for a minimum of three years. New tests typically are established during the final production year of the previous test, or more frequently if interest is strong.

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 to 80 ft^2) 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, 2, and 3. 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 of 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 less than 10% generally indicate reliable, uniform data, whereas CV of 10 to 15% are not uncommon and generally indicate the data are acceptable for rough comparisons. Tests with CV greater than 15% still may 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 percentage difference required to detect differences between varieties with 95% confidence.

Variety Characterization

For variety selection, producers should consider the performance of a variety in each of the current tests in which 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 specific situations.

Tables 1 through 5 contain updated yield data from individual tests currently in progress. First-season yields for a spring-planted test often are more variable than yields in subsequent years. Season totals are important, but yield distribution during the season might differ 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.

Table 6 provides winter survival, disease and insect-resistance, multi-foliolate expression, and continuous grazing tolerance ratings for released varieties. These ratings were obtained primarily from the annual "Winter Survival, Fall Dormancy & Pest Resistance Ratings for Alfalfa Varieties" pamphlet published by the National Alfalfa Alliance. That report summarizes information submitted by developers of alfalfa varieties as part of the variety registration process. The Association of Official Seed Certifying Agencies National Alfalfa Variety Review Board reviewed the ratings before they were published. Companies submitting varieties for the tests provided ratings for some unregistered varieties. Experimental varieties are also listed in Table 6 for brand identification.

Table 1. Southwest Kansas, Garden City Alfalfa Performance Test, Seeded August 24, 2010

Monty Spangler, agronomist
Southwest Research-Extension Center, Garden City
Keith silt loam; 30 lb seed/acre
Plots 3'x20'; 3'x20' harvested
22-100-0 lb/a of N-P-K

No disease or insect problems noted. Good growing season.

NAME	Forage yield, Tons/acre, Dry matter, 2011 5-31	2011 7-1	2011 8-2	2011 9-1	2011	Total	Total, 15% moist.	Total, % of mean
RELEASED CULTIVARS								
6431	3.46	2.36	2.15	1.84	9.82	9.82	11.55	104
Mountaineer 2.0	3.10	2.41	2.31	1.91	9.72	9.72	11.44	103
DKA50-18	3.07	2.46	2.16	2.01	9.70	9.70	11.41	103
AmeriStand 403T+	3.38	2.42	2.10	1.79	9.69	9.69	11.40	102
LegenDairy 5.0	3.20	2.33	2.22	1.84	9.59	9.59	11.28	101
Archer III	2.91	2.33	2.28	1.97	9.50	9.50	11.18	100
Perry	3.28	2.28	2.06	1.81	9.44	9.44	11.11	100
DG 4210	2.80	2.41	2.28	1.90	9.40	9.40	11.05	99
AmeriStand 407TQ	2.96	2.32	2.24	1.85	9.37	9.37	11.02	99
Vernal	3.35	2.26	2.02	1.70	9.33	9.33	10.98	99
WL 363HQ	2.84	2.32	2.22	1.85	9.23	9.23	10.86	98
Kanza	3.23	2.16	2.03	1.77	9.20	9.20	10.82	97
6422Q	2.80	2.24	2.15	1.84	9.03	9.03	10.63	95
SUMMARY STATISTICS								
Average	3.11	2.33	2.17	1.85	9.46	9.46	9.46	9
LSD (0.05)	0.27	0.17	0.25	0.20	0.45	0.45	0.53	5
LSD (0.20)	0.17	0.11	0.16	0.13	0.29	0.29	0.34	3
CV (%)	6.05	5.12	7.94	7.57	3.32	3.32	--	--
MCV (%)	8.67	7.34	11.39	10.85	4.77	4.77	4.77	5

Table 2. Northwest Kansas, Colby Alfalfa Performance Test, Seeded September 2, 2009

Pat Evans, agronomist
Northwest Research-Extension Center, Colby
Keith silt loam; 18 lb seed/acre
Plots 3'x20'; 3'x17' harvested

14-46-0 lb/a of N-P-K before planting

Growing conditions were normal with no insect problems.

NAME	Forage yield, Tons/acre, Dry matter, 2011 6-3	2011 7-1	2011 8-1	2011 9-2	2011	2010	10-11 Total	Total, 15% moist.	Total, % of mean
RELEASED CULTIVARS									
WL 363HQ	2.26	2.41	2.28	1.57	8.52	7.98	16.50	19.41	113
Mountaineer 2.0	3.12	1.64	1.99	1.28	8.03	7.22	15.26	17.95	104
AmeriStand 403T+	3.03	1.67	1.91	1.00	7.61	7.64	15.25	17.94	104
Archer III	2.64	1.74	1.87	1.25	7.51	7.66	15.17	17.85	104
6422Q	2.59	1.75	2.00	1.55	7.88	7.16	15.04	17.70	103
LegenDairy 5.0	2.53	1.94	1.98	1.18	7.63	7.26	14.90	17.52	102
Perry	2.73	2.11	1.54	0.92	7.31	6.82	14.13	16.62	96
AmeriStand 407TQ	2.21	1.86	1.84	1.36	7.26	6.80	14.06	16.55	96
Kanza	2.95	1.71	1.93	1.35	7.94	5.98	13.92	16.38	95
Vernal	2.42	1.40	1.44	1.27	6.53	5.86	12.39	14.58	85
SUMMARY STATISTICS									
Average	2.65	1.82	1.88	1.27	7.62	7.03	14.66	14.66	15
LSD (0.05)	0.67	0.75	0.64	0.50	1.29	1.11	1.71	2.01	12
LSD (0.20)	0.43	0.48	0.41	0.32	0.83	0.71	1.09	1.29	7
CV (%)	17.49	28.27	23.57	27.12	11.70	10.90	8.02	--	--
MCV (%)	25.37	41.02	34.20	39.35	16.97	15.81	11.64	11.64	12

Table 3. Southeast Kansas, Mound Valley Alfalfa Performance Test, Seeded April 12, 2010

Joseph Moyer, agronomist
Southeast Research-Extension Center, Mound Valley
Parsons silt loam; 18 lb seed/acre
Plots 3'x20'; 3'x17' harvested

20-50-200 lb/a of N-P-K before planting

Some leaf loss before third cut, because wet ground prevented earlier cutting.

NAME	Forage yield, Tons/acre, Dry matter, 2011 5-9	2011 6-13	2011 7-12	2011 8-23	2011	2010	10-11 Total	Total, 15% moist.	Total, % of mean
RELEASED CULTIVARS									
FSG639ST Bt	2.27	1.64	0.50	0.59	4.99	4.25	9.24	10.87	108
Kanza	2.18	1.53	0.48	0.65	4.84	4.18	9.02	10.62	106
AmeriStand 407TQ	2.27	1.55	0.44	0.65	4.91	4.04	8.94	10.52	105
Perry	2.49	1.42	0.30	0.63	4.84	4.08	8.92	10.50	105
FSG408DP Bt	2.24	1.46	0.39	0.56	4.65	4.18	8.84	10.39	103
AmeriStand 403T+	2.41	1.56	0.37	0.64	4.97	3.86	8.83	10.39	103
Vernal	2.44	1.47	0.41	0.62	4.95	3.87	8.82	10.38	103
FSG505 Bt	2.25	1.51	0.44	0.65	4.85	3.84	8.70	10.23	102
WL 363HQ	1.96	1.48	0.44	0.63	4.51	3.97	8.48	9.98	99
FSG 528SF	2.26	1.47	0.45	0.64	4.82	3.65	8.47	9.96	99
6422Q	1.94	1.61	0.44	0.61	4.61	3.76	8.36	9.84	98
DG 4210	1.89	1.51	0.41	0.59	4.40	3.80	8.20	9.64	96
Archer III	2.04	1.41	0.39	0.59	4.42	3.72	8.14	9.58	95
6552	1.96	1.42	0.40	0.63	4.40	3.63	8.03	9.44	94
WL 343 HQ	2.09	1.47	0.45	0.61	4.62	3.36	7.97	9.38	93
DKA50-18	1.92	1.41	0.40	0.59	4.31	3.35	7.66	9.01	90
SUMMARY STATISTICS									
Average	2.16	1.49	0.42	0.62	4.69	3.84	8.54	8.54	9
LSD (0.05)	0.27	0.14	0.07	0.13	0.33	0.40	0.55	0.65	6
LSD (0.20)	0.17	0.09	0.05	0.09	0.21	0.26	0.36	0.42	4
CV (%)	8.71	6.41	11.61	15.03	5.71	7.25	4.53	--	--
MCV (%)	12.41	9.13	16.53	21.40	8.13		6.45	6.45	6

Table 4. South Central Kansas, Hutchinson Alfalfa Performance Test, Seeded September 1, 2010

Bill Heer, agronomist
South Central Experiment Field, Hutchinson
Punkin silt loam; 30 lb seed/acre
Plots 3'x23'; 3'x20' harvested
22-100-0 lb/a of N-P-K

Extremely adverse growing conditions: high heat and drought during the summer months. Due to the significant effect of climate, this test may not be a good indicator of real differences among varieties.

	Forage Yield					
	Tons/acre					
	Dry matter					
	2011					
NAME	6-20	7-27	2011	Total	Total, 15% Moist.	Total, % of Mean
RELEASED CULTIVARS						
Kanza	0.72	0.31	1.02	1.02	1.20	128
AmeriStand 407TQ	0.72	0.24	0.96	0.96	1.13	120
WL 363HQ	0.63	0.26	0.89	0.89	1.05	112
6422Q	0.66	0.22	0.88	0.88	1.04	111
Perry	0.67	0.21	0.88	0.88	1.04	111
Archer III	0.63	0.21	0.83	0.83	0.98	105
FSG 528SF	0.60	0.17	0.77	0.77	0.90	96
DG 4210	0.55	0.17	0.72	0.72	0.84	90
AmeriStand 403T+	0.54	0.16	0.70	0.70	0.82	88
DKA50-18	0.57	0.12	0.69	0.69	0.81	87
WL 343 HQ	0.51	0.17	0.68	0.68	0.79	85
Vernal	0.51	0.16	0.67	0.67	0.79	84
6552	0.53	0.13	0.66	0.66	0.78	83
SUMMARY STATISTICS						
Average	0.60	0.19	0.80	0.80	0.80	1
LSD (0.05)	0.20	0.09	0.22	0.22	0.26	28
LSD (0.20)	0.13	0.06	0.14	0.14	0.17	18
CV (%)	23.18	33.48	19.34	19.34	--	--
MCV (%)	33.24	48.01	27.73	27.73	27.73	28

Table 5. North Central Kansas, Topeka Alfalfa Performance Test, Seeded September 7, 2010

Eric Adee, agronomist
Kansas River Valley Experiment Field, Topeka
Silty clay loam; 30 lb seed/acre
Plots 3'x20'; 3'x16' harvested
22-100-0 lb/a of N-P-K

No disease or insect problems noted. Good growing season.

	Forage Yield Tons/acre Dry matter							
	2011						Total, 15%	Total, % of
NAME	6-7	7-6	8-23	10-20	2011	Total	Moist.	Mean
RELEASED CULTIVARS								
Mountaineer 2.0	8.27	2.30	0.78	0.28	11.64	11.64	13.69	133
Archer III	6.88	2.04	0.66	0.24	9.82	9.82	11.55	112
Kanza	6.27	1.84	0.79	0.19	9.09	9.09	10.69	104
6422Q	5.00	2.21	1.68	0.14	9.03	9.03	10.62	103
DKA50-18	5.47	2.44	0.52	0.07	8.51	8.51	10.01	97
AmeriStand 407TQ	4.53	2.25	1.02	0.25	8.05	8.05	9.47	92
LegenDairy 5.0	4.76	1.90	0.89	0.33	7.88	7.88	9.27	90
DG 4210	4.73	2.26	0.55	0.07	7.60	7.60	8.94	87
Vernal	4.99	1.77	0.53	0.06	7.35	7.35	8.65	84
Perry	4.43	1.89	0.55	0.18	7.05	7.05	8.29	80
SUMMARY STATISTICS								
Average	5.69	2.14	0.78	0.17	8.77	8.77	8.77	9
LSD (0.05)	2.80	0.61	0.68	0.15	2.95	2.95	3.47	34
LSD (0.20)	1.80	0.39	0.44	0.10	1.90	1.90	2.23	22
CV (%)	34.14	19.84	60.76	60.79	23.31	23.31	--	--
MCV (%)	49.31	28.64	87.74	87.78	33.66	33.66	33.66	34

Table 6. 2011 Performance test entries, with disease and insect resistance ratings for released varieties.*

Brand name	WS	BW	VW	FW	AN	PRR	SAA	PA	BAA	SN	APH1	APH2	SRKN	NRKN	PL	MLE	GT
Allied																	
Escalade	-	H	R	R	R	H	MR	R	-	-	R	-	-	-	-	-	-
FSG406	1	H	H	H	H	H	-	R	-	R	H	-	-	R	-	H	-
FSG408DP Bt	2	H	R	H	H	H	-	R	-	R	R	-	-	H	-	-	-
FSG505 Bt	2	H	H	H	H	H	R	R	-	R	H	-	-	R	-	-	-
FSG639ST Bt	3	H	R	R	R	H	-	R	-	H	M	-	R	H	-	-	-
Mariner III	2	H	H	H	H	H	-	R	-	R	H	R	-	H	-	-	-
Marvel	2	H	H	H	H	H	R	R	-	-	H	-	-	-	-	H	-
Phoenix	4	H	H	H	H	H	-	H	-	H	R	-	-	MR	-	-	-
America's Alfalfa																	
AmeriStand 403T+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AmeriStand 407TQ	2	H	H	H	H	H	R	H	-	M	H	R	-	-	-	-	-
Archer III	2	H	H	H	H	H	-	H	-	H	H	-	-	H	-	H	-
Cimarron USA																	
Cimarron VL400	-	R	R	H	H	H	H	H	R	R	R	-	S	-	-	-	-
I Chg 04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MP04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CPS																	
DG 4210	1	H	H	H	H	H	-	R	-	R	H	-	-	-	-	-	-
Croplan Genetics																	
Artesian Sunrise	-	M	R	R	H	H	H	H	R	R	-	-	-	R	-	H	-
LegenDairy 5.0	2	H	H	H	H	H	R	R	-	M	H	-	-	R	-	H	-
Mountaineer 2.0	2	H	R	H	H	H	R	H	-	H	R	-	-	R	-	H	-
Rebound 5.0	2	H	H	H	H	H	-	R	-	-	H	-	-	-	-	H	-
Dairyland Seed																	
DS253	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS961	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
msSunstra-613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
msSunstra-614	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Farm Science Genetics																	
FSG 528SF	-	H	H	H	H	R	-	R	R	-	R	-	-	-	-	L	-
Forage Genetics																	
FG 52M146	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Garst																	
6400HT	2	H	H	H	H	H	-	H	-	-	H	-	-	-	-	-	Y
6415	1	H	H	H	H	H	R	R	-	-	H	-	-	-	-	H	-
6420	2	H	R	H	R	H	R	R	-	R	R	-	-	H	-	-	-
6431	2	H	H	H	H	H	-	R	-	H	H	-	-	H	-	-	-
6530	-	H	H	H	H	H	-	H	-	R	H	M	-	-	-	-	-
6552	2	H	H	H	H	H	-	R	-	R	H	-	-	-	-	H	-
Golden Harvest																	
GH 727	1	H	H	H	H	H	-	R	-	R	H	-	-	-	-	H	
KS AES & USDA																	
Kanza	-	R	-	-	-	-	R	R	-	-	-	-	-	-	-	-	-
Monsanto																	
DKA41-18RR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DKA50-18	2	H	H	H	H	H	R	R	-	R	H	-	-	-	-	H	-
Mycogen																	
4A421	-	H	H	H	H	H	H	H	-	-	H	-	-	M	-	-	-
4G418RR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4S419	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NC+																	
Hybri+421	2	H	R	H	H	H	R	R	-	R	R	-	-	H	-	-	-
Jade III	2	H	R	H	H	H	R	R	R	R	R	-	-	H	-	-	-
NE AES and USDA																	
Perry	-	R	-	-	L	-	M	R	-	-	-	-	-	-	M	-	-
NK																	
Expedition	3	R	H	H	H	H	R	-	-	R	H	-	-	R	-	-	-
Genoa	1	H	H	H	H	H	-	R	-	R	H	-	-	-	-	-	-
PGI																	
Reward II	2	H	R	H	R	H	R	R	R	R	R	-	-	H	-	-	-
Pioneer																	
54Q25	-	H	H	H	H	H	R	R	-	H	R	-	-	H	-	-	-
54V09	-	H	H	R	H	H	R	H	-	H	R	MR	-	H	-	-	-
54V46	-	R	H	H	H	H	R	R	L	M	H	R	-	H	-	-	-
Syngenta																	
6305Q	1	H	H	H	H	H	H	-	-	R	H	-	-	-	-	H	-
6422Q	1	H	H	H	H	H	-	R	-	R	H	-	-	-	-	H	-
WI AES																	
Vernal	-	R	-	MR	-	-	-	-	-	-	-	-	-	MR	-	-	-
W-L Research																	
WL 343 HQ	1	H	H	H	H	H	-	H	-	R	H	-	-	-	-	H	
WL 355 RR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WL 357 HQ	2	H	H	H	H	H	-	H	-	-	H	-	-	-	-	-	-
WL 363HQ	1	H	H	H	H	H	-	H	-	H	H	-	-	H	-	H	-

*WS = Winter survival, 1 = superior
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
APH1 = Aphanomyces root rot race 1
APH2 = Aphanomyces root rot race 2
SRKN = Southern root knot nematode
NRKN = Northern root knot nematode
PL = Potato leafhopper
MLE = Multi-foliolate expression

Disease and insect resistance ratings are from the National Alfalfa Alliance, NAAIC descriptions, or from developers of the varieties.

GT = Continuous grazing tolerance, Y/N

Pest resistance ratings:

Code	Resistance class	% resistant plants
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	

To access crop performance testing information electronically, visit our website. The information contained in this publication, plus more, is available for viewing or downloading at:

www.agronomy.ksu.edu/kscpt

Excerpts from the
University Research Policy Agreement with Cooperating Seed Companies

Permission is hereby given to Kansas State University (KSU) 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 1061, '2011 Kansas Performance Tests with Alfalfa Varieties,' or the Kansas Crop Performance Test website, *www.agronomy.ksu.edu/kscpt*, for details. Endorsement or recommendation by Kansas State University is not implied."

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