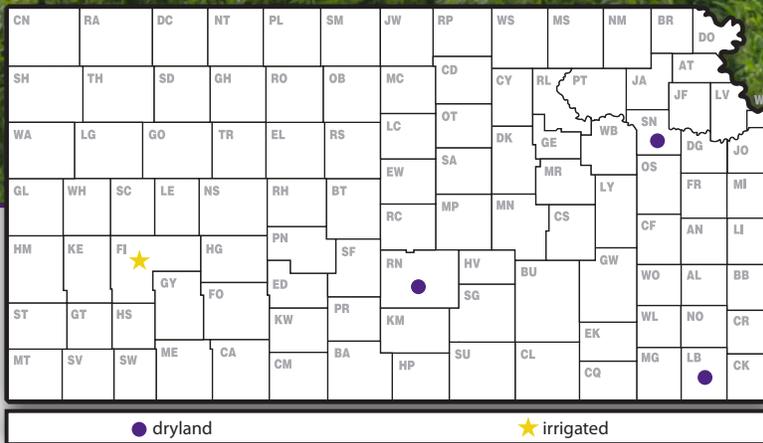


# 2013 Kansas Performance Tests with

# Alfalfa Varieties



## Report of Progress 1097



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## Entrants in 2013 Kansas Alfalfa Performance Tests

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Allied Seed, LLC (Allied, Farm Science Genetics) Nampa, ID 208-466-6700 alliedseed.com	Croplan Genetics St. Paul, MN 800-851-8810 croplangenetics.com	KSU AES Foundation Seed Manhattan, KS 785-532-6115 agronomy.ksu.edu	Nexgrow Alfalfa Minnetonka, MN 800-445-0956 plantNexgrow.com
America's Alfalfa Nampa, ID 800-873-2532 Americasalfalfa.com	Dairyland Seed Co. West Bend, WI 800-236-0163 dairylandseed.com	Monsanto Seed (Dekalb) St. Louis, MO 800-335-2676	WI AES Madison, WI 608-262-6203 uwex.edu/ces/forage
Crop Production Srv. Fresno, CA 559-436-2941	Forage Genetics Boone, IA 515-432-9115 Foragegenetics.com	NE AES & USDA Foundation Seed Division Lincoln, NE 877-229-1363	W-L Research, Inc. Madison, WI 608-295-3566 wlresearch.com

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Contribution No. 14-042-S from the Kansas Agricultural Experiment Station.

## 2013 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<sup>2</sup>) 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 4 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 5 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 5 for brand identification.

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

Monty Spangler, agronomist

Southwest Research-Extension Center, Garden City

No disease or insect problems noted.

Keith silt loam; 30 lb seed/acre

Plots 3'x20'; 3'x20' harvested

22-100-0 lb/a of N-P-K

NAME	Forage yield									
	tons/acre									
	dry matter									
	2013				2013	2012	2011	Total	Total, 15% moist.	Total, % of mean
6/2	7/11	8/12	9/20							
<b>RELEASED CULTIVARS</b>										
DG 4210	2.53	2.21	1.33	1.26	7.33	9.71	9.40	26.44	31.10	102
6431	2.45	2.04	1.03	1.16	6.68	9.72	9.82	26.22	30.85	102
Mountaineer 2.0	2.43	2.12	0.94	1.03	6.52	9.96	9.72	26.20	30.83	102
AmeriStand 403T+	2.41	2.12	1.30	1.34	7.17	9.33	9.69	26.19	30.81	102
LegenDairy 5.0	2.44	2.06	0.90	1.01	6.40	10.10	9.59	26.09	30.70	101
DKA50-18	2.30	2.17	1.20	1.16	6.82	9.52	9.70	26.04	30.63	101
Archer III	2.39	2.14	1.19	1.05	6.77	9.72	9.50	26.00	30.59	101
AmeriStand 407TQ	2.41	2.16	1.16	0.96	6.68	9.64	9.37	25.69	30.22	100
WL 363HQ	2.28	2.21	1.14	1.11	6.74	9.64	9.23	25.61	30.13	99
6422Q	2.34	2.20	1.24	1.36	7.14	9.29	9.03	25.47	29.97	99
Perry	2.43	2.03	0.95	0.93	6.34	9.52	9.44	25.30	29.76	98
Vernal	2.24	1.92	0.78	0.92	5.85	8.93	9.33	24.12	28.38	94
Kanza	2.38	1.86	0.81	0.81	5.86	8.70	9.20	23.75	27.95	92
<b>SUMMARY STATISTICS</b>										
Average	2.39	2.10	1.07	1.25	6.81	9.52	9.46	25.79	30.34	100
LSD (0.05)	0.21	0.15	0.08	1.62	1.64	1.64	0.45	1.82	2.14	11
LSD (0.20)	0.13	0.10	0.05	1.04	1.06	1.06	0.29	1.17	1.38	7
CV (%)	6.01	4.99	5.46	90.20	7.78	1.12	1.53	--	--	--
MCV (%)	8.62	7.16	7.82	29.36	24.13	24.13	4.77	11.16	11.16	11

**Table 2. Southeast Kansas, Mound Valley Rainfed 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

Blister beetle control was required in June and July.

NAME	Forage yield								Total, 15% moist.	Total, % of mean
	tons/acre									
	dry matter									
	2013			2013	2012	2011	2010	Total		
5/17	6/19	8/20								
<b>RELEASED CULTIVARS</b>										
FSG639ST Bt	2.13	1.94	1.18	5.25	3.80	4.99	4.25	18.28	21.51	106
FSG408DP Bt	2.23	1.91	1.28	5.41	3.82	4.65	4.18	18.07	21.26	104
AmeriStand 407TQ	2.06	1.93	1.22	5.21	3.83	4.91	4.04	17.98	21.15	104
AmeriStand 403T+	2.25	1.84	1.29	5.38	3.76	4.97	3.86	17.97	21.14	104
Perry	2.12	1.85	1.18	5.15	3.80	4.84	4.08	17.87	21.02	103
Kanza	2.14	1.80	1.17	5.10	3.52	4.84	4.18	17.64	20.76	102
Vernal	1.98	1.70	1.22	4.90	3.71	4.95	3.87	17.43	20.51	101
FSG505 Bt	2.14	1.95	0.92	5.00	3.68	4.85	3.84	17.38	20.45	100
WL 363HQ	2.02	1.89	1.17	5.07	3.69	4.51	3.97	17.23	20.27	99
6422Q	2.10	1.97	1.19	5.25	3.48	4.61	3.76	17.09	20.11	99
FSG 528SF	2.14	1.82	1.17	5.13	3.42	4.82	3.65	17.03	20.03	98
DG 4210	2.14	2.00	1.21	5.36	3.32	4.40	3.80	16.87	19.85	97
WL 343 HQ	2.19	1.89	1.13	5.21	3.56	4.62	3.36	16.74	19.70	97
6552	2.04	1.93	1.14	5.11	3.47	4.40	3.63	16.60	19.53	96
Archer III	2.09	2.01	1.04	5.15	3.30	4.42	3.72	16.59	19.52	96
DKA50-18	2.08	1.93	1.18	5.19	3.51	4.31	3.35	16.35	19.24	94
<b>SUMMARY STATISTICS</b>										
Average	2.11	1.90	1.17	5.18	3.60	4.69	3.84	17.32	17.32	17
LSD (0.05)	0.18	0.16	0.10	0.44	0.25	0.38	0.40	1.46	--	8
LSD (0.20)	0.11	0.10	0.07	0.52	0.16	0.25	0.26	--	--	--
CV (%)	5.82	5.81	6.21	3.48	4.87	5.71	7.25	2.66	--	--
MCV (%)	8.29	8.27	8.84	8.41	6.94	8.13	10.32	8.46	8.46	8

**Table 3. South Central Kansas, Hutchinson Rainfed Alfalfa Performance Test, Seeded September 1, 2010**

Gary Cramer, agronomist

South Central Experiment Field, Hutchinson

Ost loam; 18 lb seed/acre

Plots 3'x20'; 3'x20' harvested

22-100-0 lb/a of N-P-K

Increased rainfall greatly improved regrowth in 2013.

NAME	Forage yield								Total, 15% Moist.	Total, % of Mean
	tons/acre									
	dry matter									
	2013				2013	2011	Total			
5/31	6/27	8/2	9/19							
<b>RELEASED CULTIVARS</b>										
Kanza	1.83	1.94	1.12	1.38	6.28	1.02	7.30	8.59	141	
AmeriStand 407TQ	1.59	1.39	0.84	1.05	4.86	0.96	5.82	6.85	113	
Perry	1.53	1.11	0.71	1.33	4.68	0.88	5.56	6.54	107	
WL 363HQ	1.42	1.14	0.84	1.16	4.55	0.89	5.45	6.41	105	
Vernal	1.67	1.18	0.91	1.00	4.76	0.67	5.43	6.38	105	
6422Q	1.44	1.22	0.77	1.01	4.44	0.88	5.32	6.26	103	
AmeriStand 403T+	1.51	1.08	0.77	1.13	4.49	0.70	5.19	6.10	100	
WL 343 HQ	1.35	1.25	0.67	0.98	4.25	0.68	4.93	5.80	95	
Archer III	1.34	1.17	0.67	0.80	3.98	0.83	4.81	5.66	93	
FSG 528SF	1.29	1.18	0.61	0.83	3.91	0.77	4.68	5.50	90	
DKA50-18	1.24	0.91	0.66	0.88	3.69	0.69	4.38	5.15	85	
DG 4210	1.22	0.96	0.54	0.85	3.57	0.72	4.29	5.04	83	
6552	1.16	0.87	0.57	0.84	3.45	0.66	4.11	4.83	79	
<b>SUMMARY STATISTICS</b>										
Average	1.43	1.18	0.74	1.02	4.38	0.80	5.17	5.17	5	
LSD (0.05)	0.27	0.30	0.16	0.22	0.49	0.22	0.54	0.63	10	
LSD (0.20)	0.18	0.19	0.10	0.14	0.32	0.14	0.35	0.41	7	
CV (%)	13.39	17.71	14.99	15.14	7.81	19.34	7.25	--	--	
MCV (%)	19.20	25.40	21.50	21.71	11.20	27.73	10.39	10.39	10	

**Table 4. Northeast Kansas, Topeka Rainfed Alfalfa Performance Test, Seeded August 30, 2011**

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.

NAME	Forage yield						Total, 15% Moist.	Total, % of Mean
	tons/acre							
	dry matter							
	2013			2013	2011	Total		
6/3	7/3	10/22						
<b>RELEASED CULTIVARS</b>								
Mountaineer 2.0	2.10	1.09	0.90	4.09	11.64	15.73	18.50	126
AmeriStand 403T+	1.85	0.81	0.88	3.54	10.50	14.04	16.51	112
Archer III	1.73	0.84	0.60	3.17	9.82	12.99	15.29	104
6422Q	1.97	0.98	0.91	3.86	9.03	12.89	15.17	103
Kanza	2.17	0.90	0.69	3.75	9.09	12.84	15.11	103
DKA50-18	1.96	0.82	0.80	3.58	8.51	12.08	14.21	96
AmeriStand 407TQ	2.07	1.20	0.76	4.03	8.05	12.08	14.21	96
DG 4210	2.01	1.21	1.16	4.38	7.60	11.98	14.09	96
LegenDairy 5.0	1.99	0.94	0.91	3.84	7.88	11.72	13.78	94
Vernal	1.87	0.86	0.86	3.59	7.35	10.94	12.87	87
Perry	1.81	0.77	0.88	3.46	7.05	10.51	12.36	84
<b>SUMMARY STATISTICS</b>								
Average	1.96	0.95	0.85	3.75	8.77	12.53	12.53	13
LSD (0.05)	0.30	0.23	0.16	0.41	2.95	2.98	3.51	24
LSD (0.20)	0.19	0.15	0.10	0.26	1.90	1.91	2.25	15
CV (%)	10.62	16.80	12.82	7.56	23.31	16.48	--	--
MCV (%)	15.34	24.26	18.52	10.91	33.66	23.80	23.80	24

**Table 5. 2013 performance test entries, with disease and insect resistance ratings for released varieties.\***

Brand Name	W	B	V	F	A	R	A	P	A	S	H	H	K	K	P	L	G	A A S N			
																		P	S	B	M
	S	W	W	W	N	R	A	A	A	N	1	2	N	N	L	E	T				
<b>Allied</b>																					
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	-	-	-				
<b>America's Alfalfa</b>																					
AmeriStand 403T+	2	H	H	H	H	H	M	H	R	-	-	-	-	-	-	-	-	Y			
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	-				
<b>CPS</b>																					
DG 4210	1	H	H	H	H	H	-	R	-	R	H	-	-	-	-	-	-				
<b>Croplan Genetics</b>																					
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	-				
<b>Farm Science Genetics</b>																					
FSG 528SF	-	H	H	H	H	R	-	R	R	-	R	-	-	-	-	-	-	L	-		
<b>KS AES &amp; USDA</b>																					
Kanza	-	R	-	-	-	-	R	R	-	-	-	-	-	-	-	-	-				
<b>Monsanto</b>																					
DKA50-18	2	H	H	H	H	H	R	R	-	R	H	-	-	-	-	H	-				
<b>NE AES &amp; USDA</b>																					
Perry	-	R	-	-	L	-	M	R	-	-	-	-	-	-	-	M	-				
<b>NEXGROW</b>																					
6305Q	1	H	H	H	H	H	H	-	-	R	H	-	-	-	-	H	-				
6422Q	1	H	H	H	H	H	-	R	-	R	H	-	-	-	-	H	-				
6431	2	H	H	H	H	H	-	R	-	H	H	-	-	H	-	-	-				
6552	2	H	H	H	H	H	-	R	-	R	H	-	-	-	-	H	-				
<b>WI AES</b>																					
Vernal	-	R	-	MR	-	-	-	-	-	-	-	-	-	-	MR	-	-				
<b>W-L Research</b>																					
WL 343 HQ	1	H	H	H	H	H	-	H	-	R	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

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	

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

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](http://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 1097, '2013 Kansas Performance Tests with Alfalfa Varieties,' or the Kansas Crop Performance Test website, [www.agronomy.ksu.edu/kscpt](http://www.agronomy.ksu.edu/kscpt), for details. Endorsement or recommendation by Kansas State University is not implied."

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