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Alfalfa Cultivar Yield Test for South Dakota: 2000 Report

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for South Dakota

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The South Dakota Alfalfa Cultivar Yield Test reports relative forage production characteristics for available cultivars at several locations in South Dakota. Cultivars are entered in the test by seed companies and public breeders at their own discretion. A list of cultivars and companies is in Table 8 at the end of this circular.

Cultivar Selection

The large number of alfalfa cultivars on the market makes cultivar selection decisions difficult. When evaluating test information, consider the characteristics of each cultivar before finalizing your decision. Major attributes to think about include yield, fall dormancy and winterhardiness, disease and insect resistance, and cost per unit of pure live seed.

Yield

Yield information in this and other reports represents seeding year or post-seeding-year averages. Generally, yield data for several years of production are the most meaningful. If possible, use data from test locations that most nearly resemble growing conditions on your farm. However, results from other trials will also be helpful in determining how cultivars perform under a wide range of growing conditions.

To measure significant differences in yield between cultivars, a statistical measure known as the least significant difference (LSD) is used. If the difference in yield between any two cultivars exceeds the LSD value, the higher yielding cultivar performed better at that particular site.

Two cultivars may appear to differ in yield; however, if the difference between any two cultivars is less than the LSD value, there is not sufficient evidence that they are unequal. In some cases, the abbreviation NS (not significant) is used in place of the LSD value to designate that no yield differences were detected among any of the cultivars at that site for a given cutting, total, or average yield.

Fall Dormancy

Fall dormancy ratings (see Table 8) range from 1 (very dormant) to 9 (non-dormant). Since fall dormancy is thought to be related to winterhardiness, severe South Dakota winters necessitate that this rating (actual winterhardiness ratings can be obtained for some cultivars) be used in cultivar selection. Traditionally, very fall-dormant cultivars (rating of 1 or 2) are considered to be very winterhardy, whereas cultivars with a rating of 3 or 4 are considered to be winterhardy to moderately winterhardy.

In general, alfalfa cultivars grown in eastern or southern South Dakota should have a fall dormancy rating of 2, 3, or 4. A fall dormancy score of 1, 2, or 3 is probably more appropriate for northern and western South Dakota.

Alfalfa breeders are working to develop winterhardy cultivars that produce high yields late in the season (fall dormancy rating of 5). Nonetheless, cultivars with ratings of 6 to 8 are generally not winterhardy enough to survive South Dakota winters, although they may be used as annual forages.

Disease and Insect Resistance

Disease resistance ratings (see Table 8) are important indicators of a cultivar's potential to perform where specific diseases commonly limit production or persistence. Major diseases that may affect the productivity of alfalfa in South Dakota include bacterial wilt and *Phytophthora* root rot. Other diseases, such as *Verticillium* wilt, anthracnose, leaf spots, *Fusarium* wilt, and other root and crown rots may cause problems at particular sites. In general, planting a resistant cultivar is the most effective control for most disease problems.

Dominant insect pests of alfalfa include potato leafhopper, alfalfa

weevil, pea aphid, and grasshoppers. Several companies have released cultivars resistant to potato leafhopper during the last 3 years. While these cultivars do demand a premium, they may help reduce the impact of this insect pest in areas of the state where potato leafhoppers are fairly common.

Cost of Pure Live Seed (PLS)

Alfalfa seed costs vary according to two major factors outlined below:

1. **Type of seed purchased.** Modern proprietary cultivars are typically more expensive than older proprietary, public, or common seed. In the last 10 years, most modern cultivars have yielded up to 10% more than older cultivars, however.
2. **Types of seed treatments applied.** Alfalfa seed may be pretreated with inoculant, fungicide, clay/lime coatings, or any combination of the three. While seed treatments may be very useful, it is imperative to remember that application of any of these materials will reduce the amount of PLS per bag due to an increase in inert matter.

No single factor will make an alfalfa cultivar or group of cultivars consistently superior to any others. Therefore, you should carefully evaluate the characteristics discussed above before making your selection. Once you have gathered sufficient information, you can then make an informed decision regarding your next variety of alfalfa.

Materials and Methods

Alfalfa was planted between mid-April and mid-May into a firmly packed seedbed at a seeding rate of 15 lb pure live seed (PLS) per acre at all locations except the 1999 planting at Watertown which was seeded at 20 lb PLS per acre. Preplant (3.43 pints of Eptam 7E per acre or 1.5 pints Treflan 4L per acre) or postemergence (4 fluid oz of Pursuit 2L per acre) herbicides were used for weed control during alfalfa establishment. Superphosphate (50 lb/A) was incorporated during seedbed preparation. Soils are fertilized after establishment according to soil test results.

Alfalfa was evaluated for stage of maturity at time of harvest for all experiments using the mean-stage-by-count scheme developed by Kalu and Fick (1981, Crop Science 21:267-271) as shown in Table 1. Experiments were harvested up to four times each year; however, growth conditions at some locations often limited harvest frequencies.

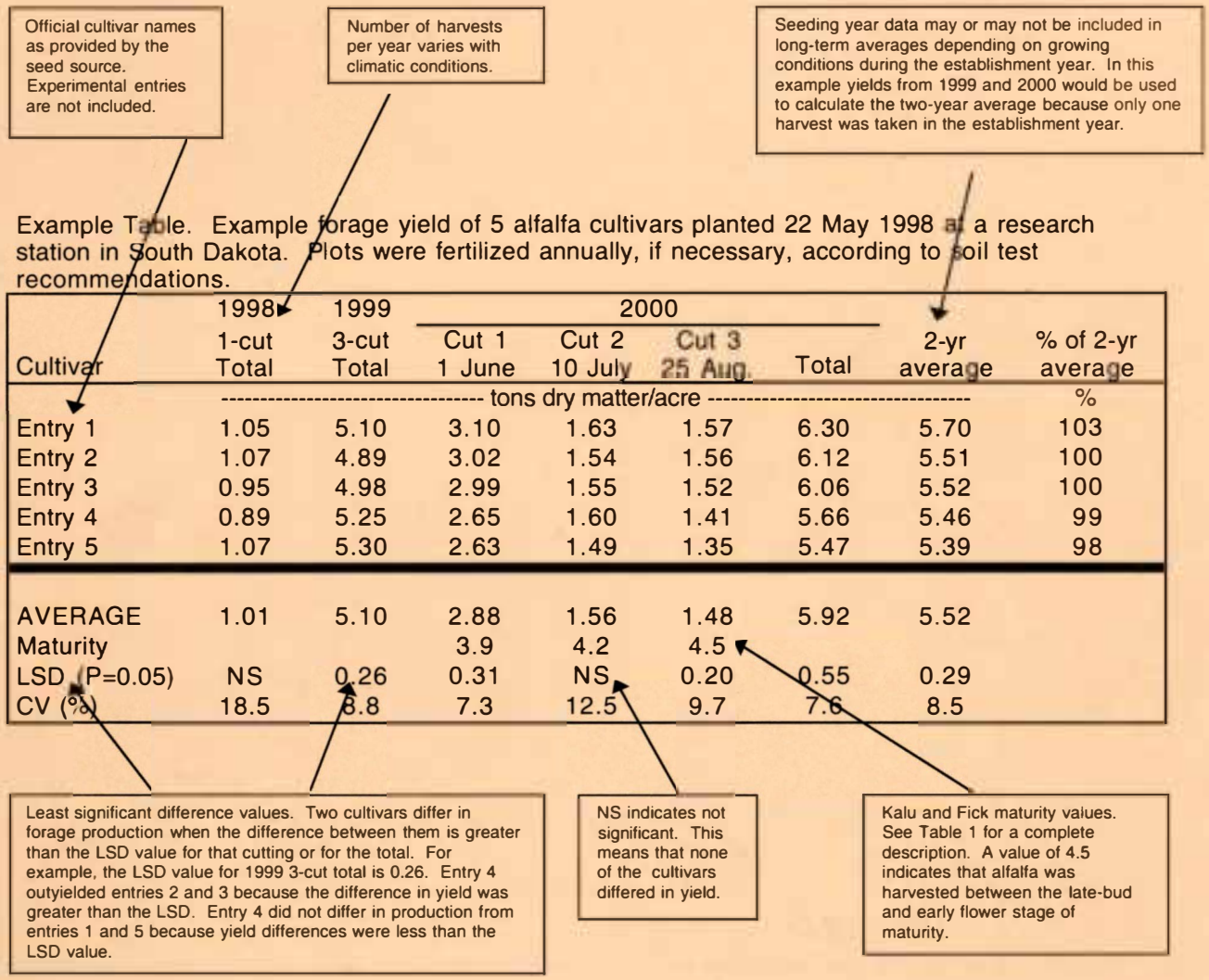
Table 1. Kalu and Fick[a] maturity index for phenological development of alfalfa.

Stage Number	Stage Name
0	Early vegetative
1	Mid-vegetative
2	Late vegetative
3	Early bud
4	Late bud
5	Early flower
6	Late flower
7	Early seed pod
8	Late seed pod
9	Ripe seed pod

[a]Kalu, B.A., and G.W. Fick. 1981. Quantifying morphological development of alfalfa for studies of herbage quality. Crop Science. 21:267-271.

Interpreting Yield Results

The following diagram and table provide an example of typical data obtained from the South Dakota Alfalfa Cultivar Yield Test. It can be used to help you interpret information in tables 1 through 7.



Example Table. Example forage yield of 5 alfalfa cultivars planted 22 May 1998 at a research station in South Dakota. Plots were fertilized annually, if necessary, according to soil test recommendations.

	1998	1999	2000					
Cultivar	1-cut Total	3-cut Total	Cut 1 1 June	Cut 2 10 July	Cut 3 25 Aug.	Total	2-yr average	% of 2-yr average
	tons dry matter/acre							%
Entry 1	1.05	5.10	3.10	1.63	1.57	6.30	5.70	103
Entry 2	1.07	4.89	3.02	1.54	1.56	6.12	5.51	100
Entry 3	0.95	4.98	2.99	1.55	1.52	6.06	5.52	100
Entry 4	0.89	5.25	2.65	1.60	1.41	5.66	5.46	99
Entry 5	1.07	5.30	2.63	1.49	1.35	5.47	5.39	98
AVERAGE	1.01	5.10	2.88	1.56	1.48	5.92	5.52	
Maturity			3.9	4.2	4.5			
LSD (P=0.05)	NS	0.26	0.31	NS	0.20	0.55	0.29	
CV (%)	18.5	3.8	7.3	12.5	9.7	7.6	8.5	

Least significant difference values. Two cultivars differ in forage production when the difference between them is greater than the LSD value for that cutting or for the total. For example, the LSD value for 1999 3-cut total is 0.26. Entry 4 outyielded entries 2 and 3 because the difference in yield was greater than the LSD. Entry 4 did not differ in production from entries 1 and 5 because yield differences were less than the LSD value.

NS indicates not significant. This means that none of the cultivars differed in yield.

Kalu and Fick maturity values. See Table 1 for a complete description. A value of 4.5 indicates that alfalfa was harvested between the late-bud and early flower stage of maturity.

Acknowledgments

The authors express their gratitude to research station managers and personnel Robert Berg, Todd Bortnem, Allen Heuer, Jim Smolik, and Mike Volek for their assistance in conducting this research.

Table 2. Forage yield of 26 alfalfa cultivars planted 25 April 1997 at the Southeast South Dakota Experiment Farm near Beresford, S.D. Plots were fertilized annually, if necessary, according to soil test recommendations.

Entry	1998	1999	2000						
	4-cut Total	4-cut Total	Cut 1 24-May	Cut 2 1-July	Cut 3 28-July	Cut 4 30-Aug.	Total	3-year average[a]	% of 3-year average
	Tons Dry Matter/Acre								%
2888	9.50	5.89	1.39	1.20	1.55	0.61	4.74	6.71	106
5312	9.19	6.03	1.40	1.15	1.55	0.61	4.71	6.64	105
WL 325HQ	8.98	6.16	1.37	1.24	1.48	0.67	4.76	6.63	105
2444	8.89	6.35	1.34	1.22	1.44	0.57	4.57	6.60	104
Depend +Ev	8.75	6.20	1.34	1.17	1.58	0.61	4.69	6.55	103
Excalibur II	9.06	6.00	1.29	1.19	1.50	0.60	4.58	6.55	103
Rhino	9.08	5.83	1.31	1.18	1.54	0.68	4.71	6.54	103
Amerigraze 401+Z	8.77	6.21	1.40	1.14	1.43	0.60	4.57	6.51	103
Asset	8.89	6.06	1.32	1.14	1.52	0.60	4.58	6.51	103
TMF Multi-plier II	8.75	6.18	1.31	1.16	1.40	0.61	4.48	6.47	102
DK140	8.82	6.06	1.22	1.18	1.47	0.54	4.41	6.43	101
Avalanche +Z	8.65	6.20	1.26	1.13	1.44	0.56	4.39	6.41	101
Garst 631	8.56	6.20	1.23	1.12	1.54	0.56	4.45	6.40	101
5454	8.52	6.25	1.30	1.12	1.42	0.55	4.38	6.39	101
5347LH	9.00	5.82	1.23	1.09	1.48	0.53	4.33	6.38	101
620	8.70	5.77	1.29	1.16	1.52	0.63	4.60	6.36	100
WL 324	8.70	5.87	1.33	1.14	1.39	0.63	4.48	6.35	100
Rainier	8.91	5.73	1.22	1.15	1.48	0.52	4.37	6.34	100
Spartan	8.69	5.80	1.24	1.11	1.45	0.53	4.33	6.27	99
DK142	8.31	5.73	1.24	1.23	1.53	0.63	4.63	6.22	98
DK127	8.56	5.87	1.12	1.13	1.41	0.55	4.20	6.21	98
Spur	8.52	5.73	1.08	1.12	1.52	0.60	4.32	6.19	98
Complete	8.46	5.76	1.29	1.03	1.49	0.55	4.35	6.19	98
Innovator +Z	8.36	5.80	1.24	1.07	1.43	0.52	4.26	6.14	97
Ace	8.04	5.56	1.12	1.08	1.45	0.60	4.26	5.95	94
Vernal	8.12	5.24	1.06	1.00	1.44	0.59	4.09	5.82	92
Mean	8.69	5.89	1.26	1.14	1.48	0.58	4.46	6.35	
Maturity (Kalu and Fick)[b]			4.2	5.5	5.1	5.0			
LSD (P=0.05)[c]	0.63	0.58	0.20	0.11	NS[d]	NS	0.49	0.48	
CV (%)	6.4	8.6	14.2	8.7	13.1	15.2	9.7	6.7	

(a) 3-year average does not include yields from the establishment year.
(b) Maturity = Kalu and Fick maturity index, mean stage by count. Refer to Table 1 for explanation of values.
(c) LSD = Least Significant Difference. Two cultivars are considered different if their yields exceed the LSD value.
(d) NS = Not significant; differences between cultivars are not statistically significant.

Table 3. Forage yield of 15 alfalfa cultivars planted 28 April 2000 at the Southeast South Dakota Experiment Farm near Beresford, S.D. Plots were fertilized with 50 lb/A superphosphate before planting.

Entry	2000			PLH rating[a]
	Cut 1 29-July	Cut 2 30-Aug.	Total	30-Aug.
	---------- Tons Dry Matter/Acre ----------			
Shaw	2.96	0.92	3.88	2.5
645-II	2.87	0.98	3.85	2.3
6420	2.80	0.99	3.79	2.7
Gold Rush 747 Brand	2.80	0.98	3.78	2.5
Husky Supreme	2.83	0.94	3.77	2.3
GH750	2.72	0.98	3.70	2.7
Frontier 2000 Brand	2.67	0.94	3.61	2.2
6410	2.66	0.93	3.59	3.0
Excel	2.64	0.93	3.57	3.3
53H81	2.61	0.87	3.48	1.8
Maverick	2.53	0.90	3.43	2.5
Multiplier 3	2.55	0.84	3.39	3.2
Vernal	2.37	0.98	3.35	1.8
53V08	2.44	0.86	3.30	2.7
Legend Gold	2.20	0.94	3.14	2.5
Mean	2.61	0.93	3.54	2.6
Maturity (Kalu & Fick)[b]	5.7	3.5		
LSD (P=0.05)[c]	0.40	NS[d]	0.43	0.8
CV (%)	13.4	9.2	10.5	25.2

(a) Potato leafhopper resistance ratings: North American Alfalfa Improvement Conference
1 No apparent injury
2 Very minor stunting and yellowing
3 Moderate stunting, yellowing is evident on 20-40% of leaves
4 Significant injury, plant showing stunting with yellowing on 40-60% of leaves
5 Severe injury, plants with severe stunting, yellowing or reddening evident on 60-100% of leaves
(b) Maturity = Kalu and Fick maturity index, mean stage by count. Refer to Table 1 for explanation of values.
(c) LSD = Least Significant Difference. Two cultivars are considered different if their yields exceed the LSD value.
(d) NS = Not significant; differences between cultivars are not statistically significant.

Table 4. Forage yield of 20 alfalfa cultivars planted 22 April 1998 at the South Dakota Crop Improvement Research Farm near Aurora, S.D. Plots were fertilized annually, if necessary, according to soil test recommendations.

Entries	1998	1999	2000				
	1-cut Total	2-cut Total	Cut 1 24-May	Cut 2 8-July	Total	2-yr average[a]	% of 2-yr average
	Tons Dry Matter/Acre						%
Magnum V	1.12	3.83	0.76	0.70	1.46	2.65	113
Geneva	1.20	3.74	0.75	0.71	1.46	2.60	111
Husky Supreme	1.38	3.55	0.73	0.62	1.34	2.45	105
WinterStar	1.24	3.62	0.68	0.58	1.26	2.44	105
WinterKing	1.15	3.52	0.73	0.60	1.33	2.42	104
Rainier	1.19	3.43	0.72	0.60	1.32	2.38	102
ABT 350	1.16	3.39	0.75	0.62	1.37	2.38	102
Feast +EV	1.21	3.45	0.64	0.52	1.16	2.30	99
DK140	1.22	3.40	0.69	0.50	1.19	2.30	98
Vernal	1.26	3.27	0.62	0.64	1.27	2.27	97
Target II Plus	1.15	3.36	0.67	0.55	1.22	2.29	98
53Q60	1.04	3.51	0.63	0.55	1.18	2.34	100
Frontier 2000 Brand	1.12	3.29	0.68	0.64	1.32	2.30	99
Goldrush 747 Brand	1.27	3.27	0.64	0.54	1.18	2.22	95
53V63	1.14	3.36	0.66	0.52	1.18	2.27	97
Yielder	1.19	3.08	0.75	0.59	1.34	2.21	95
Ace	1.10	3.25	0.68	0.54	1.23	2.24	96
WL 232HQ	1.06	3.33	0.66	0.50	1.16	2.24	96
TMF 421	1.08	3.20	0.68	0.50	1.18	2.19	94
Mean	1.17	3.40	0.69	0.58	1.27	2.33	
Maturity (Kalu & Fick)[b]			3.5	5.5			
LSD (P=0.05)[c]	NS[d]	0.32	NS	0.17	0.25	0.23	
CV (%)	14.1	8.2	14.3	25.8	17.4	8.6	

(a) 2-year average does not include yields from the establishment year.
(b) Maturity = Kalu and Fick maturity index, mean stage by count. Refer to Table 1 for explanation of values.
(c) LSD = Least Significant Difference. Two cultivars are considered different if their yields exceed the LSD value.
(d) NS = Not significant; differences between cultivars are not statistically significant.

Table 5. Forage yield of 16 alfalfa cultivars planted 25 April 2000 at the South Dakota Crop Improvement Research Farm near Aurora, S.D. Plots were fertilized with 50 lb/A superphosphate before planting.

Entry	2000 Total 20-July
	Tons DM/A
53H81	1.77
DK134	1.75
53V08	1.73
Frontier 2000	1.71
Somerset	1.71
Vernal	1.66
Gold Rush 747	1.63
Legend Gold	1.60
6410	1.59
Dakota	1.59
A 30-06	1.58
Husky Supreme	1.51
Maverick	1.51
Shaw	1.51
US A4230	1.46
Multiplier 3	1.32
Mean	1.62
Maturity (Kalu & Fick)[a]	5.0
LSD (P=0.05)	NS[b]
CV (%)	18.5

(a) Maturity = Kalu and Fick maturity index, mean stage by count. Refer to Table 1 for explanation of values.
(b) NS = Not significant; differences between cultivars are not statistically significant.

Table 6. Forage yield of 15 alfalfa cultivars planted 5 May 1998 at the Central Crops and Soils Research Farm near Highmore, S.D. Plots were fertilized annually, if necessary, according to soil test recommendations.

Entries	1998	1999	2000				
	1-cut Total	3-cut Total	Cut 1 23-May	Cut 2 6-July	Total	2-year[a] average	% of 2-yr average
	Tons Dry Matter/Acre						%
WL 324	0.93	4.24	1.49	0.51	2.00	3.12	110
Magnum V	1.03	4.31	1.34	0.37	1.70	3.01	106
53Q60	0.92	4.07	1.47	0.46	1.93	3.00	106
WL 325HQ	0.97	4.09	1.27	0.50	1.78	2.94	104
Husky Supreme	0.96	4.17	1.31	0.28	1.59	2.88	102
DK140	0.99	4.07	1.28	0.37	1.65	2.86	101
Goldrush 747 Brand	0.82	3.95	1.33	0.42	1.76	2.85	101
TMF 421	0.88	4.18	1.21	0.28	1.49	2.84	100
WL 232HQ	1.02	3.98	1.32	0.37	1.69	2.84	100
620	0.97	4.11	1.24	0.33	1.56	2.84	100
Vernal	1.03	4.13	1.18	0.27	1.45	2.79	99
53V63	0.91	3.83	1.22	0.37	1.58	2.70	96
TMF Multi-plier II	0.90	3.83	1.24	0.28	1.52	2.68	94
Frontier 2000 Brand	0.93	3.56	1.26	0.35	1.61	2.58	91
Mean	0.94	4.03	1.28	0.35	1.63	2.83	
Maturity (Kalu & Fick)[b]	3.3		3.5	4.6			
LSD (P=0.05)[c]	NS	0.37	0.29	NS[d]	NS	NS	
CV (%)		8.0	19.6	57.5	26.4	11.9	

(a) 2-year average does not include yields from the establishment year.
(b) Maturity = Kalu and Fick maturity index, mean stage by count. Refer to Table 1 for explanation of values.
(c) LSD = Least Significant Difference. Two cultivars are considered different if their yields exceed the LSD value.
(d) NS = Not significant; differences between cultivars are not statistically significant.

Table 7. Forage yield of 28 alfalfa cultivars planted 23 April 1999 at the Northeast Research Station near Watertown, S.D. Plots were fertilized annually, if necessary, according to soil test recommendations.

Entries	1999	2000					
	2-cut Total	Cut 1 26-May	Cut 2 7-July	Cut 3 3-Aug.	Total	2-year average[a]	% of 2-year average
	Tons Dry Matter/Acre						%
ABT 350	3.50	2.04	1.32	0.77	4.12	3.81	106
Spirit	3.61	1.91	1.28	0.78	3.97	3.79	105
AlfaStar	3.61	1.86	1.32	0.78	3.97	3.79	105
645-II	3.72	1.91	1.22	0.72	3.84	3.78	105
620	3.57	1.92	1.27	0.74	3.93	3.75	104
53Q60	3.44	1.90	1.32	0.77	4.00	3.72	103
Rebound 4.2	3.46	1.94	1.31	0.72	3.98	3.72	103
WinterStar	3.40	1.88	1.33	0.74	3.94	3.67	102
6410	3.49	1.91	1.19	0.75	3.85	3.67	102
GH766	3.41	1.84	1.32	0.75	3.91	3.66	102
Abound	3.50	1.92	1.17	0.73	3.82	3.66	102
FQ 314	3.51	1.76	1.27	0.77	3.80	3.65	102
6420	3.24	2.01	1.23	0.76	3.99	3.62	100
54V54	3.25	1.83	1.36	0.77	3.96	3.60	100
FQ 315	3.42	1.77	1.24	0.74	3.75	3.58	99
WL232 HQ	3.37	1.83	1.23	0.71	3.77	3.57	99
Macon	3.41	1.78	1.27	0.68	3.73	3.57	99
Excalibur II	3.38	1.70	1.28	0.73	3.72	3.55	99
Sprint	3.23	1.79	1.25	0.77	3.82	3.52	98
Legend Gold	3.40	1.65	1.21	0.74	3.60	3.50	97
DK140	3.19	1.81	1.27	0.72	3.79	3.49	97
WinterKing	3.37	1.70	1.18	0.72	3.61	3.49	97
A 395	3.32	1.73	1.16	0.75	3.63	3.48	97
DK124	3.32	1.65	1.21	0.75	3.61	3.46	96
Vernal	3.12	1.81	1.24	0.75	3.80	3.46	96
Award	3.45	1.64	1.15	0.66	3.45	3.45	96
TMF 421	3.17	1.53	1.11	0.74	3.39	3.28	91
Mean	3.40	1.81	1.25	0.74	3.80	3.60	
Maturity (Kalu & Fick)[b]		2.9	4.1	4.3			
LSD (P=0.05)[c]	NS[d]	0.25	NS	NS	0.38	0.29	
CV (%)	8.5	12.0	12.7	11.6	8.9	7.0	

(a) 2-year average includes yields from the establishment year.
(b) Maturity = Kalu and Fick maturity index, mean stage by count. Refer to Table 1 for explanation of values.
(c) LSD = Least Significant Difference. Two cultivars are considered different if their yields exceed the LSD value.
(d) NS = Not significant; differences between cultivars are not statistically significant.

Table 8. Listing of alfalfa cultivars, developers, suppliers, and agronomic characteristics.

Cultivar	Developer/Supplier	FD[a]	BW	VW	FW	An	PRR
620	Garst Seed Co.	2	HR	R	HR	HR	HR
631	Garst Seed Co.	4	HR	R	HR	R	HR
645-II	Garst Seed Co.	3	HR	HR	R	HR	HR
2444	Novartis Seeds, Inc.	3	HR	R	HR	HR	HR
2888	Novartis Seeds, Inc.	3	HR	HR	HR	HR	HR
5312	Pioneer Hi-Bred Int.	3	HR	HR	HR	HR	HR
5347LH	Pioneer Hi-Bred Int.	3	HR	R	HR	HR	HR
53H81	Pioneer Hi-Bred Int.	3	HR	HR	HR	HR	R
53Q60	Pioneer Hi-Bred Int.	3	HR	R	R	HR	HR
53V08	Pioneer Hi-Bred Int.	3	HR	HR	HR	HR	HR
53V63	Pioneer Hi-Bred Int.	3	HR	HR	HR	HR	HR
5454	Pioneer Hi-Bred Int.	4	R	MR	HR	HR	HR
54V54	Pioneer Hi-Bred Int.	4	HR	HR	HR	HR	HR
6410	Garst Seed Co.	4	HR	HR	HR	HR	HR
6420	Garst Seed Co.	4	HR	R	HR	R	HR
A 30-06	MBS Genetics	3	HR	HR	HR	HR	HR
A 395	MBS Genetics	3	HR	R	HR	HR	HR
Abound	Asgrow Seed	3	HR	HR	HR	HR	HR
ABT 350	Allied Seed	3	HR	HR	HR	HR	HR
Ace	UAP Seeds	4	HR	R	HR	HR	HR
AlfaStar	Hoffman Seed/Sexauer	4	HR	R	HR	HR	HR
Amerigraze 401+Z	AgriPro Seeds	4	HR	HR	HR	HR	HR
Asset	Coyote Seed	4	HR	R	R	R	HR
Avalanche +Z	America's Alfalfa	2	HR	HR	HR	HR	HR
Award	Asgrow Seed	4	HR	HR	HR	HR	HR
Complete	Arrow Seed/Fontanelle Hybrids	3	HR	HR	HR	HR	HR
Dakota	Great Plains Research	4	HR	R	HR	R	HR
Depend +EV	AgriPro Seeds	4	HR	HR	HR	HR	HR
DK124	Monsanto	2	HR	HR	HR	HR	HR
DK127	Monsanto	3	HR	R	R	HR	HR
DK134	Monsanto	3	HR	HR	HR	HR	HR
DK140	Monsanto	4	HR	R	HR	HR	HR
DK142	Monsanto	4	HR	R	HR	R	HR
Excalibur II	Domestic Seed	4	HR	R	HR	HR	HR
Excel	BioPlant Research	4	HR	R	HR	R	HR
Feast +EV	AgriPro Seeds	3	HR	HR	HR	R	HR
FQ 314	Cargill Hybrid Seeds	3	HR	HR	HR	HR	HR
FQ 315	Cargill Hybrid Seeds	3	HR	R	HR	HR	HR
Frontier 2000 Brand	Den Besten Seed Co.	2	R	R	HR	HR	MR
Geneva	Northrup King	4	HR	HR	HR	HR	HR
GH750	Golden Harvest	4	HR	HR	HR	HR	HR
GH766	Golden Harvest	3	HR	R	HR	HR	HR
GoldRush 747 Brand	Den Besten Seed Co.	2	MR	MR	MR	MR	MR
Husky Supreme	Den Besten Seed Co.	3	R	R	R	MR	MR
Innovator +Z	America's Alfalfa	3	HR	HR	HR	HR	HR
Legend Gold	Legend Seeds	3	HR	HR	HR	HR	HR
Macon			Information not available for Macon				
Magnum V	Dairyland Seed	4	HR	R	HR	R	HR
Maverick	Den Besten Seed Co.	3	HR	R	HR	HR	HR

Table 8 (continued). Listing of alfalfa cultivars, developers, suppliers, and agronomic characteristics.

Cultivar	Developer/Supplier	FD[a]	BW	VW	FW	An	PRR
Multiplier 3	Mycogen Seed	3	HR	R	HR	HR	HR
Rainier	Novartis Seeds, Inc.	3	HR	R	HR	HR	HR
Rebound 4.2	Croplan Genetics	4d	HR	HR	HR	HR	HR
Rhino	Geertson Seed Farms	3	HR	R	R	R	R
Shaw	Montana Ag. Exp. Stn.	3	---	MR	---	MR	R
Somerset	Novartis	3	HR	HR	HR	HR	HR
Spartan	Coyote Seed	3	HR	R	HR	HR	HR
Spirit	Fontanelle Hybrids/PGI/MBS	3	HR	R	HR	R	HR
Sprint	Specialty Seeds	3	HR	R	HR	R	HR
Spur	Sexauer	4	HR	R	HR	HR	HR
Target II Plus	Producers Hybrids	3	HR	R	HR	R	HR
TMF 421	Mycogen Seeds	2	HR	HR	R	HR	HR
TMF Multi-plier II	Mycogen Seeds	3	HR	HR	HR	HR	HR
US A4230	United Suppliers	4	HR	HR	HR	HR	HR
Vernal	Public Cultivars	2	R	---	MR	---	---
WinterKing	Wensman Seed Co.	3	HR	HR	HR	HR	HR
WinterStar	Wensman Seed Co.	2	HR	HR	HR	HR	HR
WL 232 HQ	W-L Research	2	HR	HR	HR	HR	HR
WL 324	W-L Research	3	HR	R	HR	HR	HR
WL 325 HQ	W-L Research	3	HR	R	HR	HR	HR
Yielder	AgriPro Seeds	3	HR	R	R	R	HR

a FD = Fall Dormancy; BW = Bacterial wilt; VW = Verticillium wilt; FW = Fusarium wilt; An = Anthracnose; PRR = Phytophthora root rot

COOPERATIVE EXTENSION SERVICE SDSU

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