

FORAGE CROPS



ALFALFA

Yield results for alfalfa varieties tested in current Minnesota yield trials (1999 to 2002 seeding years) are listed in tables on pages 10-15. Varieties in current winter-survival or forage-quality trials are listed on pages 15 and 16, respectively. Alfalfa variety seed marketers, telephone numbers, and web sites are provided on page 17. Disease resistance information for alfalfa varieties is available on the web at www.alfalfa.org and <http://forages.coafes.umn.edu/>.

Winterhardiness and Winter Survival Index

Severe winters make winterhardiness a primary consideration in variety selection for most areas of Minnesota.

Winterhardiness of varieties is difficult to determine because winter injury can occur as a result of many different weather events that cause varied responses in alfalfa plants of differing ages. A standardized test, the North American Alfalfa Improvement Conference (NAAIC) Winter Survival Test, measures the survival of a variety after a severe winter. Tests conducted annually at four locations (Arlington and Lancaster, Wis., and Rosemount and Morris, Minn.) are the basis for the winter survival index (WSI) on page 15.

The WSI for each tested variety was averaged over all test locations to provide a robust estimate of winterhardiness and is presented beside yield data in tables on pages 10-15. Varieties are rated from superior (1) to adequate (4) in winter survivability. Vernal, a traditional winterhardy variety, is rated very good. After a severe winter, injury is expected for varieties rated adequate (4). All varieties tested to date have rated above adequate. If a variety does not have a WSI (the company has not entered the variety in the winter survival trial) the fall dormancy index is the next best indicator of winterhardiness. Fall dormancy indices can be found on the National

Alfalfa Alliance website: www.alfalfa.org

When selecting alfalfa varieties, greatest winterhardiness is needed in west central and northwestern Minnesota (see injury potential map, page 9). Because of the high frequency of severe winters in these areas, only varieties with at least very good winter survival should be selected in these regions. East central and southeastern Minnesota also frequently experience severe winters. Southwestern Minnesota seldom experiences severe winter injury because of dry soils, high soil potassium levels and neutral soil pH. Northeastern Minnesota seldom experiences severe winter injury because of dependable snow cover.

Forage Yield

Yield results for alfalfa varieties tested in current Minnesota trials are shown on pages 10-15. Yields are expressed as a percentage of check-variety yields; for example, 113 means the variety had 13% greater yield than the check varieties. Within each table, varieties are ranked according to their average performance across ALL current trials in which they have been tested (1999 to 2002 seedings). Individual tables correspond to test results from different regions of Minnesota.

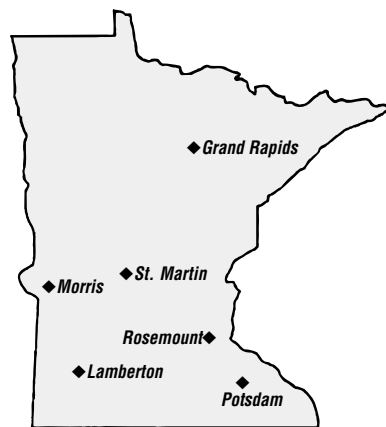
Greatest confidence should be placed in variety yield information that represents

Alfalfa Data Sources, Selection

Yield is the single largest determinant of return per acre of alfalfa. Selecting alfalfa varieties with high yield potential is fundamental to obtaining high yields. The yield advantage realized with good alfalfa varieties quickly trivializes their greater seed cost.

Yield potential of alfalfa varieties is evaluated in trial plots on Minnesota Agricultural Experiment Stations and cooperating farmers' fields, seeded yearly at Rosemount, and alternate years at other locations. The trials are conducted using recommended fertility and pest control practices to optimize alfalfa yield and persistence.

Yield performance of tested varieties is presented as a percent of check variety yields (average for Vernal, Oneida VR and 5312). Test locations are representative of the variable winter-injury risk in different regions of Minnesota. Test locations include Rosemount (Dakota Co.), Potsdam (Olmsted Co.), Lambertson (Redwood Co.), Morris (Stevens Co.), St. Martin (Stearns Co.) and Grand Rapids (Itasca Co.); see the locations map. In addition, some alfalfa varieties are tested for winter survival index (WSI) and forage quality at selected experiment stations of the universities of Minnesota and Wisconsin.



Locations of Alfalfa Trials.



more than 5 site-years of testing (two years of yield data at each of three test sites). Each variety in the yield-result tables has been formatted to reveal how many site-years of Minnesota yield data have been collected. Varieties printed in bold type indicate that the variety has been tested in more than 5 site-years.

Varietal differences in yield tend to increase with stand age. Thus, to choose a variety for short-term stands, consider especially yield performance the first and second years after seeding (yield performance in 2001 and 2002 for 2000 seeding). For long-term stands, choose varieties based on their performance through the third year after seeding (2003 yield for 2000 seeding).

Forage Quality

While maturity is the greatest determinant of forage quality or feeding value of alfalfa, varieties also differ. A NAAIC-Standardized Forage Quality Test has been performed at Arlington, Wis., and Rosemount, Minn., since 1995. Forage quality of alfalfa varieties in tests seeded in 2002 and 2003 in Minnesota and Wisconsin are shown on page 16. Data are expressed as milk per ton of forage, milk per acre and relative forage quality (RFQ).

Milk per ton is calculated based on MILK2000 and combines crude protein, neutral detergent fiber (NDF), and NDF digestibility (NDFD) to predict milk production per ton of forage DM. In MILK2000, the intake of energy from forage for a 1350-pound milking cow consuming a 30% NDF diet is calculated, and the cow's maintenance energy requirement is then subtracted from en-

ergy intake to provide an estimate of energy available from forage for conversion to milk. Forage DM yield multiplied by milk per ton of forage DM provides an estimate of milk produced per acre and combines yield and quality into a single term. For a technical discussion of NDFD and Milk2000, see www.uwex.edu/ces/forage/pubs/milk2000.htm.

Relative forage quality (RFQ) is a new index with similar mean and range as RFV that includes NDF digestibility in estimates of DMI and TDN to calculate RFQ. For a technical discussion of RFQ, see www.uwex.edu/ces/forage/pubs/rfq.htm.

In the seeding year, varieties are evaluated at one or two cuts taken in July and/or late August. Production year evaluation (first year after seeding only) is done by analyzing each of three cuttings taken at late bud to one-tenth-bloom stages of maturity.

Disease Resistance

Alfalfa root and crown diseases occur in most Minnesota soils. The most important diseases are Bacterial wilt, Phytophthora root rot, Fusarium wilt, Anthracnose, Verticillium wilt, and Aphanomyces root rot. Plant resistance is available for all six diseases. Variety resistance ratings for each disease are available on the web at www.alfalfa.org or <http://forages.coafes.umn.edu/>. While moderate resistance (MR) to a disease will provide protection to a variety under most conditions, either resistance (R) or high resistance (HR) is required for protection under severe disease conditions.

Winter injury can be the result of a combination of injury from cold temperatures and from root and crown diseases. Under some conditions, disease resistances can compensate for lesser levels of cold tolerance. While all varieties can benefit from improved disease resistance, it is especially important for moderately fall-dormant varieties to have at least (R) levels of disease resistance to stay productive for more than two years after the

seeding year under intensive management (four cuts/season) in the east-central and southeastern areas of Minnesota.

Bacterial Wilt – This disease is prevalent in most areas of the state. Wilt-susceptible varieties are poor risks and should not be grown. They generally show losses in stand by the end of the second year after seeding. In some cases where infection is severe, stand losses are often observed by the end of the first year after seeding. Stand reductions after winter are often due to a combination of wilt damage and winter injury.

Phytophthora Root Rot – This fungal disease is a major concern on poorly drained soils, especially in the east-central and southeast area of the state. It can cause stand losses of seedlings, and can contribute to lower productivity in older stands if the soil remains wet for a week or more.

Fusarium Wilt – The fungus that causes Fusarium wilt is present in most soils. It contributes to stand decline mainly in combination with other disease organisms. Consequently, resistance to Fusarium wilts in addition to resistance to both bacterial wilt and Phytophthora root rot contributes to longer stand life.

Anthracnose – This fungus disease was first found in Minnesota in 1978 and has become more prevalent each year, but only in the east central and southeast area. It infects stems and crowns and kills susceptible plants. Because anthracnose is favored by hot, moist conditions, it is most often seen in southeast Minnesota.

Verticillium Wilt – This potentially destructive fungus disease was first found in several eastern Minnesota fields in 1981. It has usually been found in 2- or 3-year-old fields, and its spread in the state has been slow. Planting resistant varieties will help provide insurance for long-life stands.

Aphanomyces Root Rot – This disease is associated with very slowly drained soils and is easily confused with Phytophthora root rot. It stunts and kills seedlings as well as causing a chronic

root disease in established plants. Few cases of this disease have been identified in Minnesota. Consider planting a variety with *Aphanomyces* resistance if Phytophthora-root-rot-resistant varieties fail to persist.

Blends

Many companies sell blends, a mixture of two or more varieties, at a reduced price from named varieties. Blends may perform as well as the best varieties or may do very poorly. Since blends may have been derived in various ways, their performance depends on the skill and integrity of the seed company. Disease re-

sistance, yield, winter survival and other characteristics may change within a blend from lot to lot or year to year as blend composition changes. Therefore, using *certified* seed of adapted, high-yielding varieties best assures trueness to name.

For the web version of this report, go to the Minnesota Agricultural Experiment Station website, www.maes.umn.edu/pubs.html

More detailed alfalfa variety performance results are available on the University of Minnesota-Agronomy Forages website: <http://forages.coafes.umn.edu>

Alfalfa Planting Rate and Date

Bushel Weight, Pounds	60
Seeds/Pound.....	220,000
Planting Rate, Pounds/Acre	
Alone	13
With Grass	5-10
Planting Rate, Seeds Sq.Ft.	
Alone	65
With grass.....	25-50
Planting Datelate April-early May or late July-early August	

Alfalfa variety yield in percent of check varieties at Rosemount, Dakota County.

Variety, in descending order of average performance over all current Minn. trials. **Bold** varieties have been in Minn. trials for more than 5 site years.

	Marketer	WSI	1999 Seeding Harvest Year				2001 Seeding Harvest Year			2002 Seeding Harvest Year		All Site-Years Average
			2000	2001	2002	3-yr Total	2002	2003	2-yr Total	2003		
Checks, Tons/Ac 15%mc Hay	—	—	6.73	6.86	6.39	19.98	5.67	5.54	11.21	6.33	—	
WL 319HQ	W-L	1.8	—	—	—	—	—	—	—	112	118	
IGNITE	Jung	—	—	—	—	—	—	—	—	111	118	
PHABULOUS	Trelay Inc.	—	—	—	—	—	105	100	103	—	116	
LEGENDAIRY YPQ	CROPLAN	—	—	—	—	—	115	103	109	—	115	
SETTER	Dahlco	—	—	—	—	—	—	—	—	107	114	
MULTIPLIER 3	Mycogen	2.8	—	—	—	—	—	—	—	111	114	
ROOT 66	Trelay Inc.	2.1	—	—	—	—	103	102	102	—	114	
WL 342	W-L	—	—	—	—	—	101	106	104	—	114	
POINTER	Dahlco	—	112	109	104	116	—	—	—	112	113	
WL 327	W-L	—	109	111	101	115	—	—	—	—	113	
PERFECT	Grassland	—	—	—	—	—	104	103	103	—	113	
ALLIANT	Monsanto	3.0	—	—	—	—	111	106	108	—	113	
WINTERGOLD	Renk	2.5	106	109	99	112	—	—	—	—	113	
HYBRIFORCE-400	Dairyland	2.8	—	—	—	—	115	109	112	118	112	
GOLDLEAF	Gold C/ALSH	3.1	—	—	—	—	—	—	—	111	112	
620	Garst	2.6	—	—	—	—	—	—	—	109	112	
BARALFA 42 IQ	Barenburg	2.3	—	—	—	—	—	—	—	108	112	
STARBUCK	Spangler	—	—	—	—	—	119	103	111	—	111	
COLOMBIA 2000	Allied	3.1	105	104	102	111	—	—	—	—	111	
AV 3420	AgVenture	—	—	—	—	—	115	107	111	—	111	
FORECAST 1001	Dairyland	2.9	109	113	112	119	—	—	—	—	111	
54H91	Pioneer	3.0	—	—	—	—	—	—	—	105	110	
54V54	Pioneer	2.7	—	—	—	—	112	111	112	—	110	
STAMPEDE	Albert Lea	—	—	—	—	—	—	—	—	110	110	
9429	LG Seeds	2.8	106	109	97	111	—	—	—	—	110	
FORECAST 3001	Dairyland	3.1	103	107	95	109	—	—	—	—	110	
WEBFOOT EXTREME	Great Lakes	—	—	—	—	—	—	—	—	109	109	
6410	Garst	2.7	103	100	96	107	111	101	106	115	109	
FQ 315	Mycogen	—	110	110	97	113	—	—	—	—	109	
GENEVA	Syngenta	2.7	108	101	100	110	—	—	—	—	109	
6420	Garst	—	—	—	—	—	112	110	111	—	109	

Alfalfa variety yield in percent of check varieties at Rosemount, Dakota County (continued).

Variety, in descending order of average performance over all current Minn. trials. **Bold** varieties have been in Minn. trials for more than 5 site years.

	Marketer	WSI	1999 Seeding Harvest Year				2001 Seeding Harvest Year			2002 Seeding Harvest Year	All Site-Years Average
			2000	2001	2002	3-yr Total	2002	2003	2-yr Total	2003	
Checks, Tons/Ac 15%mc Hay	—	—	6.73	6.86	6.39	19.98	5.67	5.54	11.21	6.33	—
6420	Garst	—	—	—	—	—	112	110	111	—	109
FEAST + EV	Garst	2.2	—	—	—	—	109	101	105	111	109
SPRINT	Specialty	2.6	108	114	102	115	—	—	—	—	109
DK 140	Monsanto	2.8	105	109	104	113	—	—	—	—	108
DK 141	Monsanto	3.3	105	101	94	107	—	—	—	—	108
WETLAND	Bio Plant	—	102	101	101	108	—	—	—	—	108
SAMURAI	Am. Alf.	—	105	103	96	108	—	—	—	—	108
ULTRALAC	Elk Mound	—	105	104	94	108	—	—	—	—	108
HUNTER	Ramy	—	100	104	99	108	—	—	—	—	108
WL 324	W-L	—	102	105	97	108	—	—	—	—	108
REBOUND 4.2	CROPLAN	2.4	108	113	100	114	—	—	—	—	108
8599	Mallard	—	—	—	—	—	106	109	108	—	108
350	La Crosse	2.8	107	110	99	113	—	—	—	—	108
IMPERIAL	Am. Alf.	—	100	105	95	107	—	—	—	—	107
VITRO	North-Gro	2.6	—	—	—	—	111	101	106	—	106
ABOUND	Monsanto	2.5	100	101	95	106	109	101	105	—	106
MILK RIVER	R.J. Hunt	—	102	100	99	107	108	95	101	104	106
MAGNUM V	Dairyland	3.0	105	109	101	112	—	—	—	—	106
DK A42-15	Monsanto	2.7	—	—	—	—	103	111	107	—	105
AC VIVA	—	—	104	105	101	110	—	—	—	—	105
53Q60	Pioneer	3.1	108	107	100	112	99	105	102	—	105
PROLIFIC	Bio Plant	3.1	—	—	—	—	110	99	104	—	104
LEGEND GOLD	Legend	—	113	106	101	114	—	—	—	—	104
5312	Check	3.0	102	102	101	102	109	101	105	104	104
SURPASS	Albert Lea	—	—	—	—	—	—	—	—	103	102
DK 124	Monsanto	2.7	104	101	91	106	—	—	—	—	102
AWARD	Monsanto	3.3	102	100	100	108	—	—	—	—	100
ONEIDA VR	Check	—	101	101	101	101	102	102	102	98	99
PLATINUM	Channel Bio	—	—	—	—	—	107	93	100	—	99
WRANGLER	Albert Lea	—	—	—	—	—	—	—	—	96	98
VERNAL	Check	2.0	97	98	98	98	90	97	94	98	98
LSD .05	—	—	7	6	9	6	11	7	7	11	—

Alfalfa variety yield in percent of check varieties at Potsdam, Olmsted County.

Variety, in descending order of average performance over all current Minn. trials. **Bold** varieties have been in Minn. trials for more than 5 site years.

	Marketer	WSI	2000 Seeding Harvest Year			3-Year Total	2002 Seeding	All Site-Years Average
			2001	2002	2003		Harvest Year 2003	
Checks, Tons/Ac 15%mc Hay	—	—	7.52	6.56	5.68	19.76	6.46	—
LIGHTNING II	Jung	—	116	131	140	128	—	128
4200	Olds Seed	—	118	124	143	127	—	127
SOMERSET	Syngenta	—	113	120	126	119	—	119
TROPHY	Geertson	—	110	116	133	118	—	118
IGNITE	Jung	—	—	—	—	—	123	118
DK 134	Monsanto	2.8	119	128	133	126	—	117
PHABULOUS	Trelay Inc.	—	114	122	146	126	—	116
SETTER	Dahlco	—	—	—	—	—	114	114
MULTIPLIER 3	Mycogen	2.8	113	121	131	121	—	114
ROOT 66	Trelay Inc.	2.1	—	—	—	—	118	114
WL 342	W-L	—	—	—	—	—	123	114
AMERISTAND 403T	Am. Alf.	2.1	108	117	114	113	120	113
POINTER	Dahlco	—	113	115	119	116	119	113
WL 327	W-L	—	111	113	120	114	—	113
ALLIANT	Monsanto	3.0	117	121	120	119	—	113
HYBRIFORCE-400	Dairyland	2.8	—	—	—	—	110	112
GOLDLEAF	Gold C/ALSH	3.1	112	118	111	114	—	112
620	Garst	2.6	—	—	—	—	120	112
BARALFA 42 IQ	Barenburg	2.3	112	115	122	116	—	112
MONUMENT II	Geertson	—	115	119	114	116	—	111
54H91	Pioneer	3.0	—	—	—	—	104	110
54V54	Pioneer	2.7	112	116	132	119	—	110
9429	LG Seeds	2.8	115	116	116	116	—	110
MAGNUM V-Wet	Dairyland	3.3	109	111	108	109	—	109
6410	Garst	2.7	112	107	99	107	128	109
FEAST + EV	Garst	2.2	106	105	94	102	—	109
631	Garst	—	112	108	101	108	—	108
350	La Crosse	2.8	—	—	—	—	107	108
ABOUND	Monsanto	2.5	110	114	110	112	—	106
MILK RIVER	R.J. Hunt	—	108	106	94	103	105	106
DK 127	Monsanto	2.9	105	101	115	106	—	105
53Q60	Pioneer	3.1	107	111	119	112	—	105
5312	Check	3.0	—	—	—	—	105	104
ONEIDA ULTRA	La Crosse	—	—	—	—	—	103	103
SURPASS	Albert Lea	—	105	99	96	101	—	102
DK 124	Monsanto	2.7	108	110	105	108	—	102
IROQUOIS	Albert Lea	—	102	99	99	100	—	100
ONEIDA VR	Check	—	99	102	99	100	97	99
WRANGLER	Albert Lea	—	104	92	96	98	—	98
VERNAL	Check	2.0	101	98	101	100	98	98
DEFENSE + EV	Garst	—	109	93	81	96	—	96
LSD .05	—	—	7	9	22	9	13	—

Alfalfa variety yield in percent of check varieties at Morris, Stevens County and St. Martin, Stearns County.

Variety, in descending order of average performance over all current Minn. trials. **Bold** varieties have been in Minn. trials for more than 5 site years.

	Marketer	WSI	Morris, 2000 Seeding			3-Year Total	St. Martin, 2002 Seeding	All Site-Years Average
			2000	2001	2002			
Checks, Tons/Ac 15%mc Hay			6.83	5.42	3.75	16.00	5.43	–
MAXIMUM I	Johnson	–	–	–	–	–	119	119
WL 319HQ	W-L	1.8	–	–	–	–	124	118
IGNITE	Jung	–	–	–	–	–	119	118
54Q25	Pioneer	–	–	–	–	–	116	116
PHABULOUS	Trelay Inc.	–	–	–	–	–	119	116
LEGENDAIRY YPQ	CROPLAN	–	–	–	–	–	122	115
SETTER	Dahlco	–	–	–	–	–	122	114
ROOT 66	Trelay Inc.	2.1	–	–	–	–	121	114
POINTER	Dahlco	–	110	110	113	111	119	113
WL 327	W-L	–	97	106	101	101	123	113
PERFECT	Grassland	–	–	–	–	–	123	113
WINTERGOLD	Renk	2.5	112	107	123	113	–	113
HYBRIFORCE-400	Dairyland	2.8	–	–	–	–	114	112
620	Garst	2.6	115	91	102	104	115	112
FORECAST 1001	Dairyland	2.9	105	100	102	102	–	111
54H91	Pioneer	3.0	–	–	–	–	122	110
9429	LG Seeds	2.8	–	–	–	–	125	110
AMERISTAND 201+ Z	Am. Alf.	2.0	109	119	124	116	–	110
FORECAST 3001	Dairyland	3.1	113	106	109	110	–	110
6410	Garst	2.7	98	78	83	88	125	109
FQ 315	Mycogen	–	109	96	111	105	–	109
FEAST + EV	Garst	2.2	–	–	–	–	120	109
SPRINT	Specialty	2.6	100	100	110	102	–	109
DK 140	Monsanto	2.8	110	106	103	107	–	108
DK 141	Monsanto	3.3	111	114	106	111	–	108
WETLAND	Bio Plant	–	108	104	115	108	–	108
FQ 314	W-L	3.0	106	113	104	108	–	108
REBOUND 4.2	CROPLAN	2.4	113	102	113	109	–	108
350	La Crosse	2.8	109	93	106	103	–	108
ABOUND	Monsanto	2.5	104	95	106	101	–	106
MILK RIVER	R.J. Hunt	–	105	93	98	100	119	106
MAGNUM V	Dairyland	3.0	99	107	102	103	–	106
53Q60	Pioneer	3.1	105	96	108	103	–	105
LEGEND GOLD	Legend	–	103	99	102	102	–	104
5312	Check	3.0	97	102	96	99	112	104
DK 124	Monsanto	2.7	104	93	83	96	–	102
WL 232 HQ	W-L	2.8	100	99	106	101	–	101
AWARD	Monsanto	3.3	97	90	88	93	–	100
ONEIDA VR	Check	–	99	98	102	99	99	99
WRANGLER	Albert Lea	–	–	–	–	–	101	98
GH 750	Golden Harvest	–	105	96	99	101	–	98
VERNAL	Check	2.0	103	101	102	102	89	98
GH 766	Golden Harvest	–	95	91	88	92	–	92
AVALANCHE+Z	Am. Alf.	2.4	93	85	82	88	–	88
LSD .05	–	–	ns	ns	ns	ns	10	–

Alfalfa variety yield in percent of check varieties at Lamberton, Redwood County.

Variety, in descending order of average performance over all current Minn. trials. **Bold** varieties have been in Minn. trials for more than 5 site years.

	Marketer	WSI	1999 Seeding Harvest Year			3-yr Total	2001 Seeding Harvest Year		2-yr Total	All Site-Years Average
			2000	2001	2002		2002	2003		
Checks, Tons/Ac 15%mc Hay			7.16	6.43	7.51	21.10	7.13	7.15	14.29	–
JADE II	NC+	–	–	–	–	–	114	114	114	114
AMERISTAND 403T	Am. Alf.	2.1	–	–	–	–	103	110	107	113
POINTER	Dahlco	–	102	98	102	101	–	–	–	113
HYBRIFORCE-400	Dairyland	2.8	–	–	–	–	108	107	108	112
54V54	Pioneer	2.7	–	–	–	–	102	105	104	110
9429	LG Seeds	2.8	91	100	98	96	104	99	102	110
AMERISTAND 201+ Z	Am. Alf.	2.0	97	100	110	103	–	–	–	110
6410	Garst	2.7	100	95	103	100	102	113	107	109
GENEVA	Syngenta	2.7	102	111	110	108	–	–	–	109
6420	Garst	–	–	–	–	–	106	108	107	109
FEAST + EV	Garst	2.2	–	–	–	–	101	111	106	109
DK 140	Monsanto	2.8	99	105	107	104	–	–	–	108
DK 141	Monsanto	3.3	105	108	104	106	–	–	–	108
REBOUND 4.2	CROPLAN	2.4	98	97	104	100	–	–	–	108
ABOUND	Monsanto	2.5	96	104	106	102	–	–	–	106
MILK RIVER	R.J. Hunt	–	96	95	93	95	112	108	110	106
MAGNUM V	Dairyland	3.0	98	96	109	102	–	–	–	106
DK A42-15	Monsanto	2.7	–	–	–	–	99	108	104	105
AC VIVA		–	96	100	104	100	–	–	–	105
53Q60	Pioneer	3.1	99	98	106	101	94	102	98	105
LEGEND GOLD	Legend	–	89	101	101	97	–	–	–	104
5312	Check	3.0	102	102	101	102	105	101	103	104
4 TRAFFIC	Kaltenberg	2.4	–	–	–	–	105	100	103	103
DK 124	Monsanto	2.7	96	91	92	93	–	–	–	102
645-II	Garst	–	100	98	102	100	–	–	–	100
AWARD	Monsanto	3.3	100	99	96	98	–	–	–	100
ONEIDA VR	Check	–	96	100	95	97	96	99	97	99
PLATINUM	Channel Bio	–	98	101	96	98	–	–	–	99
GH 750	Golden Harvest	–	96	90	98	95	–	–	–	98
VERNAL	Check	2.0	102	97	104	101	99	100	100	98
WL 325 HQ	W-L	3.0	92	97	102	97	–	–	–	97
9326	LG Seeds	–	91	96	99	96	–	–	–	96
AMERIGUARD 302 + Z	Am. Alf.	–	93	98	95	95	–	–	–	95
LSD .05	–	–	ns	10	ns	ns	9	ns	10	–

Alfalfa variety yield in percent of check varieties at Grand Rapids, Itasca County.

Variety, in descending order of average performance over all current Minn. trials. **Bold** varieties have been in Minn. trials for more than 5 site years.

	Marketer	WSI	2000 Seeding Harvest Year			3-yr Total	All Site-Years Average
			2001	2002	2003		
Checks, Tons/Ac 15%mc Hay	–	–	3.78	4.96	3.85	12.59	–
DK 134	Monsanto	2.8	107	105	111	107	117
MULTIPLIER 3	Mycogen	2.8	119	108	105	110	114
ALLIANT	Monsanto	3.0	125	105	101	110	113
620	Garst	2.6	126	109	107	113	112
MONUMENT II	Geertson	–	120	98	100	105	111
54V54	Pioneer	2.7	121	99	100	106	110
ABOUND	Monsanto	2.5	119	108	99	108	106
MILK RIVER	R.J. Hunt	–	118	111	107	112	106
DK 127	Monsanto	2.9	112	103	98	104	105
53Q60	Pioneer	3.1	106	108	101	105	105
DK 124	Monsanto	2.7	111	105	103	106	102
ONEIDA VR	Check	–	109	102	101	104	99
VERNAL	Check	2.0	91	98	99	96	98
LSD .05	–	–	19	ns	8	9	–

2003 Winter Survival Test Results from Wisconsin and Minnesota.

Winter survival index: 1 = superior winter survival. 2 = very good. 3 = good. 4 = adequate. 5 = low. 6 = no winter survival.

Variety	Arlington, Wis.	Lancaster, Wis.	Morris, Minn.	Rosemount, Minn.	Mean
BEAVER	0.9	1.2	1.4	1.8	1.3
6415	1.3	1.1	1.5	2.0	1.5
VERNAL	2.2	1.8	2.4	1.6	2.0
ZG 0141	2.4	1.1	2.5	2.1	2.0
5262	2.3	2.1	1.9	2.4	2.2
AVALANCHE +Z	2.5	2.6	2.6	1.8	2.4
526	2.2	2.2	2.8	2.5	2.4
50M172	2.1	1.9	3.0	3.1	2.5
54H91	2.8	2.5	3.3	3.5	3.0
WL 325 HQ	3.2	3.1	2.8	3.1	3.1
HYBRIFORCE-420/WET	2.8	2.4	3.6	3.8	3.2
53Q60	2.5	2.0	4.1	4.9	3.4
RANGER	3.6	3.2	3.1	3.8	3.4
DART	3.7	3.5	3.6	4.0	3.7
G-2852	3.7	3.8	–	–	3.7
FORTRESS	4.1	4.0	3.9	4.1	4.0
WL 316	–	–	4.0	4.2	4.1
ARCHER	4.4	4.2	4.2	5.0	4.4
SOUTHERN SPECIAL	4.5	4.6	6.0	5.6	5.2
CUF 101	6.0	6.0	6.0	6.0	6.0
MOAPA 69	6.0	6.0	6.0	6.0	6.0

Alfalfa variety milk production expressed as percent of Vernal and forage RFQ, CP%, NDF% and NDFD%; 2003 season totals from trial seeded in 2002 at Rosemount, Minn.

Variety, listed in descending order of milk production	Milk, %		RFQ ^a	CP, %	NDF, %	NDFD ^b , %
	Lb / Acre	Lb / Ton				
6410	123	106	132	20	44	46
GOLDLEAF	116	101	123	19	45	44
620	116	108	136	21	44	48
WL 322 HQ	113	106	132	20	44	46
FEAST +EV	114	102	125	19	45	45
BARALFA 42 IQ	113	106	132	20	44	46
CIMARRON	95	99	120	18	46	44
VERNAL	100	100	122	19	46	45
VERNAL actual values	9,257	2,183	122	19	46	45
LSD 5%	1	5	13	ns	1	ns

Alfalfa variety milk production expressed as percent of Vernal and forage RFQ, CP%, NDF% and NDFD%; 2003 season totals from trial seeded in 2003 at Rosemount, Minn.

Variety, listed in descending order of milk production	Milk, %		RFQ ^a	CP, %	NDF, %	NDFD ^b , %
	Lb / Acre	Lb / Ton				
6415	116	101	185	24	35	49
DKA33-16	114	102	187	24	35	50
EXTREME	105	99	176	23	36	48
CIMARRON	103	89	147	23	40	45
VERNAL	100	100	177	23	37	51
BARALFA 53 HR	99	93	157	22	39	47
WL 322 HQ	98	101	181	23	36	50
VERNAL actual values	2,803	2,748	177	23	37	51
LSD 5%	ns	ns	ns	1	3	ns

Alfalfa variety milk production expressed as percent of Vernal and forage RFQ, CP%, NDF% and NDFD%; 2003 season totals from trial seeded in 2003 at Arlington, Wis.

Variety, listed in descending order of milk production	Milk, %		RFQ ^a	CP, %	NDF, %	NDFD ^b , %
	Lb / Acre	Lb / Ton				
FEAST +EV	106	106	172	22	38	51
VERNAL	100	100	155	20	40	48
6410	95	99	153	20	40	47
VERNAL actual values	13,635	2,558	155	20	40	48
LSD 5%	ns	1	4	1	1	2

Alfalfa variety milk production expressed as percent of Vernal and forage RFQ, CP%, NDF% and NDFD%; 2003 season totals from trial seeded in 2003 at Arlington, Wis.

Variety, listed in descending order of milk production	Milk, %		RFQ ^a	CP, %	NDF, %	NDFD ^b , %
	Lb / Acre	Lb / Ton				
BARALFA 53 HR	121	102	195	23	35	53
6415	112	103	198	24	35	54
DKA33-16	111	101	192	24	35	52
VERNAL	100	100	185	24	37	54
EXTREME	99	97	179	23	37	51
VERNAL actual values	7,695	2,840	185	24	37	54
LSD 5%	ns	4	16	ns	ns	2

RFQ^a = Relative Forage Quality. For a technical discussion of RFQ see: <http://www.uwex.edu/ces/forage/pubs/rfq.htm>

NDFD^b = NDF digestibility. For a technical discussion of NDF digestibility see: <http://www.uwex.edu/ces/forage/pubs/milk2000.htm>

CP = Crude Protein. NDF = Neutral Detergent Fiber

2004 Forage Seed Sources.

Marketer	Company	City	State	Zip	Phone (main)	Phone (other)	Web URL / Access
AgVenture	AgVenture East	Kasson	MN	55944	800-657-4890		www.agventure.com
Albert Lea	Albert Lea Seed House	Albert Lea	MN	56007	507-373-3161		www.alseed.com
Allied	Allied Seed	Macon	MO	63552	800-880-8127		www.alliedseed.com
Am. Alf.	America's Alfalfa	Princeton	IL	61356-0404	800-873-2532		www.americasalfalfa.com
AMPAC	AMPAC Seed Co.	Winona Lake	IN	46590	866-311-4869		www.ampacseed.com
Barenburg	Barenburg Midwest	Vinton	IA	52349	888-470-5569	800-547-4101	www.barusa.com
Bio Plant	Bio Plant Research	Camp Point	IL	62320	800-593-7708		—
Brown Seed	Brown Seed Farms	Bay City	WI	54723	800-712-7696	715-262-4331	www.browngenetics.com
Channel Bio	Channel Bio Corp	Kentland	IN	47951	800-369-8218		www.channelbio.com
CROPLAN	CROPLAN Genetics	St. Paul	MN	55164-0281	800-851-8810	651-634-8105	www.croplangenetics.com
Dahlco	Dahlco Seed	Cokato	MN	55321	320-286-5982		www.dahlco.com
Dairyland	Dairyland Seed Co.	West Bend	WI	53095	800-236-0163		www.dairylandseed.com
Elk Mound	Elk Mound Feed & Farm Supply	Elk Mound	WI	54739	715-879-5556		www.elkmoundseed.com
Garst	Garst Seed Co.	Dawson	MN	56232	320-769-4445	608-452-3844	www.garstseed.com
Geertson	Geertson Seed Farm	Adrian	OR	97901	800-843-0390		—
Gold Country	Gold Country Seed	Hutchinson	MN	55350	320-587-1050		www.goldcountryseed.com
Grassland	Grassland Central	Jordan	MN	55352	952-492-2990		—
Great Lakes	Great Lakes Hybrids	Ovid	MI	48866	989-834-2251		www.glh-seeds.com
Great Plains	Great Plains Research Co. Inc.	Apex	NC	27539	919-362-1583		www.greatplainsresearch.com
Golden Harvest	JC Robinson Seeds/Golden Harvest	Sherburne	MN	56171	507-764-3640	612-565-2945	www.goldenharvestseeds.com
Johnson	Johnson Seeds	Dassel	MN	55325	320-275-2430		www.seed.ab.ca/ grower/Johnson
Jung	Jung Seed Genetics	Eyota	MN	55934	507-545-0151	800-242-1855	www.jungseedgenetics.com
Kaltenberg	Kaltenberg Seed Farms	Waunakee	WI	53597	800-383-3276		www.kaltenburgseeds.com
KayStar	KayStar Seeds	Huron	SD	57350	605-352-8791		www.kaystarseed.com
La Crosse	La Crosse Forage & Turf Seed Co.	LaCrosse	WI	54603	608-783-9560		—
Legend	Legend Seeds	DeSmet	SD	57231	605-854-3346		www.legendseeds.com
LG Seeds	LG Seeds	Sauk Rapids	MN	56379	320-248-0042	715-426-7577	www.lgseeds.com
Mallard	Mallard Seed	Plainview	MN	55964	507-534-2300		—
Monsanto	Monsanto Global Seed Group	St Louis	MO	63167	314-694-5701		www.monsanto.com
Mycogen	Mycogen Seeds	Holmen	WI	54636	608-526-2627	317-337-4007	www.mycogen.com
NC+	NC+ Hybrids	Spencer	IA	51301	712-262-9216	402-467-2517	www.nc-plus.com
North-Gro	North-Gro Seeds	Cuba City	WI	53807	608-744-7333		www.northgro.com
Olds Seed	Olds Seed Solutions	Madison	WI	53707	800-356-7333	608-249-9291	seedsolutions.com
PGI Alfalfa	PGI Alfalfa Inc.	Story City	IA	50248	800-247-3967	515-733-5274	—
Pioneer	Pioneer Hi-Bred Int'l Inc.	Johnston	IA	50131-1150	515-334-6426		www.pioneer.com
Power	Power Seeds Inc.	Fraserville	ONT	KOL IVO	705-944-5600		—
Producers	Producers Hybrids, Inc.	Battle Creek	NE	68715	888.675.3190		www.producershybrids.com
R.J. Hunt	R.J. Hunt Seed Co.	Wadena	MN	56482	218-631-4190		—
Ramy	Ramy International	Mankato	MN	56001	800-658-7269		—
Renk	Renk Seed Co.	Sun Prairie	WI	53590	800-289-7365	608-837-7351	www.renkseed.com
Spangler	Spangler Seedtech Inc	Jefferson	WI	53549	800-284-1080	414-674-4606	www.spanglerseed.com
Specialty	Specialty Seeds	Cold Spring	MN	56307	320-845-7689		www.specialtyseedsalbany.com
Syngenta	Syngenta Seeds Inc.	Golden Valley	MN	55427	763-593-7286		www.syngenta.com
Target	Target Seed, LLC	Homesdale	ID	83628	208-337-6201		www.targetseed.com
Trelay Inc.	Trelay Inc.	Livingston	WI	53554	608-943-6363		www.trelay.com
W-L	W-L Research, Inc.	Madison	WI	53708-8112	800-406-7662	608-240-0630	www.wlresearch.com
Ziller	Ziller Seed Co. Inc.	Bird Island	MN	55310	320-365-3674		www.zillerseed.com
U of MN	University of Minnesota Forages	Saint Paul	MN	55108			http://forages.coafes.umn.edu