

Alfalfa

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Yield is the single largest determinant of return per acre for alfalfa production. 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 at University of Minnesota Research and Outreach Centers and on cooperating farmers' fields. 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 percentage 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 loca-



Locations of alfalfa trials.

tions include Rosemount (Dakota Co.), Zumbro Falls (Wabasha Co.), Lambertson (Redwood Co.), St. Martin and Richmond (Stearns Co.), Underwood (Otter Tail Co.) and Grand Rapids (Itasca Co.). In addition, some alfalfa varieties are tested for forage quality at Rosemount.

Yield results for alfalfa varieties tested in current Minnesota yield trials (2005 to 2008 seeding years) are listed in Tables 1 through 4. Varieties in current forage quality and potato leafhopper trials are listed in Tables 5 and 6. Alfalfa variety seed marketers and matching web sites are provided in Table 7. Disease resistance information for alfalfa varieties is available on the web at www.alfalfa.org.

Winterhardiness

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.

The best indicator of winter survival potential is the yield performance in the third production year after seeding. Fall dormancy rating used to be a good indicator of winter survival potential, but this is no longer the case with modern varieties.

When selecting alfalfa varieties for your farm, greatest winterhardiness is needed in west central and northwestern Minnesota (see winter injury potential map). 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. Because of dependable snow cover, northeastern Minnesota seldom experiences severe winter injury.



Forage Yield

Yield results for alfalfa varieties tested in current Minnesota trials are presented in Tables 1 to 4. Yields are expressed as a percentage of check variety yields; for example, 113 means the variety had 13% greater yield than the average of the check varieties. Within each table, varieties are ranked according to their average performance across ALL current trials in which they have been tested (2005 to 2007 seedings). Individual tables correspond to test results from different regions of Minnesota.

Greatest confidence should be placed in variety yield information that represents more than five site-years of testing (e.g. 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 appearing in **bold** type have been tested in six or more 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 (e.g. yield performance in 2006 and 2007 for a 2005 seeding). For long-term stands, choose varieties based on their performance through the third year after seeding (e.g. 2007 yield for 2004 seeding).

Table 1. Alfalfa variety yield as percentage of check varieties at Rosemount (Dakota County), Zumbro Falls (Wabasha County) and Lamberton (Redwood County).

Variety ¹	Marketer	Rosemount				Zumbro Falls			Lamberton
		2006 seeding		2007 seeding		2006 seeding			2007 seeding
		2008	2007	2-Year Total	1-Year Total	2008	2007	2-Year Total	1-Year Total
L447HD	Legacy	—	—	—	—	118	112	115	—
GH727	Golden Harv.	—	—	—	—	116	108	111	—
FOREMOST II	Prairie	—	—	—	112	—	—	—	—
GENOA	NK Brand	112	109	111	—	119	108	113	—
MAGNUM VI	DairyLand	110	113	111	—	115	107	110	—
FSG 406	Allied	—	—	—	108	—	—	—	—
AMERISTAND 407TQ	Am. Alf.	—	—	—	109	113	106	109	—
PERFORM	DairyLand	111	106	108	—	109	105	107	—
MARINER III	Allied	104	110	107	—	—	—	—	—
6415	Garst	103	98	100	—	119	108	113	96
SPRINGGOLD	Renk	—	—	—	108	—	—	—	96
6417	Garst	—	—	—	106	—	—	—	108
54V46	Pioneer	107	102	105	—	124	106	114	—
WL 343HQ	W-L	117	98	108	—	111	101	105	—
DKA41-18RR	Dekalb	99	102	101	—	116	106	111	—
6443 RR	Garst	108	102	105	—	119	104	111	—
PHABULOUS III	Trelay Inc.	—	—	—	111	115	105	110	—
4A421	Mycogen	—	—	—	—	106	103	104	—
DKA34-17RR	Dekalb	108	103	105	—	—	—	—	—
4G418RR	Mycogen	—	—	—	—	108	101	104	—
55V48	Pioneer	—	—	—	110	—	—	—	99
53Q30	Pioneer	109	107	108	—	107	105	106	—
6426	Garst	—	—	—	106	—	—	—	95
5312	Check	109	107	108	105	109	105	107	106
VERNAL	Check	96	99	97	100	100	98	99	109
ONEIDA VR	Check	95	94	95	94	91	97	94	85
<i>Checks, tons/acre as hay</i>		<i>6.8</i>	<i>6.7</i>	<i>13.5</i>	<i>6.1</i>	<i>4.5</i>	<i>5.7</i>	<i>10.2</i>	<i>6.1</i>
LSD (5%)		16	11	12	9	15	8	9	13

¹ Total year average overall in current Minnesota trials. Bold varieties have been in Minnesota trials for more than 5 site-years.

Table 2. Alfalfa variety yield as percentage of check varieties at Grand Rapids (Itasca County).

Variety ¹	Marketer	Grand Rapids				
		2005 seeding			2007 seeding	
		2008	2007	2006	3-Year Total	1-Year Total
AMERISTAND 407TQ	Am. Alf.	—	—	—	—	96
6417	Garst	—	—	—	—	98
54V46	Pioneer	100	84	103	97	—
4A421	Mycogen	104	100	113	107	—
LEGENDAIRY 5.0	CropLan	100	86	94	94	—
55V48	Pioneer	—	—	—	—	96
53Q30	Pioneer	99	89	98	96	—
6200 HT	Garst	106	107	100	104	—
6400 HT	Garst	98	97	101	99	—
5312	Check	106	110	110	109	101
VERNAL	Check	98	101	95	97	100
ONEIDA VR	Check	96	89	95	94	99
<i>Checks, tons/acre as hay</i>		<i>7.2</i>	<i>4.8</i>	<i>7.4</i>	<i>19.5</i>	<i>5.5</i>
LSD (5%)		8	22	12	8	7

¹ Total year average overall in current Minnesota trials. Bold varieties have been in Minnesota trials for more than 5 site-years.

Table 3. Alfalfa variety yield as percentage of check varieties at St. Martin and Richmond (Stearns County) and Underwood (Otter Tail County).

Variety ¹	Marketer	Stearns County				Otter Tail County			
		St. Martin		Richmond		Underwood			
		2005 Seeding		2007 Seeding		2006 Seeding			
		2008	2007	2006	3-Year Total	1-Year Total	2008	2007	2-Year Total
4S419	Mycogen	120	115	112	116	—	—	—	—
SOMERSET	NK Brand	121	115	108	115	—	—	—	—
DKA33-16	Dekalb	120	114	109	115	—	—	—	—
LABRADOR	Dahlco	115	114	114	114	—	—	—	—
L333HD	Legacy	—	—	—	—	113	—	—	—
WL 357HQ	W-L	116	112	108	112	—	—	—	—
GENOA	NK Brand	119	113	112	115	—	104	104	104
SUMMERGOLD	Renk	—	—	—	—	111	—	—	—
6420	Garst	110	110	111	110	—	—	—	—
MAGNUM VI	DairyLand	—	—	—	—	—	110	107	109
AMERISTAND 407TQ	Am. Alf.	—	—	—	—	110	116	109	112
4R429	Mycogen	112	104	109	108	—	—	—	—
PERFORM	DairyLand	—	—	—	—	—	112	105	108
8630	Mallard	107	109	108	108	—	—	—	—
6415	Garst	117	117	113	116	—	103	98	100
SPRINGGOLD	Renk	—	—	—	—	116	—	—	—
6417	Garst	—	—	—	—	114	—	—	—
54V46	Pioneer	112	110	114	112	—	110	104	107
WL 343HQ	W-L	—	—	—	—	111	104	100	102
6443 RR	Garst	—	—	—	—	—	101	98	100
PHABULOUS III	Trelay Inc.	—	—	—	—	106	99	96	97
LEGENDAIRY 5.0	CropLan	125	115	109	116	—	—	—	—
55V48	Pioneer	—	—	—	—	109	—	—	—
53Q30	Pioneer	108	112	107	109	—	89	95	92
6200 HT	Garst	103	101	103	102	—	95	99	97
6400 HT	Garst	102	98	103	101	109	99	102	100
5312	Check	103	108	106	106	105	104	106	105
VERNAL	Check	101	96	97	98	100	99	99	99
ONEIDA VR	Check	95	95	97	96	95	97	96	96
<i>Checks, tons/acre as hay</i>		5.8	6.7	6.8	19.3	7.9	5.2	6.0	11.3
LSD (5%)		6	8	8	9	10	14	11	11

¹ Total year average overall in current Minnesota trials. Bold varieties have been in Minnesota trials for more than 5 site-years.

Table 4. Seeding year alfalfa variety yields as a percentage of check varieties at Rosemount (Dakota County) and Underwood (Otter Tail County).

Variety ¹	Marketer	Rosemount	Underwood
		2008 seeding Seed Yr Total	2008 seeding Seed Yr Total
420 PLUS	Mustang	—	105
6431	Garst	106	102
PGI 459	Producer	—	104
LEGEND EXTRA	Legend	103	—
WL 357HQ	W-L	—	102
LIGHTNING IV	Jung	92	108
AMERISTAND 407TQ	Am. Alf.	99	—
VELOCITY	NuTech	100	98
6415	Garst	96	—
55V48	Pioneer	99	91
6417	Garst	92	97
DKA43-13	Dekalb	96	91
WL 343HQ	W-L	—	85
5312	Check	103	103
ONEIDA VR	Check	95	103
VERNAL	Check	102	94
<i>Checks, tons/acre as hay</i>		2.9	1.3
LSD (5%)		17	21

¹ Total year average overall in current seeding year Minnesota trials. Bold varieties have been in Minnesota trials for more than 5 site-years.

Table 5a. Alfalfa variety dry matter yield, milk production (expressed as percent of Vernal), RFQ index, CP and NDF (% dry matter), and NDFD (% NDF); 2008 season totals and weighted averages from a trial seeded in 2007 at Rosemount.

Variety, listed in descending order of milk production	DM yield ¹ Ton/ acre	Milk, (% of Vernal) ²		RFQ ³ , index	CP ³ , % dm	NDF ³ , % dm	NDFD ⁴ , % NDF
		Lb/ acre	Lb/ ton				
SPRINGGOLD	5.7	110	101	203	24.2	33.7	51.2
Experimental 1 ⁵	5.8	110	100	205	24.9	33.2	51.3
Experimental 2 ⁵	5.7	108	100	206	24.9	33.2	51.6
6417	5.6	106	100	202	24.5	33.5	50.7
WL 322 HQ	5.5	104	100	204	25.1	33.2	51.1
CIMARRON	5.5	101	96	184	24.1	35.7	50.1
VERNAL	5.3	100	100	201	24.6	34.0	51.9
Vernal, actual values	5.3	17,200	3,270	201	24.6	34.0	51.9
Mean	5.6	106	100	201	24.6	33.8	51.1
LSD (5%)	ns	6	2	11	0.5	1.3	0.9
CV (%)	5.1	4.4	1.5	3.9	1.5	2.7	1.2

¹ A seasonal 4-harvest total taken on 28 May, 30 June, 30 July and 5 September 2008.

² Milk production (pounds milk per acre and ton) are predicted using the MILK2006 spreadsheet, version milk2006alfalfagrass, developed at the University of Wisconsin.

³ RFQ=relative forage quality index; CP=% crude protein; and NDF=% neutral detergent fiber. Variables expressed as average concentration for the season.

⁴ NDFD=neutral detergent fiber digestibility, expressed as % NDF concentration.

⁵ Entered as experimental germplasm by alfalfa breeder.

Table 5b. Alfalfa variety dry matter yield, milk production (expressed as percent of Vernal), RFQ index, CP and NDF (% dry matter), and NDFD (% NDF); 2008 season totals and weighted averages from a trial seeded in 2008 at Rosemount.

Variety, listed in descending order of milk production	DM yield ¹ Ton/ acre	Milk, (% of Vernal) ²		RFQ ³ , index	CP ³ , % dm	NDF ³ , % dm	NDFD ⁴ , % NDF
		Lb/ acre	Lb/ ton				
6431	2.7	107	102	204	21.9	33.6	49.1
VELOCITY	2.6	103	104	214	22.0	32.7	50.3
VERNAL	2.6	100	100	192	21.6	34.8	48.4
DKA 43-13	2.4	99	105	217	22.2	32.2	50.2
6415	2.4	99	105	222	22.5	31.7	50.7
CIMARRON	2.5	97	100	193	21.6	34.7	48.0
WL 322 HQ	2.4	96	105	218	23.2	31.7	49.9
6417	2.3	96	107	226	22.3	31.2	51.1
Vernal, actual values	2.6	8,400	3,240	192	21.6	34.8	48.4
Mean	2.5	100	104	211	22.2	32.8	49.7
LSD (5%)	ns	3	ns	15	0.6	1.8	1.9
CV (%)	7.3	2.1	6.7	4.9	2.1	3.8	2.6

¹ A seasonal 2-harvest total taken on 10 July and 22 August in 2008.

² Milk production (pounds milk per acre and ton) are predicted using the MILK2006 spreadsheet, version milk2006alfalfagrass, developed at the University of Wisconsin.

³ RFQ=relative forage quality index; CP=% crude protein; and NDF=% neutral detergent fiber. Variables expressed as average concentration for the season.

⁴ NDFD=neutral detergent fiber digestibility, expressed as % NDF concentration.

⁵ Entered as experimental germplasm by alfalfa breeder.

Table 6. Alfalfa yield trial for potato leafhopper resistant varieties from a trial seeded in 2008 at South Charleston, Ohio.

Variety, listed in descending order of resistance	7/2/08	8/11/08	9/8/08	Total 2008	% of Susceptible Check ¹	Injury ² 8/11/08	Marketer
53H92	0.27	0.64	0.32	1.21	135*	2.0	Pioneer
EverGreen 3	0.14	0.59	0.27	0.98	109*	2.5	NK Brand Seeds
6426	0.10	0.57	0.29	0.97	108*	2.3	Garst
AmeriStand 404LH	0.03	0.63	0.26	0.87	97	1.8	America's Alfalfa
Susceptible checks**	0.11	0.52	0.25	0.90	—	4.5	

Yield is expressed as tons dry matter/acre

* Varieties not significantly different from highest value in column.

** Susceptible check varieties were Vernal, DK 140 and 5454

¹ The % yield improvement over the yield of susceptible check varieties.

² Potato leafhopper injury rated from 1 = no visible injury to 5 = most severe injury.

Table 7. 2008 forage seed sources

Marketer	Company	Web URL
Albert Lea	Albert Lea Seed House	www.alseed.com
Allied	Allied Seed	www.alliedseed.com
Am. Alf.	America's Alfalfa	www.americasalfalfa.com
Barenburg	Barenburg Midwest	www.barusa.com
Croplan	CROPLAN Genetics	www.croplangenetics.com
Dahlco	Dahlco Seed	www.dahlco.com
Dairyland	Dairyland Seed Co.	www.dairylandseed.com
Dekalb	AsgrowDeKalb	www.asgrowanddekalb.com
FFR	FFR Cooperative	www.ffrcoop.org
Garst	Garst Seed Co.	www.garstseed.com
Golden Harv.	JC Robinson Seeds/Golden Harvest	www.goldenharvestseeds.com
Jung	Jung Seed Genetics	www.jungseedgenetics.com
Legacy	Legacy Seeds, Inc.	www.legacyseeds.com
Legend	Legend Seeds	www.legendseeds.com
LG Seeds	LG Seeds	www.lgseeds.com
Mallard	Mallard Seed	www.mallardseed.com
Mustang	Mustang Seeds	www.mustangseeds.com
Mycogen	Mycogen Seeds	www.mycogen.com
NC+	NC+ Hybrids	www.nc-plus.com
NK Brand	NK Brand	www.nk-us.com
NuTech	NuTech Seed	www.nutechseed.com
Pioneer	Pioneer Hi-Bred International Inc.	www.pioneer.com
Prairie	Prairie Brand	www.prairiebrandseed.com
Producer	Producer's Choice	www.producerschoiceseed.com
Renk	Renk Seed Co.	www.renkseed.com
Trelay Inc.	Trelay Inc.	www.trelay.com
W-L	W-L Research, Inc.	www.wlresearch.com
Ziller	Ziller Seed Co. Inc.	www.zillerseed.com
U of MN	University of Minnesota Forages	www.extension.umn.edu/forages