



## Alfalfa



Yield is the single largest determinant of economic return per acre for alfalfa production. Selecting alfalfa varieties with high yield potential and persistence is fundamental to obtaining high yields.

Yield potential of alfalfa varieties is evaluated in research trials 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.

Test locations are in alfalfa production regions with different winter injury risk. Test locations include Rosemount (Dakota Co.), Zumbro Falls (Wabasha Co.), Lamberton (Redwood Co.), Richmond (Stearns Co.), and



Locations of alfalfa trials.

Underwood and Fergus Falls (Otter Tail Co.). Yield performance of conventional (non-Roundup Ready) varieties is presented as a percentage of check variety yields (average for Vernal, Oneida VR, and 5312).

Yield results for alfalfa varieties tested in current Minnesota yield trials (2009 to 2013 seeding years) are listed in tables 1 through 4; alfalfa variety seed marketers and matching web sites are provided in Table 6. Disease resistance information for alfalfa varieties is available on the web at [www.alfalfa.org](http://www.alfalfa.org).

### **Winterhardiness and Winter Survival Index**

The potential of 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 weather events that cause varied responses in alfalfa plants of differing ages. In 2013, extensive winterinjury/winterkill was observed in southern Minnesota. We believe this was related to freezing rain and ice sheeting events in both January and April. Consequently, we found that several older trials at Rosemount were completely killed and we observed stand damage at Lamberton and Zumbro Falls.

The best indicator of winter survival potential is the yield performance in the third production year after seeding. Fall dormancy rating, sometimes an indicator of winter survival potential, is available at [www.alfalfa.org](http://www.alfalfa.org).

Our long-term results show that when selecting alfalfa varieties, greatest winterhardiness is needed in west central and northwestern Minnesota (see winter injury poten-



tial 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. Northeastern Minnesota also seldom experiences severe winter injury because of dependable snow cover

### **Forage Yield**

Overall, alfalfa yields in 2013 suffered because the prolonged cold spring delayed first harvest, and a drought in July reduced the summer yields. 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 (2010 to 2013 seedings). Individual tables correspond to test results from different regions of Minnesota.

Greatest confidence should be placed in variety yield information that represents six or more 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 MN yield data have

been collected. Varieties appearing in **bold** type have been tested in six or more site-years.

Varietal yield difference tends to increase with stand age. Thus, to choose a variety for short-term stands, consider yield performance the first and second years after seeding (e.g. yield performance in 2011 and 2012 for a 2010 seeding). For long-term stands, choose varieties based on their performance through the third year after seeding (e.g. 2012 yield for 2010 seeding).

### Potato Leafhopper Tolerance

Potato leafhoppers (PLH) are usually the most damaging insect pest of alfalfa in Minnesota. Some alfalfa varieties have tolerance via inhibited PLH population growth and higher economic thresholds. Alfalfa varieties with greater than 50% resistance to PLH have an economic

threshold three times higher than conventional varieties. Variety resistance to potato leafhopper is available at [www.alfalfa.org](http://www.alfalfa.org).

Despite their potential for significant damage, PLH are not a problem in every harvest, year, and region of Minnesota. PLH pressure is more consistent south and east of Minnesota.

### 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 (races 1 and 2). Variety resistance ratings for each disease are available on the web at [www.alfalfa.org](http://www.alfalfa.org). While moderate resistance (MR) to a disease will provide protection to a variety under most conditions, either resistance (R) or high resis-

tance (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 that varieties with less than Very Good (2.0) WSI have at least (R) levels of disease resistance to produce more than two years after the seeding year under intensive management (4 cuts/season) in the east central and southeastern areas of Minnesota.

### Roundup Ready

Roundup Ready alfalfa varieties are new on the market so there now are trials in Stearns County and at Rosemount for comparing their

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

Variety <sup>1</sup>	Marketer	Rosemount	Zumbro Falls				Lamberton		
		2012 Seeding 1-Year Total	2011	2012	2013	3-Year Total	2012	2013	2-Year Total
SECURE-BR	DairyLand	—	—	—	—	—	139	119	128
MARINER IV	La Crosse	124	—	—	—	—	—	—	—
HYBRIFORCE-3400	DairyLand	122	—	—	—	—	—	—	—
<b>MAGNUM 7-WET</b>	<b>DairyLand</b>	—	—	—	—	—	<b>144</b>	<b>124</b>	<b>133</b>
<b>HYBRIFORCE-2400</b>	<b>DairyLand</b>	—	<b>105</b>	<b>113</b>	<b>125</b>	<b>113</b>	<b>146</b>	<b>137</b>	<b>141</b>
<b>WL343HQ</b>	<b>W-L</b>	—	—	—	—	—	<b>123</b>	<b>105</b>	<b>113</b>
STOCKPILE	BrettYoung	—	105	123	122	116	—	—	—
<b>SOLARGOLD</b>	<b>Renk</b>	<b>113</b>	—	—	—	—	<b>124</b>	<b>111</b>	<b>117</b>
SONIC	NuTech	—	—	—	—	—	116	114	115
55Q27	Pioneer	120	—	—	—	—	—	—	—
55V50	Pioneer	118	104	121	115	113	110	104	107
CRAVE	TA Seed	—	108	123	110	113	—	—	—
SENECA	DairyLand	—	105	120	114	113	—	—	—
<b>REBOUND 6.0</b>	<b>CROPLAN</b>	—	<b>101</b>	<b>119</b>	<b>107</b>	<b>109</b>	<b>107</b>	<b>112</b>	<b>110</b>
<b>DG4206</b>	<b>Crop Prod.</b>	—	<b>97</b>	<b>124</b>	<b>115</b>	<b>111</b>	<b>120</b>	<b>109</b>	<b>114</b>
6422Q	Nexgrow	—	100	119	115	111	—	—	—
<b>DKA43-13</b>	<b>Dekalb</b>	—	<b>97</b>	<b>118</b>	<b>115</b>	<b>109</b>	—	—	—
4A415	Mycogen	—	103	116	112	110	—	—	—
MAGNITUDE	La Crosse	110	—	—	—	—	—	—	—
FORAGEGOLD	Renk	119	—	—	—	—	—	—	—
<b>55V48</b>	<b>Pioneer</b>	—	<b>105</b>	<b>123</b>	<b>115</b>	<b>114</b>	—	—	—
<b>54Q32</b>	<b>Pioneer</b>	—	<b>102</b>	<b>112</b>	<b>110</b>	<b>108</b>	—	—	—
6417	Nexgrow	—	99	116	110	108	—	—	—
55H94	Pioneer	107	—	—	—	—	—	—	—
PGI557	Producer	—	93	113	111	105	—	—	—
5312	Check	104	103	104	98	102	97	105	101
ONEIDA VR	Check	104	97	106	103	102	101	76	88
VERNAL	Check	92	99	89	98	96	102	119	111
Checks, tons/acre as hay		6.3	8.4	7.4	6.4	22.1	3.1	3.7	6.8
LSD 5%		11	7	9	12	6	28	19	20

<sup>1</sup> Varieties are ranked according to their performance across all current trials. **Bold** varieties have been in Minnesota trials for more than 5 site-years.



**Table 3. Alfalfa Roundup Ready variety yield as percentage of all varieties at Rosemount (Dakota County) and Richmond (Stearns County).**

Variety <sup>1</sup>	Marketer	Rosemount	Richmond		
		2012 Seeding	2011 Seeding		2-Year Total
		1-Year Total	2012	2013	
54R02	Pioneer	103	—	—	—
CONSISTENCY 4.10RR	CROPLAN	—	101	102	102
AMERISTAND 405T RR	Am. Alf.	—	100	103	101
DKA41-18RR	Dekalb	—	95	97	96
WL355.RR	W-L	—	96	94	95
54VR03	Pioneer	—	97	94	95
Average, tons/acre as hay		6.76	8.64	6.76	15.4
LSD 5%		6	9	11	9

<sup>1</sup> The RR trial is the average over all of the varieties in the trial.

**Table 4. Seeding year alfalfa variety yields as a percentage of check varieties at Rosemount (Dakota County) and Richmond (Stearns County).**

Variety <sup>1</sup>	Marketer	Rosemount	Richmond	Richmond Roundup Ready
RR STRATICA	CROPLAN	—	—	107
401B	BYearon	—	106	—
402H	BYearon	—	105	—
<b>DG4206</b>	<b>Crop Prod.</b>	<b>118</b>	<b>91</b>	—
MEGAMAXRR	Legend	—	—	104
PGI 529	Producer	104	—	—
ONEIDA VR	Check	101	107	—
WL 356HQ.RR	W-L	—	—	103
54QR04	Pioneer	—	—	102
DKA41-18RR	Dekalb	—	—	102
AMERISTAND 455TQ RR	Am. Alf.	—	—	102
WL 372HQ.RR	W-L	—	—	102
54R02	Pioneer	—	—	101
DKA44-16RR	Dekalb	—	—	100
YIELDMASTER RR	Jung	—	—	100
FSG 403LR	La Crosse	100	—	—
55Q27	Pioneer	99	101	—
YIELDMAX	Legend	—	100	—
5312	Check	97	101	—
6497R	Nexgrow	—	—	98
428RR	La Crosse	—	—	98
VERNAL	Check	103	92	—
FSG 424	La Crosse	97	—	—
LEGENDAIRY XHD	CROPLAN	—	96	—
<b>55V50</b>	<b>Pioneer</b>	<b>86</b>	<b>104</b>	—
MATRIX	Albert Lea	95	—	—
CONSISTENCY 4.10RR	CROPLAN	—	—	93
L 455HD	Legacy	89	97	—
POWERHOUSE RR	Legend	—	—	87
Ave, tons/acre as hay		0.44	2.54	2.49
LSD 5%		37	12	16

<sup>1</sup> Varieties are ranked according to their performance across all current seeding year trials. **Bold** varieties have been in Minnesota trials for more than 5 site-years.

**Table 5. Sources of forage seed for 2013 trials.**

Marketer	Company	Web URL
AgVenture	AgVenture Feed and Seed	<a href="http://www.agventurefeeds.com">www.agventurefeeds.com</a>
Albert Lea	Albert Lea Seed House	<a href="http://www.alseed.com">www.alseed.com</a>
Allied	Allied Seed	<a href="http://www.alliedseed.com">www.alliedseed.com</a>
Am. Alf.	America's Alfalfa	<a href="http://www.americasalfalfa.com">www.americasalfalfa.com</a>
Barenburg	Barenburg Midwest	<a href="http://www.barusa.com">www.barusa.com</a>
Beck's	Beck's Hybrids	<a href="http://www.beckshybrids.com/">http://www.beckshybrids.com/</a>
Blue River	Blue River Hybrids	<a href="http://www.blueriverorgseed.com">www.blueriverorgseed.com</a>
BrettYoung	BrettYoung	<a href="http://www.brettyoung.ca/USA">www.brettyoung.ca/USA</a>
Byron Seed	Byron Seed	<a href="http://www.bestforage.com">www.bestforage.com</a>
Crop Prod.	Crop Production Services	<a href="http://www.cpsagu.com">www.cpsagu.com</a>
CROPLAN	CROPLAN Genetics	<a href="http://www.croplangenetics.com">www.croplangenetics.com</a>
Dahlco	Dahlco Seed	<a href="http://www.dahlco.com">www.dahlco.com</a>
DairyLand	DairyLand Seed	<a href="http://www.dairylandseed.com">www.dairylandseed.com</a>
Dekalb	AsgrowDekalb	<a href="http://www.asgrowanddekab.com">www.asgrowanddekab.com</a>
Farm Science	Farm Science Genetics	<a href="http://www.farmsciencegenetics.com">www.farmsciencegenetics.com</a>
FFR	FFR Cooperative	<a href="http://www.ffrcoop.org">www.ffrcoop.org</a>
Jung	Jung Seed Genetics	<a href="http://www.jungseedgenetics.com">www.jungseedgenetics.com</a>
La Crosse	LaCrosse Forage and Turf	<a href="http://www.lftseed.com">www.lftseed.com</a>
Legacy	Leqacy Seeds	<a href="http://www.legacyseeds.com">www.legacyseeds.com</a>
Legend	Legend Seeds	<a href="http://www.legendseeds.com">www.legendseeds.com</a>
Lemke	Lemke Seed	<a href="http://www.lemkeseed.com">www.lemkeseed.com</a>
LG Seeds	LG Seeds	<a href="http://www.lgseeds.com">www.lgseeds.com</a>
Millborn	Millborn Seed	<a href="http://www.millbornseeds.com">www.millbornseeds.com</a>
Mustang	Mustang Seeds	<a href="http://www.mustangseeds.com">www.mustangseeds.com</a>
Mycogen	Mycogen Seeds	<a href="http://www.mycogen.com">www.mycogen.com</a>
NC+	NC+ Hybrids	<a href="http://www.nc-plus.com">www.nc-plus.com</a>
Nexgrow	Nexgrow	<a href="http://www.plantnexgrow.com">www.plantnexgrow.com</a>
NK Brand	NK Brand	<a href="http://www.nk-us.com">www.nk-us.com</a>
NuTech	NuTech Seed	<a href="http://www.nutechseed.com">www.nutechseed.com</a>
Pioneer	Pioneer Hi-Bred International	<a href="http://www.pioneer.com">www.pioneer.com</a>
Prairie	Prairie Brand	<a href="http://www.prairiebrandseed.com">www.prairiebrandseed.com</a>
Producer	Producer's Choice	<a href="http://www.producerschoiceseed.com">www.producerschoiceseed.com</a>
Renk	Renk Seed	<a href="http://www.renkseed.com">www.renkseed.com</a>
Renze	Renze Seed	<a href="http://www.renzeseeds.com">www.renzeseeds.com</a>
TA Seed	TA Seed	<a href="http://www.taseeds.com">www.taseeds.com</a>
Trelay Inc.	Trelay Inc.	<a href="http://www.trelay.com">www.trelay.com</a>
Twin City	Twin City Seed Company	<a href="http://www.twincityseed.com">www.twincityseed.com</a>
W-L	W-L Research	<a href="http://www.wlresearch.com">www.wlresearch.com</a>
Ziller	Ziller Seed	<a href="http://www.zillerseed.com">www.zillerseed.com</a>
U of MN	University of Minnesota Forages	<a href="http://www.extension.umn.edu/forages/">http://www.extension.umn.edu/forages/</a>