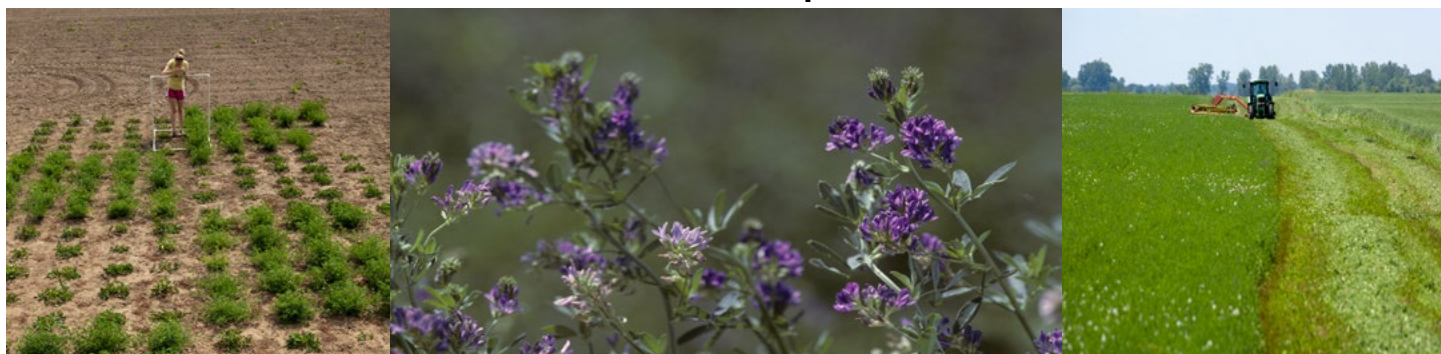


# 2016 Alfalfa Field Crop Trials Results



*Minnesota Agricultural Experiment Station and the College of Food, Agricultural and Natural Resource Sciences*

Forage yield and forage quality are important factors in determining economic return per acre for alfalfa production. Selecting alfalfa varieties with high yield potential and persistence is fundamental to obtaining and maintaining high yields.

Yield potential of alfalfa varieties are continually evaluated in research trials at University of Minnesota Research and Outreach Centers and on cooperating farmers' fields. The 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.) and Richmond (Stearns Co.). Yield performance of conventional (non-Roundup Ready) varieties is presented as a percentage of check variety yields (avg. for Vernal, Oneida VR, and 5312).



Yield results for alfalfa varieties currently tested Minnesota yield trials (2013 to 2015 seeding years) are listed in Tables 1 through 3; alfalfa variety, seed marketers and matching web sites are provided in Table 4. Disease resistance information for alfalfa varieties is available on the web at [www.alfalfa.org](http://www.alfalfa.org).

### **Winter Hardiness and Winter Survival Index**

The potential of severe winters make winter hardiness a primary consideration in variety selection for most areas of Minnesota. Winter hardiness 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.

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

Our long-term results show that when selecting alfalfa varieties, greatest winter hardiness 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. Northeastern Minnesota also seldom experiences severe winter injury because of dependable



snow cover.

### **Forage Yield**

Yield results for alfalfa varieties tested in current Minnesota trials are presented in Tables 1 to 3. 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 (2013 to 2015 seeding years). Individual tables correspond to test results from different regions of Minnesota. LSD numbers beneath yield columns indicate whether the difference between yields is due to genetics or to other factors, such as variations in the environment. If the yield difference between two entries equals or exceeds the LSD value, the higher-yielding entry probably was superior in yield. A difference less than the LSD value is probably due to

environmental factors.

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 2014 and 2015 for a 2013 seeding). For long-term stands, choose varieties based on their performance through the third year after seeding (e.g. 2016 yield for 2013 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 leaf

hopper 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 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 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 tested in trials in Dakota county for comparing their yields and are presented in Table 3. Roundup was used at the recommended rate for weed control. Otherwise alfalfa was managed using protocols employed in the conventional variety trials.

**Table 1. Alfalfa variety yield as percentage of check varieties at Rosemount (Dakota County).**

Variety <sup>1</sup>	Marketer	Rosemount							
		2013 Seeding				2014 Seeding			2015 Seeding
		2014	2015	2016	3-Year Total	2015	2016	2-Year Total	2016
FSG 426	La Crosse	—	—	—	—	—	—	—	116
HYBRIFORCE-3400	Alforex	—	—	—	—	—	—	—	122
FF42.A2	La Crosse	—	—	—	—	—	—	—	117
LS 804	Legacy	—	—	—	—	110	118	114	—
55Q27	Pioneer	94	110	110	105	112	124	117	114
55V50	Pioneer	107	116	112	112	114	119	116	110
55Q14	Pioneer	—	—	—	—	—	—	—	106
FSG 403LR	LaCosse Forage	107	110	99	105	—	—	—	—
GA-409	Prof. Alfalfa	—	—	—	—	104	115	109	—
DG 4210	Crop Production	90	115	99	101	—	—	—	—
L 455HD	Legacy	97	111	110	106	—	—	—	—
54QR04	Pioneer	94	113	109	105	—	—	—	—
54R02	Pioneer	98	108	103	103	—	—	—	—
FSG 424	LaCosse	91	110	105	102	—	—	—	—
PGI 529	Producer	88	108	99	98	—	—	—	—
5312	Check	101	101	101	101	102	101	102	102
ONEIDA VR	Check	97	103	103	101	101	103	102	100
VERNAL	Check	101	96	96	98	97	96	96	98
<b>Checks, tons/acre as hay</b>		<b>5.7</b>	<b>5.1</b>	<b>7.2</b>	<b>18.0</b>	<b>7.2</b>	<b>6.1</b>	<b>13.3</b>	<b>6.4</b>
<b>LSD 5%</b>		<b>8</b>	<b>7</b>	<b>11</b>	<b>6</b>	<b>8</b>	<b>12</b>	<b>8</b>	<b>9</b>

<sup>1</sup>Varieties are ranked according to their performance across all current trials.

**Blends**

Some 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. Disease resistance, 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 (MAES) website: [www.maes.umn.edu/pubs.html](http://www.maes.umn.edu/pubs.html).

More detailed alfalfa variety performance results are available on the UM-Agronomy FORAGES website: [www.extension.umn.edu/forages](http://www.extension.umn.edu/forages).

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**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.....	25-30
Planting Date....	Late April-Early May or Late July-Early August

**Table 2. Alfalfa variety yield as percentage of check varieties at Richmond (Stearns County), Zumbro Falls (Wabasha County) and Lamberton (Redwood County).**

Variety <sup>1</sup>	Marketer	Richmond	Zumbro Falls			Lamberton			
		2015 Seeding	2014 Seeding		2-Year Total	2013 Seeding			3-Year Total
		2016	2015	2016	2-Year Total	2014	2015	2016	3-Year Total
FSG 426	La Crosse	133	—	—	—	—	—	—	—
HYBRIFORCE-2400	DairyLand	—	—	—	—	123	116	120	120
54QR04	Pioneer	—	—	—	—	113	112	123	116
LEGENDAIRY XHD	CROPLAN	—	—	—	—	114	111	120	115
620	Mustang	—	—	—	—	119	110	114	114
55Q27	Pioneer	125	107	107	107	108	116	122	116
55V50	Pioneer	127	106	107	107	109	102	108	106
55Q14	Pioneer	116	—	—	—	—	—	—	—
FSG 403LR	LaCosse	—	—	—	—	115	113	116	114
DG 4210	Crop Production	—	—	—	—	111	116	119	116
L 455HD	Legacy	—	101	98	99	110	113	122	115
520BR	Mustang	—	—	—	—	109	98	108	105
FORAGEGOLD	Renk	—	—	—	—	102	103	108	104
LH9700	Latham	—	105	103	104	—	—	—	—
55VR06	Pioneer	—	102	103	103	—	—	—	—
TOUGHMAX	Legend	—	99	100	100	—	—	—	—
GENUITY POWERHOUSE RR	Legend	—	98	96	97	—	—	—	—
5312	Check	103	104	105	105	99	103	105	103
ONEIDA VR	Check	99	97	97	97	102	101	106	103
VERNAL	Check	99	99	98	98	99	96	89	94
<b>Checks, tons/acre as hay</b>		<b>8.0</b>	<b>6.3</b>	<b>7.7</b>	<b>14.0</b>	<b>3.8</b>	<b>4.8</b>	<b>4.4</b>	<b>13.0</b>
<b>LSD 5%</b>		<b>9</b>	<b>7</b>	<b>7</b>	<b>5</b>	<b>20</b>	<b>15</b>	<b>17</b>	<b>14</b>

<sup>1</sup>Varieties are ranked according to their performance across all current trials.

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

Variety <sup>1</sup>	Marketer	Rosemount			
		2014 Seeding			2015 Seeding
		2015	2016	2-Year Total	2016
55VR08	Pioneer	—	—	—	107
55VR06	Pioneer	103	106	105	—
DKA43-22RR	DeKalb	103	97	101	—
DKA40-51RR	DeKalb	99	102	101	97
DKA44-16RR	DeKalb	97	98	97	103
GENUITY POWERHOUSE RR	Legend	101	98	100	—
RR501	Monsanto	97	98	97	—
430 RRLH	La Crosse	—	—	—	94
<b>Ave, tons/acre as hay</b>		<b>8.1</b>	<b>7.7</b>	<b>15.9</b>	<b>7.5</b>
<b>LSD 5%</b>		<b>ns</b>	<b>5.3</b>	<b>5.6</b>	<b>9.9</b>

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

**Table 4. Sources of forage seed for 2016 trials.**

Marketer	Company	Web URL
Albert Lea	Albert Lea Seed House	<a href="http://www.alseed.com">www.alseed.com</a>
Am. Alf.	America's Alfalfa	<a href="http://www.americasalfalfa.com">www.americasalfalfa.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>
Channel	Channel Seed	<a href="http://www.channel.com/">http://www.channel.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>
DairyLand	DairyLand Seed	<a href="http://www.dairylandseed.com">www.dairylandseed.com</a>
DeKalb	AsgrowDeKalb	<a href="http://www.asgrowanddekalb.com">www.asgrowanddekalb.com</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	Legacy Seeds	<a href="http://www.legacyseeds.com">www.legacyseeds.com</a>
Legend	Legend Seeds	<a href="http://www.legendseeds.com">www.legendseeds.com</a>
Mustang	Mustang Seeds	<a href="http://www.mustangseeds.com">www.mustangseeds.com</a>
Nexgrow	Nexgrow	<a href="http://www.plantnexgrow.com">www.plantnexgrow.com</a>
NuTech	NuTech Seed	<a href="http://www.nutechseed.com">www.nutechseed.com</a>
Pioneer	Pioneer Hi-Bred Int'l	<a href="http://www.pioneer.com">www.pioneer.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>
W-L	W-L Research	<a href="http://www.wlresearch.com">www.wlresearch.com</a>
U of MN	University of Minnesota Forages	<a href="http://www.extension.umn.edu/forages/">http://www.extension.umn.edu/forages/</a>