

2017 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.) 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).



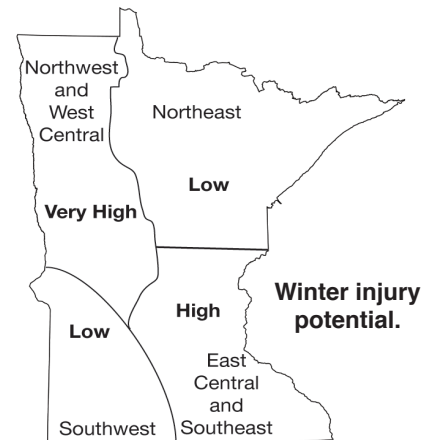
Yield results for alfalfa varieties currently tested Minnesota yield trials (2014 to 2017 seeding years) are listed in Tables 1 through 3; alfalfa variety, seed marketers and matching websites are provided in Table 4. Yield data is not shown for the yield trial seed in 2016, because all varieties sustained significant injury during the winter of 2016-17. Winter injury occurred because the trial had been harvested in October. Disease resistance information for alfalfa varieties is available on the web at www.alfalfa.org/pdf/2018_Variety_Leaflet.pdf.

Winter Survival

The potential of severe winters make winter survival 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.

Fall dormancy rating is sometimes an indicator of winter survival potential and is available at www.alfalfa.org/pdf/2018_Variety_Leaflet.pdf.

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 (2014 to 2017 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 en-

tries 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 2015 and 2016 for a 2014 seeding). For long-term stands, choose varieties based on their performance through the third year after seeding (e.g. 2017 yield for 2014 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/pdf/2018_Variety_Leaflet.pdf.

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. 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 protec-

tion 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) Winter Survival 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 2. Roundup was used at the recommended rate for weed control. Otherwise alfalfa was man-

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

Variety ¹	Marketer	Rosemount							Richmond			Zumbro Falls			
		2014 Seeding				2015 Seeding			2015 Seeding			2014 Seeding			
		2015	2016	2017	3-Year Total	2016	2017	2-Year Total	2016	2017	2-Year Total	2015	2016	2017	3-Year Total
HybriForce-3400	Alforex	—	—	—	—	122	128	124	—	—	—	—	—	—	—
FSG 426	La Crosse	—	—	—	—	116	125	120	133	125	129	—	—	—	—
FF42.A2	La Crosse	—	—	—	—	117	122	119	—	—	—	—	—	—	—
55V50	Pioneer	114	119	115	116	110	118	114	127	129	128	106	107	119	111
55Q27	Pioneer	112	124	118	118	114	121	117	125	117	121	107	107	113	109
4H400	Alforex	—	—	—	—	—	—	—	115	112	113	—	—	—	—
55Q14	Pioneer	—	—	—	—	106	111	108	116	117	116	—	—	—	—
LS 804	Legacy	110	118	108	112	—	—	—	—	—	—	—	—	—	—
GA-409	Pref. Alf.	104	115	112	110	—	—	—	—	—	—	—	—	—	—
StarGold	Rainier	110	125	111	115	—	—	—	—	—	—	99	101	114	105
Winter King III	MW BioAg	111	125	115	117	—	—	—	—	—	—	96	97	112	102
Sundance III	—	—	—	—	—	—	—	—	—	—	—	105	100	120	108
LH9700	Latham	—	—	—	—	—	—	—	—	—	—	105	103	113	107
55VR06	Pioneer	—	—	—	—	—	—	—	—	—	—	102	103	112	106
L-455HD	Legacy	—	—	—	—	—	—	—	—	—	—	101	98	112	104
Hi-Gest 360	Alforex	—	—	—	—	—	—	—	—	—	—	97	100	112	103
TOUGHMAX	Legend	—	—	—	—	—	—	—	—	—	—	99	100	104	101
GENUITY POWER-HOUSE RR	Legend	—	—	—	—	—	—	—	—	—	—	98	96	109	101
5312	Check	102	101	97	100	102	106	104	103	103	103	104	105	103	104
ONEIDA VR	Check	101	103	106	103	100	97	99	99	96	97	97	97	100	98
VERNAL	Check	97	96	98	97	98	96	97	99	101	100	99	98	97	98
LSD 5%		8	12	12	9	9	13	8	9	10	9	7	7	7	5
Checks, tons/acre as hay		7.2	6.1	6.4	19.7	6.4	5.4	11.8	8.0	7.4	15.4	6.3	7.7	7.5	21.6

¹Varieties are ranked according to their performance across all current trials.

aged using protocols employed in the conventional variety 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 web version of this report, go to MN Agric. Exp. Sta. website www.maes.umn.edu/pubs.html.

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

Authors and Researchers

Authors of this alfalfa report are: Craig Sheaffer, M. Scott Wells, and Joshua Larson. Test plot establishment and management are supervised by Joshua Larson.

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 Date....	Late April-Early May or Late July-Early August

Table 2. Alfalfa Roundup Ready variety yield as percentage of all varieties at Rosemount (Dakota County).

Variety ¹	Marketer	Rosemount						
		2014 Seeding				2015 Seeding		
		2015	2016	2017	3-Year Total	2016	2017	2-Year Total
55VR06	Pioneer	103	106	102	104	107	113	109
DKA43-22RR	DeKalb	103	97	102	101	—	—	—
GENUITY POWERHOUSE RR	Legend	101	98	102	101	—	—	—
DKA40-51RR	DeKalb	99	102	99	100	97	102	99
DKA44-16RR	DeKalb	97	98	102	99	103	100	101
RR501	Channel	97	98	92	96	—	—	—
430 RRLH	La Crosse	—	—	—	—	94	85	90
LSD 5%		7	5	12	7	10	16	11
Ave, tons/acre as hay		8.1	7.7	8.0	23.9	7.5	4.7	12.2

¹The RR trial the average is over all of the varieties in the trial.

Table 3. Seeding year alfalfa variety yields as a percentage of check varieties at Rosemount (Dakota County).

Variety	Marketer	Rosemount ¹
		2017 Seeding
		2017
LUKAL ALFALFA	Albert Lea	115
SW 5210	SW	112
msSuntra-144110	DairyLand	111
SW 4107	SW	108
QUAIL	Blue River	108
AFX 469	Alforex	107
ROBIN	Blue River	106
SW 3407	SW	96
FSG 415 BR ALFALFA	La Crosse See	95
KING BIRD	Blue River	95
LUZELLE ALFALFA	Albert Lea	92
AFX 429	Alforex	87
VIKING 372 HD	Albert Lea	87
5312	Check	102
ONEIDA VR	Check	99
VERNAL	Check	99
LSD 5%		18
Checks, tons/acre as hay		2.4

¹Varieties are ranked according to their performance in the seeding year trial.

Table 4. Sources of forage seed for 2017 trials.

Marketer	Company	Web URL
Albert Lea	Albert Lea Seed House	www.alseed.com
Alforex	Alforex Seed	www.alforexseeds.com
Am. Alf.	America's Alfalfa	www.americasalfalfa.com
Beck's	Beck's Hybrids	http://www.beckshybrids.com/
Blue River	Blue River Hybrids	www.blueriverorgseed.com
BrettYoung	BrettYoung	www.brettyoung.ca/USA
Channel	Channel Seed	http://www.channel.com/
Crop Prod.	Crop Production Services	www.cpsagu.com
CROPLAN	CROPLAN Genetics	www.croplangenetics.com
DairyLand	DairyLand Seed	www.dairylandseed.com
DeKalb	AsgrowDeKalb	www.asgrowanddekalb.com
Jung	Jung Seed Genetics	www.jungseedgenetics.com
La Crosse	LaCrosse Forage and Turf	www.lftseed.com
Latham	Latham hi-Tech Seeds	www.lathamseeds.com
Legacy	Legacy Seeds	www.legacyseeds.com
Legend	Legend Seeds	www.legendseeds.com
MW Bioag	Midwestern BioAg	www.midwesternbioag.com
Mustang	Mustang Seeds	www.mustangseeds.com
Nexgrow	Nexgrow	www.plantnexgrow.com
NuTech	NuTech Seed	www.nutechseed.com
Pioneer	Pioneer Hi-Bred Int'l	www.pioneer.com
Pref. Alf.	Preferred Seed	www.preferredseed.com
Producer	Producer's Choice	www.producerschoiceseed.com
Ranier	Ranier Seeds	www.ranierseeds.com
Renk	Renk Seed	www.renkseed.com
SW	S&W Seed	www.swseedco.com
W-L	W-L Research	www.wlresearch.com
U of MN	University of Minnesota Forages	http://www.extension.umn.edu/forages/