

2015 Barley Field Crop Trials Results



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

Spring barley varieties are compared in replicated trials at Crookston, Morris, St. Paul, Stephen and Roseau and in on-farm trials at Fergus Falls, Perley, Oklee, Strathcona, Kimball, and Hallock. Data collected from these trials should be used to make comparisons only among those varieties included in the trials. Yield is reported both for 2015 and a multi-year average as percent of the mean of the trial. In 2015, the lowest yielding trial was at Morris and the highest yielding at Roseau. LSD numbers beneath the yield columns indicate whether the difference between yields is due to genetics or to other factors, such as variations in environment. If 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 was probably due to environmental factors.

Variety Selection Criteria

Most barley producers in the region grow barley for malt and select varieties approved by the American Malting Barley Association (AMBA). The most important industry specifications for making malting grade are low grain protein (11.5% - 13.5%), kernel plumpness (>80%) and low deoxynivalenol or DON content (<2 ppm). DON is the toxin produced by the Fusarium Head Blight (FHB) pathogen. Please consult the AMBA recommended varieties for the most current information about industry acceptance of malting barley varieties at www.ambainc.org. Variety selection will also be influenced by contracts made

Relative grain yield (percent of the mean of the trial) of barley varieties in on-farm trials at Fergus Falls, Hallock, Oklee, Perley, Kimball, and Strathcona.

Entry	2015	2013-2015 ¹
Robust	88	93
Lacey	106	105
Rasmusson	110	108
Quest	97	98
Tradition	98	100
Stellar-ND	101	102
Celebration	98	100
Innovation	100	101
Conlon	93	94
ND Genesis ²	102	—
Pinnacle	100	101
LSD 0.05	3	2
Mean, Bu/Acre	140	131

¹Includes data from Hallock (2013 and 2014) and Kimball (2014).

²2015 data only.

Relative grain yield (percent of the mean of the trial) of barley varieties at several locations in Minnesota in single-year (2015) and multiple-year comparisons (2013-2015).

Entry	Crookston		Morris		Stephen		St. Paul	Roseau		State Mean	
	2015	2-Year ¹	2015	3-Year	2015	3-Year	2-Year ²	2015	3-Year	2015	3-Year
Robust	97	99	93	89	73	88	91	99	100	90	93
Lacey	106	100	108	104	113	104	96	97	101	105	101
Rasmusson	110	104	106	112	123	114	109	109	104	111	109
Quest	103	99	107	105	94	95	111	95	102	99	102
Tradition	94	92	103	99	98	97	90	94	95	97	95
Stellar-ND	99	99	99	93	101	98	89	105	95	101	95
Celebration	96	103	87	95	94	101	103	85	96	90	99
Innovation	108	105	105	105	112	103	119	108	104	108	106
Conlon	91	93	87	92	88	98	91	96	89	90	93
ND Genesis ³	96	96	100	104	111	106	89	113	110	105	103
Pinnacle	97	105	105	103	103	103	100	112	113	104	105
LSD 0.05	7	6	16	9	19	10	11	12	8	7	4
Mean, Bu/Acre	103	95	90	88	124	113	126	145	126	116	110

¹Only two years of data, 2013 and 2015.

²Only two years of data, 2013 and 2014.

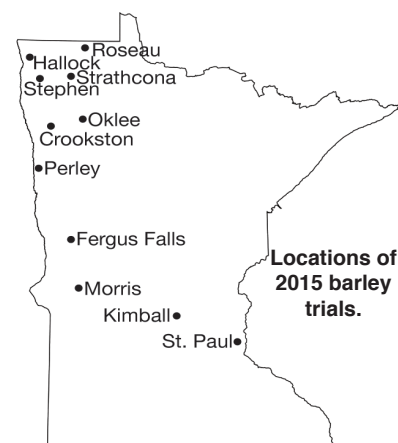
³Only two years of data, 2014 and 2015.

available by malting and brewing companies and these vary from year to year.

In addition to yield and acceptable malt quality, disease resistance plays an important role in variety selection. Disease evaluations are carried out in inoculated field and/or greenhouse experiments. Disease ratings are based on the results of two or more experiments and are scored on a 1–9 scale where 1 = most resistant and 9 = most susceptible. For most producers the disease FHB and the presence of DON in harvested grain are the two most

important factors limiting production of malting barley in the region. The two-rowed variety Conlon and the six-rowed variety Quest have a lower disease score for FHB and typically have lower DON compared to the other varieties grown in the region.

The other diseases listed in the disease reactions table are leaf diseases that can be a problem in Minnesota. The two-rowed varieties Conlon and Pinnacle tend to be a little more susceptible to spot blotch. Celebration and Conlon are the most resistant to net blotch. Septoria speckled leaf



Locations of 2015 barley trials.

Agronomic characteristics of barley varieties, 2014-2015.

Entry	Type	Use	Heading (DAP)	Height (inches)	Lodging (1-9)	Plump ² (%)	Protein ² (%)
Robust	6-row	Malt	66	35	5.1	92	13.9
Lacey	6-row	Malt	65	33	3.7	94	13.3
Rasmusson	6-row	Malt	64	31	4.6	91	13.0
Quest	6-row	Malt	65	34	5.6	91	13.2
Tradition	6-row	Malt	65	33	3.6	92	13.5
Stellar ND	6-row	Malt	64	34	4.9	94	13.4
Celebration	6-row	Malt	64	36	6.4	85	13.6
Innovation	6-row	Malt	65	32	3.4	94	13.0
Conlon	2-row	Malt	63	32	4.2	95	13.1
ND Genesis ¹	2-row	Malt	67	34	4.9	—	—
Pinnacle	2-row	Malt	64	34	3.1	97	12.0
No. Environments			5	5	3	17	17

¹No data to report for plump or protein.

²Data from 2008-2014.

Disease reactions of barley varieties in multiple-year comparisons¹.

Entry	Fusarium Head Blight	Net Blotch	Speckled Leaf Blotch	Spot Blotch	Stem Rust ²	Bacterial Leaf Streak
			----- (1-9) -----			
Robust	8	5	9	2	1	6
Lacey	8	6	9	2	1	6
Rasmusson	9	5	9	2	1	6
Quest	5	5	9	3	1	6
Tradition	8	4	9	2	1	7
Stellar-ND	9	6	9	2	1	7
Celebration	7	3	9	4	1	5
Innovation	8	4	9	2	1	6
Conlon	6	3	9	5	1	5
ND Genesis ³	8	—	9	2	1	6
Pinnacle	9	6	9	4	1	6

¹1-9 scale where 1 = most resistant, 9 = most susceptible.

²Reaction to the dominant strain of the stem rust pathogen.

³No data to report for net blotch.

blotch is a disease that has not been seen at any economically important level in Minnesota for more than 10 years. These leaf diseases can be controlled effectively with the use of a fungicide. FHB severity and DON can be reduced with fungicides, but they are not always effective.

Bacterial leaf streak disease has become more prominent in the past few years and tends to become more severe following heavy rain events. This disease cannot be controlled with fungicides. The bacterial leaf streak ratings presented are based on three years of data and at this point show only small differences among varieties for resistance.

For detailed variety descriptions and other University of Minnesota barley information please visit:

<http://smithlab.cfans.umn.edu>

PVP Status

All varieties shown in tables except Robust are covered by the Plant Variety Protection Act, PVP (94). Growers can save seed of these varieties for their own planting only; it cannot be sold to anyone else, not even a relative or a neighbor without specific permission of the applicant for protection.

Project Leaders

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Barley

Planting Rate and Date

Bushel Weight, Pounds.....	48
Seeds/Pound.....	14,300
Planting Rate, Pounds/Acre.....	85
Planting Rate, Seeds/Sq. Ft.....	28
Planting Date.....	Early Spring