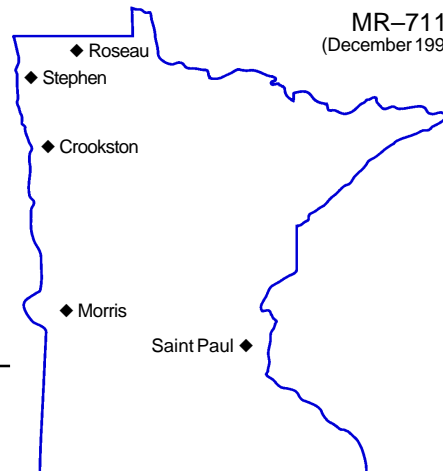


# Minnesota Agricultural Experiment Station

# VARIETY TRIALS

## Barley



Locations of barley trials.

Successful barley production depends to a considerable extent on selecting the best varieties for a particular farm. For that reason, varieties are compared in trial plots on Minnesota Agricultural Experiment Station fields at St. Paul, Morris and Crookston, and on farmers' fields. Important old varieties and new varieties are grown in replicated plots at each location. These plots are handled so that the factors affecting yield and other characteristics are nearly the same for all varieties at each location.

### Variety Classifications

Barley varieties are classed into groups under the headings "recommended public varieties," "special purpose variety," and "other varieties." Variety descriptions are arranged alphabetically within groups.

Classifications of barley varieties as "recommended," "other" and "special purpose" are determined each year by the Experiment Station Crop Variety Review Committee. A variety is usually not eligible for the "recommended" group unless it has out performed other varieties in important characteristics in three years of testing.

Listings in an "other varieties" category are usually inferior in one or more characteristics, as demonstrated in comparative tests.

Seed of varieties in all these groups may be eligible for certification, and the use of certified seed is suggested. However, certification does not imply recommendation. Registered and certified seed of varieties described in this report can be purchased from seed dealers or from growers listed in the *Minnesota Registered and Certified Seed Directory for 1997 Planting*. This annual publication

can be obtained without charge from the Minnesota Crop Improvement Association, 1900 Hendon Avenue, St. Paul, MN 55108, or from county extension agents' offices. The information is also available on-line at <<http://www.rtrade.org/mcia/>>.

### Interpreting the Tables

The LSD (Least Significant Difference) figures listed for forage quality performance under columns of tests at Rosemount and Arlington, are statistical measures of variability within the trials. This statistic is used to determine whether the differences between two quality tests are due primarily to genetic difference in the varieties.

If the quality difference between two varieties equals or exceeds the LSD value listed at the bottom of each quality test column, you can conclude that the higher quality variety was superior in quality. If the difference is less, greater attention should be given to other traits which are also important in making your variety choices.

### Protection Act Changes

Varieties receiving their U.S. Plant Variety Protection Act registration beginning in 1995 are identified by the code "PVP(94)." These varieties may *not* be sold by a producer, not even to a relative or neighbor, without the express permission of the variety's developer/owner.

### Authors/Researchers

The authors of this barley report are Donald Rasmusson and Edward Schiefelbein. Assistance was provided by Ruth Dill-Macky, David LeGare, John Wiersma at Crookston, and staff at Morris.

Information on the reaction of varieties to specific pathogens was largely obtained by Ruth Dill-Macky, Department of Pathology.

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*For Crop Production 1998* \_\_\_\_\_

# **BARLEY** **VARIETY TRIALS**

Minnesota Agricultural Experiment Station — University of Minnesota  
December 1997

Results of Barley Variety Tests Conducted by the Minnesota Agricultural Experiment Station. This report was prepared by Donald Rasmusson, agronomist, and Edward Schiefelbein, scientist, Department of Agronomy and Plant Genetics, University of Minnesota, St. Paul, MN 55108. [phone: 612/625-7278; e-mail: <rasmu002@maroon.tc.umn.edu>].

## **Fusarium Head Blight**

Fusarium head blight (scab) again caused serious losses in barley via reductions in yield and quality, and the production of vomitoxin. Until it reemerged and attacked Minnesota's barley crop in 1993, scab had not been a significant problem on barley since the 1940s. Currently recommended varieties appear to be equally susceptible to scab.

## **Classification Changes**

Foster, a North Dakota developed barley, was added to the recommended list last year. It was recently classified as a malting variety by the American Malting Barley Association (AMBA). Excel was recently dropped from the list of varieties recommended by the University. Royal continues to be recommended as a forage companion crop and feed-grain variety.

## **Recommended Public Varieties**

**Foster**—Medium yield. Maturity similar to Robust. Kernel plumpness good, similar to Stander. Intermediate in lodging reaction between Robust and Stander. Resistant to spot blotch. Six-rowed, semi-smooth awns, colorless aleurone. Has long rachilla hairs allowing grain to be distinguished from that of Robust and Stander. Classified as a malting variety by AMBA. Developed by North Dakota Agricultural Experiment Station from a cross involving Robust, ND 5570, Glenn and Karl. Released 1995. Seed sales regulated by the U.S. Plant Variety Protection Act, PVP(94).

**Robust**—Medium yield and medium maturity. Good lodging resistance and kernel plumpness. Six-rowed, semi-smooth awn, short rachilla hairs, colorless aleurone. Classified as a malting variety by AMBA. Resistant to spot blotch. Developed by Minnesota Agricultural

Experiment Station from cross of Morex and Manker. Released 1983. Seed sale regulated by U.S. Plant Variety Protection Act.

**Stander**—High yield. Superior in lodging resistance to Robust and Foster. Good kernel plumpness, similar to Foster. Six-rowed, semi-smooth awn, short rachilla hairs, colorless aleurone. Classified as a malting variety by AMBA. Resistant to spot blotch. Developed by Minnesota Agricultural Experiment Station from crosses involving Excel, Robust and Bumper. Released 1993. Seed sale regulated by U.S. Plant Variety Protection Act.

## Special Purpose Variety

**Royal**—Intended for use as a forage-companion crop and feed-grain variety. Not a malting type. Six-rowed, semi-smooth awn, blue aleurone, semidwarf stature. Forage quality superior to taller varieties based on digestibility and intake potential; low in fiber and lignin. Similar to Robust in forage protein and forage yield at the soft dough stage. Compared to taller barley and oat varieties, it competes less with underseeded forage legumes because of its short stature and superior lodging resistance. Resistant to spot blotch. Developed by the Minnesota Agricultural Experiment Station from crosses involving Robust, Azure and semidwarf Minn. M32. Released 1994. Seed sale regulated by U.S. Plant Variety Protection Act.

## Other Varieties

**Azure**—Medium yield. Medium maturity. Six-rowed, semi-smooth awn, long rachilla hairs, blue aleurone. Classified as a malting variety by AMBA. Resistant to spot blotch. Grain yield similar to Robust in Minnesota trials, but is not recommended because of limited Minnesota demand for a blue aleurone malting variety. Developed by North Dakota Agricultural Experiment Station from a cross involving Bonanza, Nordic, and ND B130. Released 1982.

**Bowman**—Medium yield. Medium maturity. Very good kernel plumpness. Medium lodging resistance. Two-rowed, smooth awns, long rachilla hairs, colorless aleurone. Not approved for malting by AMBA. Limited demand for two-rowed non-malting type in Minnesota. Similar to Robust in resistance to leaf diseases. Developed by North Dakota Agricultural Experiment Station from cross involving several parents. Released 1984.

**Excel**—High yield. Medium maturity. Similar to Robust in lodging resistance. Kernel plumpness lower than Robust. Six-rowed, semi-smooth awn, colorless aleurone. Has long rachilla hairs allowing grain to be distinguished from that of Robust and Stander. Classified as a malting variety by AMBA. Resistant to spot blotch. Developed by Minnesota Agricultural Experiment Station from cross involving Robust, Manker, and a sister-line of Morex. Released 1990. Seed sale regulated by U.S. Plant Variety Protection Act.

**Morex**—Low yield. Susceptible to lodging. Kernel plumpness intermediate. Six-rowed, semi-smooth awn, short rachilla hairs, colorless aleurone. Awns may drop off as crop approaches maturity. Threshes easily. Classified as a malting variety by AMBA. Moderate resistance to spot blotch. Developed by Minnesota Agricultural Experiment Station from cross of Cree and Bonanza. Released 1978.

Table 1. Grain yield of selected barley varieties in bushels per acre, 1992-1997.

Note Key:

Locations: C=Crookston, M=Morris, S=Stephen, SP=St. Paul, R=Roseau, AVG=average for all five locations.

Variety	C	M	S	SP	R	AVG
Number of Trials	10	6	2	4	2	24
Robust	93	94	102	84	91	93
Stander	105	103	107	97	105	103
Foster	100	95	100	94	93	97
LSD 0.05	3	5	10	5	10	2

Table 2. Agronomic traits of selected barley varieties, 1992-1997.

Note Key:

[1] Heading expressed as date in June.

[2] Height expressed in centimeters.

[3] Lodging expressed as a percentage representing the extent to which plants fall over in a test plot: 0=no plants down, 100=all plants down.

[4] Plump Kernals expressed as the percentage of kernals which remain on the top of a sieve representing industry standard of desirability.

Variety	Heading [1]	Height [2]	Lodging [3]	Plump Kernals [4]
Number of Trials	17	22	8	10
Robust	23	82	40	87
Stander	24	75	33	88
Foster	23	79	43	88

## Barley Planting Rate and Date

Rate is based on normal seedbeds and on normal size, good quality seed. Rate used can vary greatly depending on seed cost, desired stand, expected mortality, emerging ability, seed weight, seed germination, seedbed condition, depth of planting and planting equipment. Weight given is the most widely accepted in the U.S.

Bushel Weight (pounds)	Seeds/pound (number)	Rate/acre (pounds)	Rate (seeds)	Planting Date
48	14,300	85	28/square foot	Early spring