

2018 Winter Rye Field Crop Trials Results



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

Winter rye (*Secale cereale* L.), also known as cereal rye, is the most winter hardy and drought tolerant of all small grains. Winter rye performs best in sandy loam, well-drained soils compared to fine textured soils with poor internal drainage. Soil pH for optimum growth ranges from 5.6 to 7 but it can tolerate pH as low as 4.5 and as high as 8. Expect winter rye to be more productive than other small grains on infertile, sandy soils. Winter rye will continue to grow until late fall and resume growth very quickly in the early spring. Combined, these attributes explains the popularity of winter rye as a cover crop/green manure in both organic and conventional production systems. Other primary uses of winter

rye are pasture/forage and grain crop.

Results of the University of Minnesota's variety performance evaluations are summarized in Tables 1 and 2. The rye performance trials were grown near Lamberton, Le Center, Kimball, Crookston and Roseau in 2018. This past year was challenging: The trials near Lamberton, Le Center and Kimball had variable stands, likely caused by herbicide carry-over. The trial near Lamberton therefore was discarded while the trial in Crookston was lost due to hail. It is for that reason that no single year is presented. These performance evaluations are not designed for crop comparisons. The data should be used only to compare varieties within

a table.

The primary purpose, agronomic characteristics and grain quality are summarized in Table 1. Winter hardiness, relative maturity - as measured by the number of days to heading - plant height, straw strength, test weight and grain protein have been converted to a 1-9 scale to allow for easier interpretation of the data. Differences for all four characteristics are generally much less in the northern half of the state. In the southern half of the state, the gap in characteristics widens as the period of vegetative growth is longer in the south, especially with early and mild springs. Therefore, the averages of the actual data can be misleading.

Table 1. Origin and agronomic characteristics of winter rye varieties in Minnesota in multiple-year comparisons (2016-2018).

Cultivar	Agent or Breeder ¹	Year of Release	Type ²	Legal Status ³	Primary Use	Seed Color	Winter Hardiness	Days to Heading	Plant Height	Straw Strength	Ergot	Test Weight	Grain Protein
Aroostook	USDA-NRCS	1981	OPV	None	Grain	Blue/Grey	1	1	6	9	4	4	2
Elbon	OK	1956	OPV	None	Forage	Green	9	1	5	7	5	3	2
Hazlet	SeCan	2006	OPV	None	Grain	Blue/Grey	4	7	4	4	1	1	8
KWS Bono	KWS	2013	Hybrid	N/A	Grain	Green	4	6	1	1	1	1	9
KWS Brasetto	KWS	2007	Hybrid	N/A	Grain	Blue/Grey	3	7	2	1	1	5	8
Maton II	Oklahoma Genetics, Inc.	2006	OPV	None	Forage	Green	5	1	7	7	7	6	3
Musketeer	SeCan	1981	OPV	None	Grain	Green	9	3	8	9	2	4	6
ND Dylan	NDSU	2016	OPV	PVP (Pending)	Grain	Green	5	6	7	9	2	9	2
Oklon	OK	1993	OPV	None	Forage	Green	6	1	7	6	6	2	3
Prima	SeCan	1984	OPV	None	Grain	Green	5	6	7	6	1	3	6
Rymin	MN	1973	OPV	None	Grain	Blue/Grey	3	6	7	8	2	2	5
Spooner	WI	1992	OPV	None	Grain	Yellow	9	4	7	6	1	4	5
Wheeler	MI	1972	OPV	None	Forage	Yellow	1	9	9	8	9	9	1
LSD (0.1)							3	2	3	2	2	1	1

¹OK = Oklahoma State University, NDSU = North Dakota State University, UM = University of Minnesota, WI = University of Wisconsin, MI = Michigan State University.

²OPV = Open Pollinated Variety.

³Status under the Plant Variety Protection Act.

⁴1 = best, 9 = worst.

Winter Rye**Planting Rate and Date**

Bushel Weight, Pounds.....	56
Seeds/Pound.....	15,000-30,000
Planting Rate, Pounds/Acre...	35-70
Planting Rate, Seeds/Sq. Ft....	21-23
Planting Date.....	Sept. 15-Oct. 15

Varieties with lodging scores greater than 6 should be chosen with caution as lodging can reduce harvestability, yield, and quality. This is especially important if soils are highly fertile.

The relative grain yield of tested varieties in 1 to 3-year comparisons is presented in Table 2. The average yield across the three remaining testing locations was 83 bu/acre in 2018. This compares to a three-year average of 81 bu/acre. The two hybrid winter rye varieties that are commercially available yield about 50% more compared to the best performing open pollinated varieties. Rymin and Hazlet are the most productive and best adapted of the open pollinated varieties.

Table 2. Relative grain yield of winter rye varieties in five Minnesota locations in multiple year comparisons (2016-2018).

Cultivar	Lamberton ¹	Le Center	Kimball ²	Crookston ¹	State ³
Aroostook	82	59	85	73	75
Elbon	86	81	78	75	81
Hazlet	115	120	106	126	116
KWS Bono	151	190	164	160	160
KWS Brasetto	141	155	159	159	147
Maton II	81	74	85	67	77
Musketeer	96	92	82	102	93
ND Dylan	—	127	99	—	115
Oklon	83	64	103	70	78
Prima	104	95	105	116	104
Rymin	104	110	98	112	105
Spooner	92	97	87	97	95
Wheeler	65	37	50	42	54
Mean (Bu/Acre)	92.1	69.2	67.9	74.6	81.2
LSD (0.1)	8	21	19	14	7

¹2016 and 2017 data.

²2016 and 2018 data.

³Includes data from trials near St. Paul (2016, 2017) and Roseau (2018).

Varieties differ in their susceptibility to a number of economically important fungal pathogens, including powdery mildew, leaf rust, leaf spotting diseases, Fusarium head blight and ergot. Not enough observations have been made to date to reliably differentiate winter rye varieties based in their susceptibility to these diseases. A preliminary rating to susceptibility to ergot is included because of the economic importance of this disease. Note that no variety tested is immune to ergot while fungicides do not provide control of ergot. Application of a fungicide should be considered if powdery mildew is present prior to jointing. Likewise, control of leaf rust may be warranted if the disease can be found near the top of the canopy just as the flag leaf is emerging.

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