

2017 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 explain 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 trials were conducted in Lamberton, Le Center, St. Paul, Kimball and Crookston in the 2017 and the preceding two years. 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

Table 1. Origin and agronomic characteristics of winter rye varieties in Minnesota in single-year (2017) and multiple-year comparisons (2015-2017).

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

⁴1-9 rating with 1 = earliest and 9 = latest.

⁵1-9 rating with 1 = shortest and 9 = tallest.

⁶1-9 rating with 1 = strongest and 9 = weakest.

⁷1-9 rating with 1 = most resistant and 9 = least resistant.

⁸1-9 rating with 1 = highest and 9 = lowest.

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

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. 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 and 3-year comparisons is presented in Table 2. The average

yield across the four testing locations was 72 bu/acre in 2017. This compares to a three-year average of 56 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.

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 on 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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Table 2. Relative grain yield of winter rye varieties in five Minnesota locations in single -year (2017) and multiple year comparisons (2015-2017).

Cultivar	Lamberton		Le Center		St. Paul		Kimball ²	Crookston		State	
	2017	3 Yr	2017	3 Yr	2017	3 Yr	2 Yr	2017	3 Yr	2017	3 Yr
Aroostook	81	78	53	70	53	77	70	78	68	73	67
Elbon	84	84	86	78	55	73	78	77	72	78	73
Hazlet	116	115	120	119	155	132	119	120	129	123	125
KWS Bono ¹	153	160	249	190	210	173	190	165	172	175	187
KWS Brasetto ¹	144	141	188	162	187	157	162	157	170	162	167
Maton II	80	77	70	73	62	75	73	68	64	72	63
Musketeer	95	95	69	89	83	81	89	100	105	92	96
ND Dylan	100	—	88	—	105	—	—	99	—	100	—
Oklon	83	78	66	72	65	80	72	65	65	76	68
Prima	99	110	66	93	97	95	93	113	110	98	108
Rymin	102	105	96	108	97	103	108	114	108	103	111
Spooner	88	99	86	100	89	108	100	102	96	84	101
Wheeler	74	60	64	47	43	47	47	42	41	63	35
Mean (bu/acre)	100.2	82.3	59.9	76.7	56.2	65.6	76.7	71.1	60.3	71.7	56.1
LSD (0.1)	6	13	35	17	30	23	14	29	19	8	11

¹2016 and 2017 data (3 year data is predicted value).
²2015 and 2016 data.