

# Oat and Cereal Rye Variety Trials

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Careful management and proper variety selection can make small grains profitable in crop rotations due to their low input requirements and beneficial effects on succeeding crops. When grown as a cash crop, oats and cereal rye can be marketed for cover crop seed, grain, straw, forage, hay or haylage. Mid-summer harvest allows for a myriad of field management options for the remainder of the season, such as mid-season manure application or the establishment of a perennial forage crop.

Practical Farmers of Iowa has been collaborating with Iowa State Research Farms to trial small grain varieties since 2015. Oats and cereal rye were trialed at the Northern Research and Demonstration Farm.

## Materials and Methods

Nine varieties of cereal rye and 18 varieties of oats were trialed. Management information for each trial can be found in Table 1. No herbicides or insecticides were applied. Rye seed samples from each location were sent to the Iowa State Seed Testing Laboratory for germination testing. Germination seed samples were pooled across replicates at each site, therefore, germination data are not analyzed statistically. Data were analyzed using JMP Pro 15 (SAS Institute Inc.). Statistical significance is determined at  $P \leq 0.10$  level (unless otherwise noted) and means separations are reported using Tukey's least significant difference (LSD).

## Results and Recommendations

Rye yields ranged from 44 to 74 bushels/acre with an average of 55. The three hybrid rye varieties (Bono, Brasetto, Serafino) had the highest yield. Rye seed germination ranged from 92 to 98% with an average of 95% (Table 2).

Oat yields ranged from 74 to 149 bushels/acre with an average of 131. Test weight ranged from 33.4 to 45.1 lb./bushel. Five varieties had a test weight above the milling threshold: 38 lb./bushel. The two highest yielding varieties were Warrior and Saddle. Streaker, a hullless variety, had the lowest yield but the highest test weight (Table 3).

Further information about the trials, such as the characteristic of each variety and their source, can be found on Practical Farmers of Iowa website:

[Oat Variety Trial 2021](https://practicalfarmers.org/research/oat-variety-trial-2021/) (practicalfarmers.org/research/oat-variety-trial-2021/)

[Cereal Rye Variety Trial 2021](https://practicalfarmers.org/research/cereal-rye-variety-trial-2021/) (practicalfarmers.org/research/cereal-rye-variety-trial-2021/)

**Table 1. Management information for small grain variety trials.**

	Oat trial	Cereal Rye trial
Previous crop	Soybean	Soybean
Replications	3	3
Harvested plot size	5 ft. x 46 ft.	5 ft. x 60 ft.
Fertilizer applied	79 lb. N/ac. as Urea—March 31	28 lb. N/ac. and 147 lb. P/ac.—November 3, 2020 36 lb. N/ac. and 192 lb. Gypsum/ac.—April 6, 2021
Tillage	Soil finisher—March 31	
Planting date	Apr. 1 followed by cultipacker	Oct. 7, 2020 with no-till drill
Row spacing	7.5 in.	7.5 in
Seeding rate	4 bu./ac.	Variable to achieve target planting population of 23 seeds/ft <sup>2</sup>
Seeding depth	1 in.	1.25 in.
Harvest date	July 21	July 19

**Table 2. Yield, test weight, plant height, percent lodging, and germination of cereal rye varieties.**

	Yield			Test Weight (lb./bu.)	Plant Height at Harvest (in.)	Lodging at Harvest (%) <sup>b</sup>	Seed germination (%)
	(bu./ac.)	(percent of site avg.)	3-yr avg. (bu./ac.)				
Bono	74	135	73	55	44	5	--
Brasetto	76	139	70	53	45	5	--
Danko	51	93	--	53	49	5	93
Elbon	33	59	30	53	53	15	98
Hazlet	62	112	51	52	50	8	92
ND Dylan	41	74	40	52	55	18	95
ND Gardner	40	74	--	52	56	15	97
Serafino	73	133	69	54	46	5	--
Spooner	44	80	41	53	55	10	95
LSD(90%) <sup>a</sup>	16	--	--	2	4	5	--
MEAN	55	--	--	53	50	10	95

<sup>a</sup> By response variable, if the difference between any two entries is greater than the least significant difference (LSD) the entries are considered statistically different with 90% confidence.

<sup>b</sup> Lodging data are visual estimates and were not statistically analyzed.

**Table 3. Yield, test weight, plant height, percent lodging, and germination of cereal rye varieties.**

	Yield					
	(bu./ac.)	(percent of site avg.)	7-yr avg. (bu./ac.)	Test Weight (lb./bu.)	Plant Height at Harvest (in.)	Lodging at Harvest (%)
Warrior	149	114	116	35.0	38	0
Saddle	145	111	111	35.5	37	0
MN Pearl	142	109	111	35.1	38	2
Esker2020	142	108	110	33.4	37	0
Saber	141	108	109	35.5	36	0
Rushmore	141	108	135	37.0	39	0
Natty	139	107	99	37.5	39	0
Deon	139	107	96	37.2	39	0
CS Camden	139	106	91	34.6	38	0
Hayden	137	105	95	37.1	38	2
Reins	135	104	92	37.7	31	0
Jerry	132	101	75	37.6	39	0
Shelby 427	131	100	88	38.7	40	0
Antigo	128	98	85	38.8	37	27
Goliath	116	89	86	38.0	44	38
Morton	110	85	107	35.9	40	0
Sumo	109	83	82	38.2	37	8
Streaker	74	57	81	45.1	38	35
MEAN	131	--	--	37.1	38	--
LSD(90%) <sup>a</sup>	32	--	--	1.5	3	--

<sup>a</sup> By response variable, if the difference between any two entries is greater than the least significant difference (LSD) the entries are considered statistically different with 90% confidence.

<sup>b</sup> Lodging data are visual estimates and were not statistically analyzed.

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