



## Small Grain 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, cereal rye and oats can be marketed for cover crop seed, grain, straw, forage, hay or haylage. Their 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. This past year, cereal rye and oats were trialed at the Northeast Research Demonstration Farm.

### Materials and Methods

Eleven varieties of cereal rye (and one triticale variety) and 17 varieties of oats were trialed this year. Management information for each trial can be found in Table 1. No herbicides or insecticides were applied. Seed samples of non-hybrid varieties of rye and triticale 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, and therefore, germination data are not analyzed statistically. Data were analyzed using JMP Pro 15 (SAS Institute Inc., Cary, North Carolina). 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).

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

	Cereal rye and triticale trial	Oat trial
Previous crop	Soybeans	Soybeans
Replications	3	3
Harvested plot size	8 ft. × 50 ft.	8 ft. × 85 ft.
Fertilizer applied	60 lb. P/ac. and 267 lb. K/ac. on Oct. 21, 2021. 30 lb. N/ac. on Apr. 5.	35 lb. N/ac., 58 lb. P/ac. and 135 lb. K/ac. on Nov. 15, 2021.
Tillage	None	Field cultivator on Mar. 29. Mulch finish cultivator on Apr. 10
Planting date	Oct. 1, 2021 followed by cultipacker	Apr. 11 followed by cultipacker
Row spacing	7.5 in.	7.5 in
Seeding rate	Variable to achieve target planting population of 23 seeds/ft. <sup>2</sup>	4 bu./ac.
Seeding depth	1.25 in.	1 in.
Harvest date	July 14	July 25 (grain), July 26 (straw)

## Results and Discussion

Rye yields ranged from 50 to 95 bushels/acre with an average of 69. The four hybrid rye varieties (Bono, Receptor Serafino, Tayo) had the highest yield. Rye straw yields ranged from 2.1 to 3.3 tons/acre with an average of 2.7. Rye and triticale seed germination ranged from 89–96% with an average of 94% (Table 2).

Oat yields ranged from 116 to 152 bushels/acre with an average of 134. Test weight ranged from 32.6 to 39.3 lb./bushel with an average of 35.9 lb./bushel. Antigo was the only variety at the site to have a test weight meet food grade specifications (Table 3). Oat straw yields ranged from 1.30 to 2.60 tons/acre with an average of 2.03 tons/acre.

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

### Cereal Rye and Triticale Variety Trial 2022

[practicalfarmers.org/research/cereal-rye-and-triticale-variety-trial-2022](http://practicalfarmers.org/research/cereal-rye-and-triticale-variety-trial-2022)

### Oat Variety Trial 2022

[practicalfarmers.org/research/oat-variety-trial-2022](http://practicalfarmers.org/research/oat-variety-trial-2022)

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**Table 2. Yield (grain and straw), test weight, plant height, and germination of cereal rye varieties.**

Variety	Yield			Test weight, lb./bu.	Straw yield, ton/ ac.	Plant height at harvest, in.	Seed germination, %
	bu./ ac.	% of site avg.	4-yr. avg., bu./ ac.				
Aroostook	56	81	41				
Bono	84	122	69	54	2.8	39	0
Danko	64	93	64	56	2.3	41	94
Elbon	50	73	38	56	2.1	47	96
Hazlet	65	94	51	54	2.8	48	95
ND Dylan	62	90	50	55	3.0	52	94
ND Gardner	57	82	57	55	2.7	49	94
Receptor	89	128	0	56	2.6	39	0
Serafino	85	124	72	56	3.3	41	0
Spooner	59	85	41	56	2.8	51	94
Tayo	95	137	0	53	2.8	41	0
Tulus (trit.)	64	92	0	51	2.6	33	89
LSD(90%)	33	0	0	1	1.1	5	0
MEAN	69	0	0	55	2.7	44	94

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.

**Table 3. Yield, test weight, plant height, and straw yield of oat varieties.**

Variety	Yield			Test weight, lb./ bu.	Plant height at harvest, in.	Straw yield, ton/ac.
	bu./ ac.	% of site avg.	8-yr avg, bu./ ac.			
Antigo	129	96	112	39.3	33	1.53
CS Camden	116	87	111	32.6	34	1.60
Deon	136	102	126	34.7	38	2.47
Esker 2020	152	113	136	34.3	35	1.97
Goliath	140	105	129	35.9	43	2.00
Hayden	130	98	129	36.1	37	2.17
Jerry	116	87	110	36.5	36	1.43
MN Pearl	132	99	132	34.0	37	1.93
Morton	119	89	115	33.8	40	2.27
Natty	147	110	127	36.5	38	2.20
Reins	141	106	121	37.3	29	1.30
Rushmore	151	113	138	37.6	36	2.17
Saddle	138	103	129	36.5	32	2.20
SD Buffalo	141	105	0	36.0	38	2.60
Shelby 427	130	97	117	37.1	37	1.97
Sumo	124	93	112	36.8	33	2.23
Warrior	131	98	125	36.0	33	2.53
LSD(90%)	13	0	0	0.3	2	0.69
MEAN	134	0	0	35.9	36	2.03

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8-year average yields are listed for varieties trialed at least twice in the past seven years at this location.