



Oat and Cereal Rye Variety Trials

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Careful management and proper variety selection can make oats profitable in crop rotations due to their low input requirements and beneficial effects on succeeding crops. When grown as a cash crop, 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 University Research Farms to trial small grain varieties since 2015. This past year, oats and cereal rye were trialed at the Armstrong and Neely-Kinyon Memorial Research and Demonstration Farms. This was the second year oats were trialed, and the first year cereal rye was trialed in this location.

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).

Table 1. Management information for small grain variety trials, Armstrong and Neely-Kinyon Memorial Research and Demonstration Farms.

	Oat trial	Cereal Rye trial
Previous crop	Soybean	Soybean
Replications	3	3
Harvested plot size	5 ft. × 56 ft.	5 ft. × 56 ft.
Fertilizer applied	70 lb. N/ac. as Urea on Apr. 1	14 lb. N/ac. on Apr. 7; 37 lb. N/ac, 175 lb. P/ac. and 164 lb. K/ac. on Apr. 15
Tillage	Disked on Apr. 1	
Planting date	Apr. 5, followed by cultipacker	Oct. 7, 2020
Row spacing	7.5 in.	7.5 in.
Seeding rate	4 bu./ac.	Variable to achieve target planting population of 23 seeds/ft ²
Seeding depth	1 in.	1.25 in.
Harvest date	July 28	July 28

Results and Discussion

Rye yields ranged from 41 to 91 bushels per acre with an average of 65. The three hybrid rye varieties (Bono, Brasetto, Serafino) had the highest yield. Rye seed germination ranged from 62 to 94% with an average of 85% (Table 2).

Oat yields ranged from 64 to 145 bushels per acre with an average of 107. Test weight ranged from 30.5 to 45.4 lbs. per bushel. The two highest yielding varieties were Reins and Rushmore. Streaker, a hullless variety, had the lowest yield, but was the only variety to make food grade specifications for test weight (Table 3).

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

Variety	Yield		Test Weight (lb./bu.)	Plant Height at Harvest (in.)	Lodging at Harvest (%) ^b	Seed germination (%)
	(bu./ac.)	(% of site average)				
Bono	90	139	56	46	5	0
Brasetto	91	139	55	45	5	0
Danko	73	112	54	49	7	82 ^c
Elbon	45	69	53	54	65	94
Hazlet	60	92	52	50	25	62 ^c
ND Dylan	49	76	52	56	87	89
ND Gardner	41	64	53	55	82	92
Serafino	88	135	55	47	13	0
Spooner	49	75	53	55	62	90 ^c
LSD(90%) ^a	19	0	1	5	34	0
MEAN	65	0	54	51	39	85

^a 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.

^b Lodging data are visual estimates and were not statistically analyzed.

^c Fungal or other abnormalities present in the sample.

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)

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Table 3. Yield, test weight, plant height, and percent lodging of oat varieties. Varieties with a test weight that meets food grade specification (≥ 38 lb./bu.) are highlighted.

Variety	Yield		2-year average (bu./ac.)	Test weight (lb./bu.)	Plant height at harvest (in.)	Lodging (%)
	(bu./ac.)	(% of site average)				
Reins	145	136	134	35.8	30	22
Rushmore	134	125	141	35.3	36	37
Saddle	131	122	131	34.2	34	10
MN Pearl	128	120	135	33.8	35	33
Hayden	127	119	119	35.9	37	35
Saber	122	114	137	34.5	34	25
Esker 2020	117	110	129	32.7	34	40
Warrior	113	106	117	32.0	35	17
Shelby 427	112	105	137	36.4	36	38
Sumo	105	98	61	34.9	35	30
Deon	102	96	113	32.8	36	42
Natty	99	93	121	34.2	37	30
CS Camden	96	90	96	30.5	36	28
Antigo	92	87	109	37.6	33	68
Morton	81	76	99	32.0	39	35
Goliath	77	73	83	34.5	41	77
Jerry	73	69	80	33.0	36	33
Streaker	64	60	126	45.4	34	43
MEAN	107	0	0	34.7	35	36
LSD(90%)	33	0	0	2.1	4	42

^aBy 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.

^b2-yr. average yields are listed for varieties trialed in the past two years at this location.