



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. 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, oats and cereal rye were trialed at the Ag Engineering and Agronomy Research Farm. This was the fourth 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 in 2021. 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 and 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 in 2021.

Previous crop	Soybean	Soybean
Replications	3	3
Harvested plot size	5 ft. × 51 ft.	5 ft. × 60 ft.
Fertilizer applied	30 lb. N/ac., 100 lb. P/ac., and 25 lb. S/ac. on April 3	30 lb. N/ac., 100 lb. P/ac., and 25 lb. S/ac. on April 3
Tillage	Field cultivator on April 5	
Planting date	Apr. 5	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. ²
Seeding depth	1 in.	1.25 in.
Harvest date	July 22	July 22

Results and Discussion

Rye yields ranged from 32 to 82 bushels/acre with an average of 58. The three hybrid rye varieties (Bono, Brasetto, Serafino) had the highest yield. Rye seed germination ranged from 92% to 97%, with an average of 95% (Table 2).

Oat yields ranged from 72 to 116 bushels/acre with an average of 104. Test weight ranged from 31.4 to 45.9 lb./bushel. Six varieties had a test weight above the milling threshold: 38 lb./bushel. The two highest yielding varieties were Goliath and Jerry. Streaker, a hullless variety, had the lowest yield but the highest test weight (Table 3).

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 % lb	Seed germination %
	bu./ac.	% of site average				
Bono	82	141				
Brasetto	74	128	53	55	42	
Danko	63	108	53	56	48	95
Elbon	32	54	53	54	53	95
Hazlet	59	102	52	55	52	92
ND Dylan	42	73	52	54	54	97
ND Gardner	40	69	52	54	54	96
Serafino	79	136	54	56	44	
Spooner	51	87	53	55	54	90
LSD(90%)	16		2	1	3	
MEAN	58		53	55	49	95

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.

	YIELD			Test weight (lb./bu.)	Plant height at harvest (in.)	Lodging at harvest
	bu./ac.	% of site average	4-year average (bu./ac.) ^b			
Goliath	116	112	88	35.8	36	77
Jerry	114	110	77	37.1	33	28
Reins	113	108	96	38.1	25	0
Saddle	111	107	100	35.9	30	0
Warrior	111	107	104	36.3	30	0
CS Camden	111	107	89	31.4	30	2
Esker2020	110	106	104	34.2	31	3
Rushmore	110	106	121	38.3	33	8
Saber	107	103	94	35.1	31	13
Natty	106	102	86	37.4	23	15
MN Pearl	106	102	97	36.0	30	8
Shelby 427	103	99	81	38.2	33	2
Deon	103	99	90	36.7	32	7
Hayden	102	98	87	37.7	32	5
Morton	96	93	98	34.7	32	7
Sumo	92	88	82	38.1	30	7
Antigo	86	82	81	39.5	31	15
Streaker	72	69	79	45.9	33	50
MEAN	104			37.0	31	
LSD(90%) ^a	27			3.7	12	

^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.

^b7-yr. average yields are listed only for those varieties trialed at least twice in the past seven years at this location.

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

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

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

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