South Dakota State University

College of Agriculture, Food and Environmental Sciences |
SDSU Extension | South Dakota Agricultural Experiment Station

2026 South Dakota Rye Grain Variety Trial Results

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Introduction:

The Southeast Research Farm has conducted rye grain variety trials, including hybrid rye entries, for the past seven growing seasons. Among the small-grain crops, rye has the greatest natural tendency to cross-pollinate. Hybrid rye varieties have also demonstrated substantially greater yield potential than open-pollinated varieties in previous trials at the farm. Interest in rye production appears to be increasing, creating opportunities for the crop to become a more valuable component of eastern South Dakota cropping systems. Adding rye to corn-soybean rotations has the potential to interrupt the life cycles of pests such as western and northern corn rootworms while increasing crop diversity. Rye is also a competitive crop that can suppress weeds and reduce reliance on weed-control inputs.

As a cool-season grass with a dense, fibrous root system, rye may contribute to improved soil structure and overall soil function. It can also provide several benefits for livestock producers, including straw production, an opportunity for late-summer manure application, and a suitable field for establishing cover crops intended for fall, winter, or spring grazing. To further evaluate rye production in eastern South Dakota, variety trials were conducted in South Dakota near Artesian and Beresford in the 2026 growing season. These trials compared open-pollinated and hybrid rye varieties for grain yield and adaptation to local growing conditions.

Methods:

The 2026 winter rye variety trials were conducted near Beresford at the SDSU Southeast Research Farm, and near Artesian, South Dakota. Twelve winter rye lines were included in the trial and one winter triticale line, FLEX 719, was added as a check. At each location, entries were direct-seeded with a small-plot drill at a depth of approximately 1.5 inches. The Beresford trial was planted on Oct. 1, 2025, and the Artesian trial was planted on Oct. 2, 2025. Plots were planted 5 ft wide by 20 ft long and were arranged in a randomized complete block design with four replications. Hybrid rye lines were seeded at 800,000 pure live seeds per acre, while open-pollinated lines were seeded at 1.2 million seeds per acre.

The plots at Beresford received a basal application of 30/25/0/15 NPKS in the fall and additional 60 lb of N per acre in the spring (March 24, 2026). The plots at Artesian were managed along with the rest of the rye field they were in as per our farmer-cooperator's program. At maturity, whole plot yields were measured using a small plot combine (Zurn, Model 150). Data were analyzed in JMP statistical software (SAS Institute Inc., Cary, NC). For the across-site analysis, the model included site, entry, site × entry, and replication nested within site. Because the site × entry interaction was not significant, emphasis was placed on the across-site entry means.

Results:

The site × entry interaction was not statistically significant, indicating that entry performance was generally consistent between the two sites. Averaged across the 12 rye lines in the trial (not including the triticale check), yield was 78.9 bu/ac at Beresford and 68.9 bu/ac at Artesian, with an average of 74.2 bu/ac across the two locations (Table 1). In this season, 'KWS Serafino' was numerically the highest yielding line at both sites and had a test weight over 56 lb per bushel at both sites (Tables 2 and 3). In the pooled analysis across sites, 'KWS Rixor' and 'KWS Tayo' were statistically similar to 'Serafino' for grain yield ($P < 0.10$).

Hybrid rye lines continued to outperform the open-pollinated lines for grain yield. Across both locations, the hybrids averaged 82.4 bu/ac compared with 66.4 bu/ac for the open-pollinated lines, an average yield advantage of 16.0 bu/ac. At Beresford, the hybrid and open-pollinated lines averaged 89.6 and 71.6 bu/ac, respectively. At Artesian, hybrids averaged 75.3 bu/ac compared with 61.3 bu/ac for the open-pollinated lines.

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Table 1. Grain yield of 12 winter rye lines and one winter triticale line (FLEX 719), included as a check, evaluated at Artesian and Beresford, South Dakota, in 2026. The trial was arranged in a randomized complete block design with four replications at each site. Yield values marked in bold font are statistically similar to the numerically highest yielding line at a given site. Varieties yielding in the top 1/3 of the trial are bold and shaded light blue.

Variety	Artesian Yield (bu/ac)	Beresford Yield (bu/ac)	Across Sites Yield (bu/ac)
KWS Serafino	**83.6**	**94.9**	**89.2**
KWS Rixor (H247)	**79.6**	**91.0**	**85.3**
KWS Tayo	**77.9**	**92.1**	**85.0**
SU Barasi	**79.8**	**87.6**	83.7
SU Thor	**77.9**	**88.9**	83.4
SU Perspectiv	68.5	**91.4**	81.6
KWS Receptor	**75.6**	87.4	81.5
SU Bebop OP	72.1	82.4	77.2
SU Performer	67.4	83.5	75.5
Hazlet	60.6	72.4	66.5
Rymin	60.8	70.2	65.5
ND Gardener	51.7	61.4	56.5
FLEX 719[1]	35.4	34.1	34.7
Mean	68.5	79.8	74.2
CV (%)	9.7	7.8	8.7
LSD (0.10)	8.0	7.4	5.4

1 FLEX 719 was a winter triticale check and was not included in the rye-type averages.

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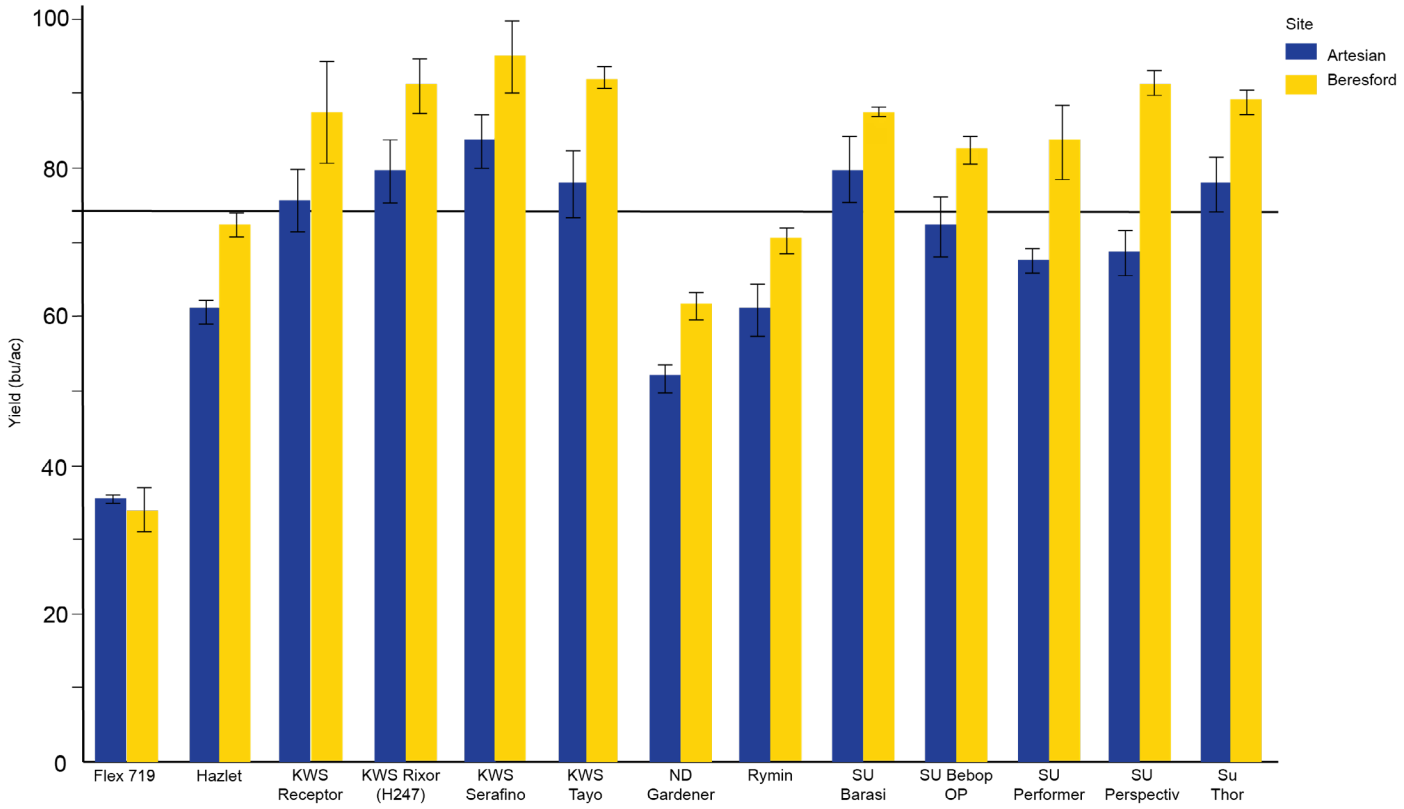
Figure 1. Mean grain yield of winter rye lines and the winter triticale check, FLEX 719, evaluated at Artesian and Beresford, South Dakota, in 2026. Bars represent site means, and error bars indicate variation among replications. The horizontal line represents the overall mean yield across both sites and all entries (74.2 bu/ac).



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2026 South Dakota Rye Grain Variety Trial Results Beresford

Table 2. Plant height, lodging score, 100-seed weight, test weight, and grain yield of 12 winter rye lines and one winter triticale line (FLEX 719), included as a check, evaluated at the SDSU Southeast Research Farm near Beresford, South Dakota, in 2026. The trial was arranged in a randomized complete block design with four replications. Yield values marked in bold font are statistically similar to the numerically highest yielding line at this site. Varieties yielding in the top 1/3 of the trial are bold and shaded light blue.

Line	Height (in)	Lodging Score (0-10)	100-Seed Wt. (g)	Test Wt. (lb/bu)	Yield (bu/ac)
KWS Serafino	43.2	2.0	2.53	56.6	**94.9**
KWS Tayo	39.5	2.2	2.61	56.6	**92.1**
SU Perspectiv	42.8	2.0	2.76	57.5	**91.4**
KWS Rixor (H247)	39.8	1.5	2.63	56.3	**91.0**
SU Thor	43.2	2.5	2.52	53.0	**88.9**
SU Baresi	42.8	2.5	2.62	55.5	**87.6**
KWS Receptor	41.2	2.0	2.30	56.3	87.4
SU Performer	43.8	1.5	2.88	57.6	83.5
SU Bebop OP	45.0	2.2	2.80	56.6	82.4
Hazlet	49.6	3.2	2.75	57.3	72.4
Rymin	51.0	2.8	2.68	56.9	70.2
ND Gardener	48.5	2.5	2.60	55.6	61.4
FLEX 719[1]	51.2	2.5	3.84	49.6	34.1
Mean	44.7	2.3	2.73	55.8	79.8
CV (%)	5.0	26.1	5.8	3.5	7.8
LSD (0.10)	2.7	0.7	0.2	2.3	7.4

1 FLEX 719 was a winter triticale check. Lodging was rated on a 0-10 scale, with higher values indicating greater lodging.

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2026 South Dakota Rye Grain Variety Trial Results Artesian

Table 3. Plant height, lodging score, 100-seed weight, test weight, and grain yield of 12 winter rye lines and one winter triticale line (FLEX 719), included as a check, evaluated near Artesian, South Dakota, in 2026. The trial was arranged in a randomized complete block design with four replications. Yield values marked in bold font are statistically similar to the numerically highest yielding line at this site. Varieties yielding in the top 1/3 of the trial are bold and shaded light blue.

Line	Height (in)	Lodging Score (0-10)	100-Seed Wt. (g)	Test Wt. (lb/bu)	Yield (bu/ac)
KWS Serafino	38.2	2.5	2.60	56.6	**83.6**
SU Baresi	37.2	2.2	2.56	55.6	**79.8**
KWS Rixor (H247)	32.2	1.5	2.60	56.9	**79.6**
KWS Tayo	35.2	1.8	2.74	56.2	**77.9**
SU Thor	36.8	2.0	2.61	55.4	**77.9**
KWS Receptor	33.2	4.2	2.40	55.6	**75.6**
SU Bebop OP	37.2	2.8	2.74	56.2	72.1
SU Perspectiv	35.2	2.0	2.69	54.6	68.5
SU Performer	44.8	4.5	2.55	56.3	67.4
Rymin	43.0	5.2	2.59	57.2	60.8
Hazlet	35.0	3.5	2.72	54.7	60.6
ND Gardener	44.2	6.8	2.34	55.8	51.7
FLEX 719[1]	42.0	2.0	4.28	52.0	35.4
Mean	38.0	3.2	2.72	55.6	68.5
CV (%)	5.6	37.0	4.8	3.2	9.7
LSD (0.10)	2.6	1.4	0.2	2.2	8.0

1 FLEX 719 was a winter triticale check. Lodging was rated on a 0-10 scale, with higher values indicating greater lodging