South Dakota State University

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

# 2025 South Dakota Winter Rye Grain Variety Trial Results

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**Introduction:**

The Southeast Research Farm has been conducting rye grain variety trials, including hybrid rye entries, for the last six seasons. Among the small grains, rye has the greatest natural propensity to outcross and hybrid lines have shown much improved yield potential over open-pollinated lines in our past trials. The market for rye seems to be expanding, and hopefully that will continue to be the case. Rye would be a valuable addition to the corn-soybean rotation. It is very competitive with weeds, and adding another crop from time to time would help disrupt the life cycle of pests such as the western and northern corn rootworms. It is a cool-season grass with a fibrous root system which would benefit soil health. For farmers with livestock, it would provide an opportunity to produce straw, a place to put manure in the late summer, and potential to produce a cover crop for fall, winter or spring grazing. To further evaluate this crop in our area, variety trials were conducted at several sites in eastern South Dakota (Artesian, Clear Lake, and Beresford) to compare both open-pollinated and hybrid lines of rye for grain yield production in our environment.

**Methods:**

At each site rye was direct-seeded using a small plot drill. Plot size was 5 by 20' and plots were laid out in a randomized complete block design with four replications. Fourteen rye lines as listed below were evaluated along with a winter triticale check ('Flex 719') at three locations

| Type | Line | Type | Line |
|---|---|---|---|
| Rye - OP | SU Bebop | Rye | KWS H247 |
| Rye | SU Performer | Rye | KWS H249 |
| Rye | SU Cossani | Rye - OP | Hazlet |
| Rye | SU Perspective | Rye - OP | ND Gardener |
| Rye | SU Baresi | Rye - OP | Aroostook |
| Rye | KWS Receptor | Rye - OP | Danko |
| Rye | KWS Serafino | Triticale | Flex 719 |
| Rye | KWS Tayo | - | - |

Planting dates were as follows: Beresford (Southeast Research Farm), 10/2/24; Clear Lake, 10/10/24; Artesian, 10/10/24. Hybrid lines were seeded at 800,000 PLS per acre and open-pollinated lines at 1.2 million seeds per acre. At Beresford and Clear Lake, N and S were applied in the fall (30 and 15 lb/ac, respectively) with an additional application of 65 lb/ac of N in the spring. At Artesian plots were fertilized as per the farmer's practices. Yields were determined at maturity by harvesting the plots with a small plot combine (Zurn model 150). At the Clear Lake site only two of four replications could be harvested due to wet soil conditions. All data were subjected to analysis of variance using the Proc GLM subroutine of SAS statistical software.

**Results:**

The 2025 season was not favorable for rye production. Drought in the fall of 2024 delayed stand establishment after planting. Limited rainfall in the spring allowed the crop to develop and tiller, but hot dry weather in mid-June (over 100 degrees F on June 21 and 22) created stress during grain filling and decreased yield potential. In 2024 across three sites the average yield was 98 bu/ac, whereas in this year (2025) the average yield across the three locations tested was 58.7 bu/ac (Table 1). In the production part of the Southeast Farm the average yield 49 bu/ac in 2025 where the farm average yield was 103 bu/ac in 2024. Even under a stressful production season, the hybrid lines continued to out-perform the open pollinated lines.

South Dakota State University Extension

# 2025 South Dakota Rye Grain Variety Trial Results

Table 1. Grain yield from 14 lines of winter rye and one winter triticale line planted as a check in variety trials conducted at three sites in South Dakota (Artesian, Beresford, and Clear Lake) in 2025. Trials were laid out in a randomized complete block design with four replications at each site; however, because of wet soil conditions, only two replications were able to be harvested at the Clear Lake location. Yields were limited by dry soil conditions in the fall and early spring, and by hot dry weather in June of 2025. 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) | Clear Lake Yield (bu/ac) | Across Sites Yield (bu/ac) |
|---|---|---|---|---|
| KWS H247 | **69.9** | **71.1** | **71.9** | **70.8** |
| SU Performer | **67.1** | **68.3** | 62.0 | **66.5** |
| KWS Serafino | **66.9** | **64.4** | **67.0** | **65.9** |
| KWS Receptor | **69.3** | **64.1** | 62.4 | **65.9** |
| SU Baresi | **59.9** | **68.2** | 59.5 | 63.2 |
| SU Perspective | **67.1** | 59.6 | 58.3 | 62.3 |
| KWS Tayo | **67.4** | 61.1 | 52.4 | 61.9 |
| KWS H249 | **65.6** | 61.6 | 54.0 | 61.7 |
| SU Cossani | **60.3** | 62.1 | 54.0 | 59.7 |
| SU Bebop | 56.4 | 60.6 | 56.2 | 58.0 |
| Danko* | 45.4 | 58.7 | 56.9 | 53.0 |
| Aroostook* | 56.1 | 52.9 | 37.4 | 51.1 |
| Hazlet* | 49.6 | 52.2 | 47.4 | 50.2 |
| Flex 719* | 52.5 | 39.9 | 42.9 | 45.5 |
| ND Gardener* | 48.3 | 40.4 | 40.3 | 43.5 |
| **Mean** | 60.0 | 59.4 | 54.9 | 58.7 |
| **CV (%)** | 16.5 | 10.6 | 9.3 | 13.5 |
| **LSD (0.10)** | 11.8 | 8.7 | 8.9 | 6.7 |
| Site*Line Interaction | | | | |

South Dakota State University Extension

# 2025 South Dakota Rye Grain Variety Trial Results Artesian

Table 2. Plant height, lodging score, 100-seed weight, grain moisture, test weight and yield for 14 lines of winter rye and one line of winter triticale (planted as a check) evaluated in a variety trial at Artesian, South Dakota in 2025. Plots were seeded on Oct. 10, 2024 and harvested on August 11, 2025. The trial was laid out in a randomized complete block design with four replications. 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) | Grain Moisture (%) | Test Wt. (lb/bu) | Yield (bu/ac) |
|---|---|---|---|---|---|---|
| KWS H247 | 44.9 | 8.5 | 2.23 | 11.3 | 49.0 | **69.9** |
| KWS Receptor | 46.3 | 7.8 | 2.21 | 10.5 | 50.3 | **69.3** |
| KWS Tayo | 44.0 | 7.5 | 2.31 | 10.5 | 48.7 | **67.4** |
| SU Perspective | 46.5 | 8.8 | 2.24 | 10.2 | 47.5 | **67.1** |
| SU Performer | 49.3 | 8.0 | 2.16 | 10.2 | 48.3 | **67.1** |
| KWS Serafino | 45.5 | 8.0 | 2.19 | 13.4 | 48.5 | **66.9** |
| KWS H249 | 45.8 | 8.5 | 2.43 | 10.6 | 49.9 | **65.6** |
| SU Cossani | 46.8 | 8.3 | 2.28 | 11.5 | 46.6 | **60.3** |
| SU Baresi | 47.0 | 8.0 | 2.21 | 10.3 | 48.2 | **59.9** |
| SU Bebop | 49.8 | 8.8 | 2.16 | 11.3 | 48.3 | 56.4 |
| Aroostook | 51.8 | 8.0 | 2.44 | 10.1 | 49.3 | 56.1 |
| Flex 719 | 54.5 | 7.3 | 3.43 | 8.6 | 42.8 | 52.5 |
| Hazlet | 52.8 | 8.5 | 2.50 | 17.9 | 46.5 | 49.6 |
| ND Gardener | 50.5 | 8.8 | 2.09 | 9.6 | 49.0 | 48.3 |
| Danko | 49.8 | 8.8 | 2.54 | 17.5 | 47.0 | 45.4 |
| **Mean** | 48.3 | 8.2 | 2.36 | 11.6 | 48.0 | 60.0 |
| **CV (%)** | 3.8 | 6.7 | 6.1 | 38.9 | 4.5 | 16.5 |
| **LSD (0.10)** | 2.2 | 0.7 | 0.17 | NS | 3.0 | 11.8 |

South Dakota State University Extension

# 2025 South Dakota Rye Grain Variety Trial Results Beresford

Table 3. Plant height, lodging score, 100-seed weight, test weight and yield for 14 lines of winter rye and one line of winter triticale (planted as a check) evaluated in a variety trial at the SDSU Southeast Research Farm in Beresford, South Dakota in 2025. Plots were seeded on Oct. 2, 2024 and harvested on August 1, 2025. The trial was laid out in a randomized complete block design with four replications. 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 H247 | 36.5 | 8.0 | 2.15 | 47.8 | **71.1** |
| SU Performer | 38.0 | 7.8 | 2.16 | 47.5 | **68.3** |
| SU Baresi | 39.0 | 7.5 | 2.12 | 48.2 | **68.2** |
| KWS Serafino | 39.0 | 7.8 | 2.04 | 47.2 | **64.4** |
| KWS Receptor | 37.5 | 7.3 | 2.17 | 47.9 | **64.1** |
| SU Cossani | 40.0 | 8.8 | 2.12 | 47.9 | 62.1 |
| KWS H249 | 37.5 | 7.8 | 2.23 | 49.0 | 61.6 |
| KWS Tayo | 37.9 | 7.5 | 2.21 | 46.3 | 61.1 |
| SU Bebop | 40.3 | 8.0 | 2.16 | 47.9 | 60.6 |
| SU Perspective | 39.5 | 8.0 | 2.21 | 46.0 | 59.6 |
| Danko | 42.5 | 7.8 | 2.22 | 46.8 | 58.7 |
| Aroostook | 43.0 | 8.8 | 2.63 | 49.0 | 52.9 |
| Hazlet | 44.3 | 7.5 | 2.40 | 48.4 | 52.2 |
| ND Gardener | 44.8 | 8.5 | 2.01 | 45.4 | 40.4 |
| Flex 719 | 47.0 | 7.5 | 3.24 | 39.3 | 39.9 |
| **Mean** | 40.4 | 7.9 | 2.27 | 47.0 | 59.4 |
| **CV (%)** | 5.6 | 8.9 | 5.0 | 3.4 | 10.6 |
| **LSD (0.10)** | 2.7 | 0.8 | 0.14 | 1.9 | 8.7 |

South Dakota State University Extension

# 2025 South Dakota Rye Grain Variety Trial Results Clear Lake

Table 4. Plant height, lodging score, and yield for 14 lines of winter rye and one line of winter triticale (planted as a check) evaluated in a variety trial at Clear Lake, South Dakota in 2025. Plots were seeded on Oct. 10, 2024 and harvested on August 20, 2025. The trial was laid out in a randomized complete block design with four replications. However, because of wet soil conditions at the time of harvest, only two of four replications could be harvested at this site. So the data in this table represents yield from two replications. Varieties yielding in the top 1/3 of the trial are bold and shaded light blue.

| Line | Height (in) | Lodging Score (0-10) | Yield (bu/ac) |
|---|---|---|---|
| KWS H247 | 45.5 | 8.0 | **71.9** |
| KWS Serafino | 45.5 | 8.0 | **67.0** |
| KWS Receptor | 47.0 | 8.0 | 62.4 |
| SU Performer | 46.5 | 8.0 | 62.0 |
| SU Baresi | 48.5 | 8.0 | 59.5 |
| SU Perspective | 48.5 | 8.0 | 58.3 |
| Danko | 47.5 | 8.0 | 56.9 |
| SU Bebop | 46.0 | 8.0 | 56.2 |
| SU Cossani | 45.5 | 7.5 | 54.0 |
| KWS H249 | 48.0 | 8.0 | 54.0 |
| KWS Tayo | 47.5 | 8.0 | 52.4 |
| Hazlet | 52.0 | 7.5 | 47.4 |
| Flex 719 | 53.5 | 8.0 | 42.9 |
| ND Gardener | 50.5 | 8.0 | 40.3 |
| Aroostook | 53.5 | 7.5 | 37.4 |
| **Mean** | 48.4 | 7.9 | 54.9 |
| **CV (%)** | 4.7 | 4.1 | 9.3 |
| **LSD (0.10)** | 4.0 | NS | 8.9 |