South Dakota State University

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

2025 Winter and Spring Cereals Raised for Forage Variety Trial Results

Peter Sexton | Associate Professor, SDSU Extension Sustainable Cropping Systems Specialist & Southeast Research Farm Supervisor
Brad Rops | Southeast Research Farm Operations Manager
Joslyn Fousert | Graduate Research Assistant
Sara Bauder | SDSU Extension Forage Field Specialist
David Karki | SDSU Extension Agronomist

S-0002-2025-15-F

Introduction:
This report reviews forage yield data from variety trials with winter and spring cereals conducted at the Southeast Research Farm in Beresford, South Dakota in 2025. The 2025 season started with very little reserve soil moisture as the fall of 2024 was dry and effectively no snow cover over the winter (Fig. 1). Limited rainfall in the spring allowed for stands to develop, but forage production was restricted by drought.

Methods:
Both the winter and spring forage variety trials were direct-seeded into soybean stubble using a small plot drill. Plot size was 5 by 25' and plots were laid out in a randomized complete block design with four replications at the SDSU Southeast Research Farm in Beresford, South Dakota. The winter annual forage trial consisted of five lines of winter rye along with seven lines of winter triticale, while the spring forage variety trial consisted of eight oat lines, five triticale lines, and two barley lines as listed below:

Winter Forages		Spring Forages	
Line	**Type**	**Line**	**Type**
Aroostook	Rye	CDC Haymaker	Oat
Hazlet	Rye	CDC Westgate	Oat
KWS Aviator	Rye	Dual Threat	Oat
KWS Progas	Rye	Goliath	Oat
ND Gardener	Rye	SD Momentum	Oat
Ace	Triticale	SD Ranger	Oat
EXP 1721	Triticale	SD Titan	Oat
EXP 209	Triticale	Trical Cadillac	Oat
EXP 554	Triticale	Trical Exp 5735	Triticale
Flex	Triticale	Trical Flex	Triticale
Gainer	Triticale	Trical Gunner	Triticale
Showtime	Triticale	Trical Kicker	Triticale
-	-	Trical Surge	Triticale
-	-	Lavina	Barley
-	-	Stockford	Barley

The hybrid rye lines (KWS Aviator and KWS Progas) were planted at a seed rate of 800,000 seeds per acre. All the other winter forages lines were planted at a seed rate of 1.2 million seeds per acre. All the spring forage lines were planted at a seed rate of 1.3 million seeds per acre (30 PLS/ft2). The winter annual forage trial was fertilized with 30-30-0-15 lb/ac N-P2O5-K-S on Sept. 26, 2024, and 60 lb/ac N on March 12, 2025.

The spring forage variety trial was planted on March 27, 2025 and received 115 lb/ac of MAP (60 lb/ac of P2O5 and 13 lb/ac of N) on March 12, with an additional 160 lb/ac N applied on April 11, 2025. The winter annual forages were planted on Oct. 2, 2024. The winter annuals were harvested for forage on May 29, 2025 and the spring forages were harvested on June 11, 2025. In both trials, yields were determined with the use of a forage harvester (Swift Current Manufacturing, Saskatchewan) to measure whole plot fresh weight, with subsamples taken for measurement of percent moisture. Dry matter yields were then calculated on a per acre basis and subject to ANOVA using SAS statistical software.

Results:

As noted in the introduction, drought stress resulted in low yields of the winter cereals at Beresford in 2025. The dry fall delayed stand establishment after planting and lack of snow cover increased stress with overwintering, so the stand was relatively thin in the spring. On a dry matter basis, the winter cereal lines averaged only 1936 lb/ac of forage yield (Table 1). 'Hazlet', 'Aroostook', and 'KWS Aviator' were the top yielding lines in this set of data. The spring cereals received some rain shortly after planting and established well but still showed only modest productivity with an average yield of 3504 lb/ac in the trial (Table 2). Stockford barely, SD Momentum oat, Trical Surge and Trical Exp 5735 triticales, SD Ranger oat, and Lavina barley were in numerical order the high yielding lines among the spring cereals tested in this trial.

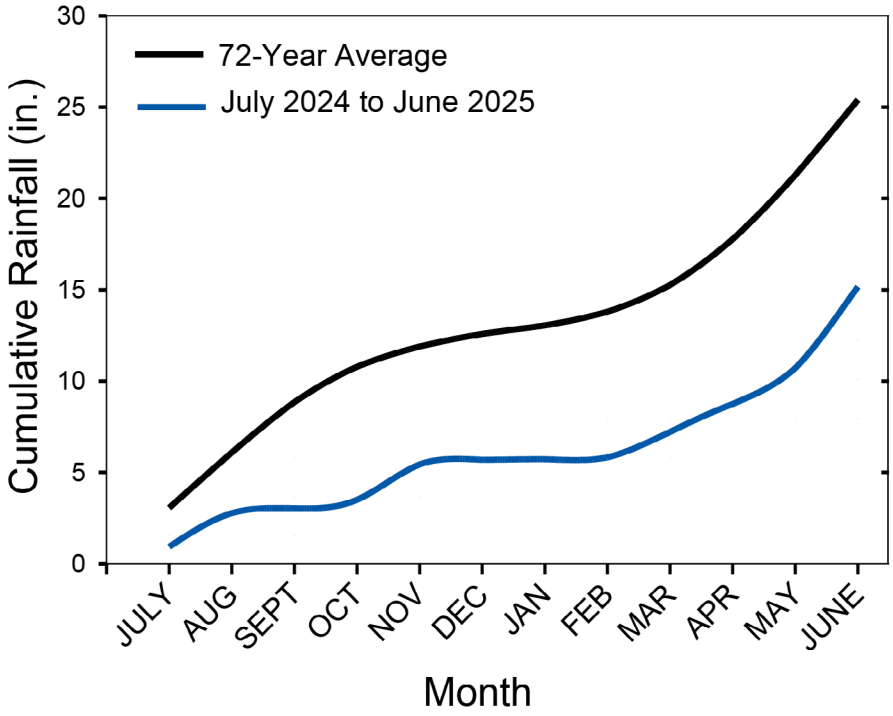

Fig. 1. Cumulative rainfall for the 12 month period of July 2024 through June 2025.

South Dakota State University Extension

2025 South Dakota Forage Variety Trial Results Winter Forages

Table 1. Fall (12/9/24) and spring (5/1/25) visual stand ratings, height at harvest, Feekes stage at harvest, dry matter yield, and calculated hay and silage yields from a variety trial with 12 varieties of winter cereals (rye and triticale) conducted at the SDSU Southeast Research Farm in 2025. Plots were planted on Oct. 2, 2024 and were harvested on May 29, 2025. Dry conditions in the fall of 2024 (see Fig. 1) delayed establishment of the winter cereals and left little residual moisture for early spring growth resulting in low dry matter forage yields. Across all the lines in the 2025 trial the average dry matter yield was 1889 lb/ac, whereas the average dry matter yield for all lines across four previous trials (2020, 2021, 2022 and 2024 seasons) was 6050 lb/ac. Rainfall picked up again in June of 2025, but this was after the harvest of winter rye and triticale for forage. Varieties yielding in the top 1/3 of the trial are bold and shaded light blue.

Variety	Crop	Fall Stand Rating (%)	Spring Stand Rating (%)	Height at Harvest (in.)	Feekes Stage	Dry Matter Yeild (lb/ac)	Hay Yield (tons/ac)	Silage Yield (tons/ac)
Hazlet	Rye	79	91	31.0	10.4	**3117**	**1.83**	**4.45**
Aroostook	Rye	76	86	28.3	10.3	**3002**	**1.77**	**4.29**
KWS Aviator	Rye	73	89	28.0	10.3	**2830**	**1.66**	**4.04**
ND Gardener	Rye	79	93	**41.3**	10.5	2682	1.58	3.83
Showtime	Triticale	73	85	23.5	10.0	2053	1.21	2.93
KWS Progas	Rye	73	81	23.5	10.2	1910	1.12	2.73
EXP 554	Triticale	64	78	23.0	8.8	1586	0.93	2.27
Gainer	Triticale	69	79	23.5	10.4	1582	0.93	2.26
Flex	Triticale	78	74	22.1	8.4	1318	0.78	1.88
EXP 1721	Triticale	70	70	22.0	8.8	1292	0.76	1.85
EXP 209	Triticale	76	61	22.0	8.8	1054	0.62	1.51
Ace	Triticale	75	49	19.8	8.5	811	0.48	1.16
Mean		73.5	77.9	25.7	9.6	1936	1.14	2.77
CV		4.8	11.3	5.7	-	11.2	11.2	11.2
LSD (0.05)		5.0	12.7	2.1	-	311	0.18	0.44
LSD (0.10)		4.2	10.6	1.8	-	259	0.15	0.37

South Dakota State University Extension

2025 South Dakota Forage Variety Trial Results Spring Forages

Table 2. Visual stand ratings at 40 DAP, height at harvest, Feekes stage at harvest, dry matter yield, and calculated hay and silage yields from a variety trial with 15 varieties of spring cereals conducted at the SDSU Southeast Research Farm in 2025. Plots were planted on March 27 with a seed rate of 30 PLS per square foot, and were harvested on June 11, 2025. The trial was embedded in a field of hard red spring wheat. The previous fall and winter were very dry (see Fig. 1), and there was little reserve moisture for growth. Spring rainfall allowed for establishment of the trial, but because of dry conditions crop growth was less than expected. Varieties yielding in the top 1/3 of the trial are bold and shaded light blue.

Variety	Crop	Visual Stand Rating (%)	Height at Harvest (in.)	Feekes Stage	Dry Matter Yeild (lb/ac)	Hay Yield (tons/ac)	Silage Yield (tons/ac)
Stockford	Barley	93	25.5	9.8	**4060**	**2.39**	**5.80**
SD Momentum	Oat	81	24.5	9.8	**3763**	**2.21**	**5.38**
Trical Surge	Triticale	91	24.8	9.5	**3728**	**2.19**	**5.33**
Trical Exp 5735	Triticale	89	25.8	9.0	**3686**	**2.17**	**5.27**
SD Ranger	Oat	79	23.8	10.2	**3685**	**2.17**	**5.26**
Lavina	Barley	93	24.5	10.1	**3622**	**2.13**	**5.17**
SD Titan	Oat	78	25.8	10.1	3568	2.10	5.10
Trical Cadillac	Oat	85	21.8	10.4	3561	2.09	5.09
Dual Threat	Oat	86	23.0	9.8	3557	2.09	5.08
CDC Westgate	Oat	83	23.3	8.0	3501	2.06	5.00
Trical Kicker	Triticale	93	24.0	8.5	3397	2.00	4.85
Trical Gunner	Triticale	88	20.8	8.0	3317	1.95	4.74
Goliath	Oat	83	24.5	10.0	3295	1.94	4.71
CDC Haymaker	Oat	83	20.8	8.0	3115	1.83	4.45
Trical Flex	Triticale	86	19.8	8.3	2700	1.59	3.86
Mean		86	23.5	9.3	3504	2.06	5.01
CV		6.1	4.7		8.9	8.9	8.9
LSD (0.05)		7.5	1.6		445	0.26	0.64
LSD (0.10)		6.2	1.3		371	0.22	0.53