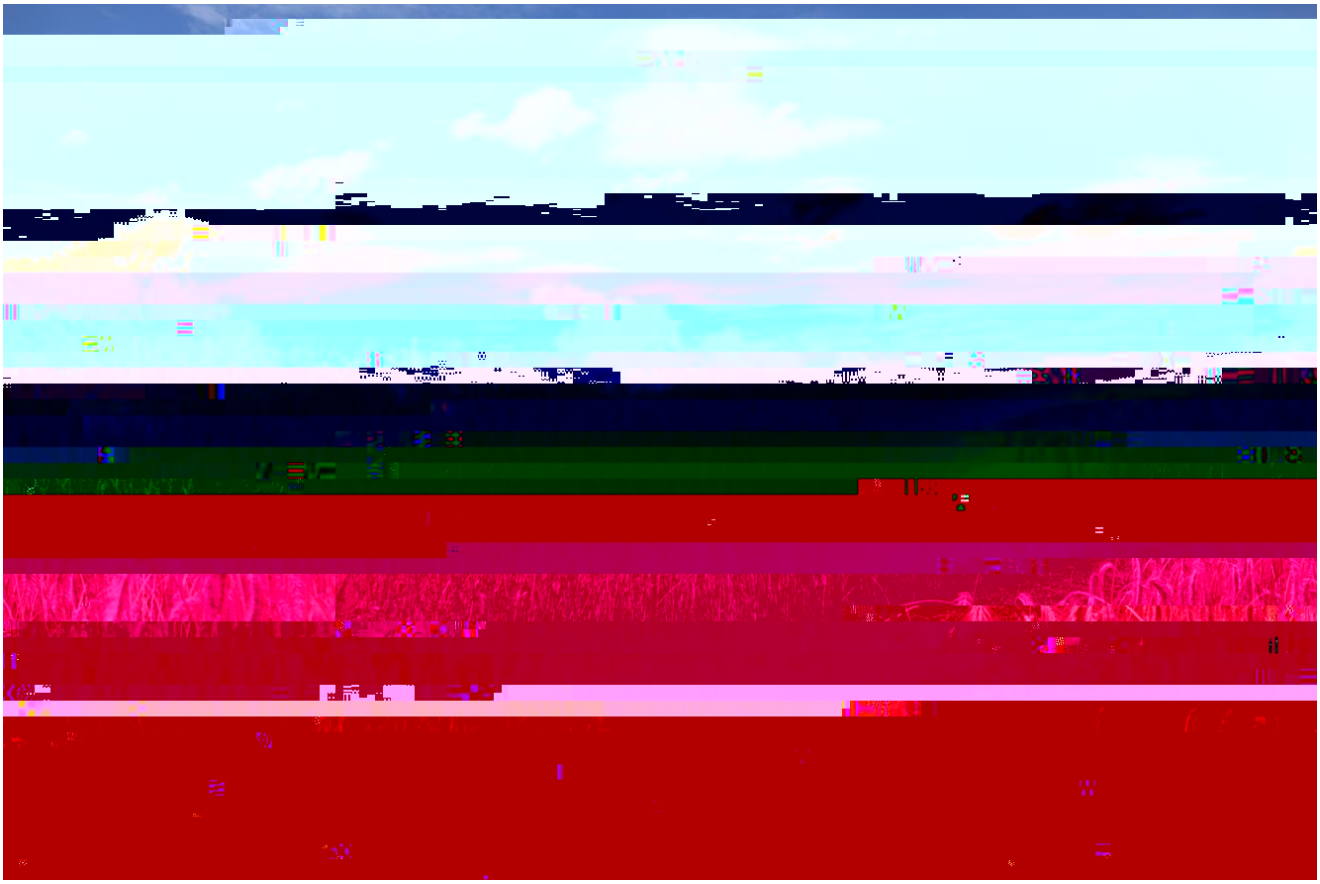
2023 Rye Variety Trial



Dr. Heather Darby, UVM Extension Agronomist
John Bruce
UVM Extension Crops and Soils Technician
(802) 524-6501

Visit us on the web at: http://www.uvm.edu/nwcrops

2023 RYE VARIETY TRIAL

Dr. Heather Darby, University of Vermont Extension
heather.darby[at]uvm.edu

The interest in growing cereal rye for grain to be sold as cover crop seed, or to other value-added markets (distillers and bakers), has increased considerably across the Northeast region in recent years. As a result, farmers and end-users are requesting yield and quality information on cereal rye varieties. In 2022-2023, University of Vermont Extension Northwest Crops and Soils (NWCS) Program conducted a variety trial to evaluate yield and quality of cereal rye.

MATERIALS AND METHODS

The rye variety trial was initiated at Borderview Research Farm in Alburgh, VT in the fall of 2022. Plots were managed with practices similar to those used by producers in the surrounding area. Agronomic information is displayed in Table 1. The experimental design was a randomized complete block with three replicates. The field was plowed, disked, and prepared with a spike tooth harrow to prepare the seedbed for -Sep 2022 at a seeding rate of 350 live seeds m^{-2}. Treatments were twelve varieties of cereal rye including Aroostook, Bono, .

Table 1. Agronomic and trial information for the rye cover crop variety trial, 2022-2023.

	Borderview Research Farm, Alburgh, VT
Soil type	Benson rocky silt loam

Starting on 18-May through 4-Jun, heading dates and flowering dates were recorded for each variety. On 1-Aug 2023, one day prior to harvest, three plant heights per plot were measured for each plot, excluding awns. Lodging was assessed visually as percent lodged, with 0% indicating no lodging and 100% indicating the entire plot was lodged. Grain plots were harvested at the Alburgh site with an Almaco SPC50 plot combine on 2-Aug. Seed was cleaned with a small Clipper M2B cleaner (A.T. Ferrell, Bluffton, IN) and a one-pound subsample was collected to analyze quality characteristics. Grain quality was determined at the E. E. Cummings Crop Testing Laboratory at the University of Vermont (Burlington, VT). Grains were analyzed for crude protein and starch content using the Perten Inframatic 9500 NIR Grain Analyzer (Perkin

RESULTS

Seasonal precipitation and temperature recorded at Borderview Research Farm in Alburgh, VT are displayed in Table 3. The average fall temperature (Sep 2022 to Nov 2022) was 51.8° F, which was 2.23°F warmer than the 30-year normal. The average temperature from Mar 2023 to Jul 2023 was 1.30° F cooler than the 30-year normal. This growing season was wetter than past years with a total precipitation of 24.1 inches from Mar 2023 to Jul 2023. The catastrophic flash flooding that occurred mid-month in Jul 2023 resulted in 10.75 inches of precipitation, a departure of 6.69 inches more than the 30-year average. From Sep 2022 to Jul 2023, there were 5260 Growing Degree Days (GDDs), which is less than the mean historical GDD trends over the last 30 years.

Table 3. Weather data for rye variety trial in Alburgh, VT.

Alburgh, VT	Sep-23	Oct-23	Nov-23	Mar-23	Apr-23

Table 4. Cereal rye harvest measurements. Alburgh, VT 2023.

Variety	Height	Lodging	Moisture	Test weight	Yield @ 13.5% moisture
	cm	%	%	lbs bu-1	lbs ac^{-1}
Aroostook	166*	70.0	14.3	50.8*	3070
Bono	122	31.7*	14.4	53.0*	4163
Covermax	137	8.33*	13.4*	52.0*	3906
Danko	141	**1.67**	14.0	**54.4**	3566
Hazlet	147	31.7*	14.2	53.2*	3421
ND Dylan	145	61.7	13.6*	50.7*	3324
ND Gardner	161*	70.0	15.2	50.1	3160
Progas	136	**1.67**	**13.1**	48.9	3887
Ruth's VNS	**173**	65.0	14.2	48.1	2881
Serafino	125	**1.67**	13.8*	52.0*	3305
Spooner	161*	63.3	13.5*	52.0*	3353
Tayo	125	35.0*	14.7	50.7*	**5505**
LSD (p=0.10)	14.2	45.3	0.866	2.6	880
Trial Mean	145	36.8	14.0	51.3	3628

Within a column, varieties with an asteri

Table 5. Cereal rye grain quality. Alburgh, VT 2023.

Variety	Crude protein @12% moisture	Starch @ 12% moisture	Falling Number	DON
	%	%	seconds	ppm
Aroostook	**10.6**	59.3	118	**0.30**
Bono	7.30	62.2*	175	1.10
Covermax	7.50	**62.4**	176	

than for wheat, possibly closer to 100-200 seconds. The falling number results in this trial are consistent with our prior studies, but more research is needed to characterize potential end uses for rye with different falling numbers. See the 2020 and 2022 Rye Harvest Date Trial Report for more details about the impact of harvest date and variety on falling number in rye.

These data highlight the importance of varietal selection, but also only represent one year of data in ongoing trials. More data and other factors should be considered when making management decisions.

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