

Table 2. Trial agronomic information, 2021.

Heading date was collected through the month of June, recorded as the date when more than 50% of the plot was headed out. Plots were harvested with an Almaco SPC50 small plot combine on 27-Jul. Grain moisture, test weight, and yield were determined at harvest. A subsample was collected to determine quality characteristics. Grain quality was determined at the E. E. Cummings Crop Testing Laboratory at the University of Vermont (Burlington, Vermont). Seed was cleaned by hand in the laboratory prior to analysis. Samples were ground using the Perten LM3100 Laboratory Mill. Flour was analyzed for protein content using the Perten Inframatic 8600 Flour Analyzer. Most commercial mills target 12-15% protein content for bread wheat. Falling number was measured (AACC Method 56-81B, AACC Intl., 2000) on the Perten FN 1500 Falling Number Machine. The falling number indicates the level of enzymatic activity in the grain. It is determined by the time it takes, in seconds, for a stirrer to fall through a slurry of flour and water to the bottom of a test-tube. Falling numbers above 250 indicate low enzymatic activity and sound quality wheat. A falling number lower than 200 indicates high enzymatic activity and poor quality wheat, typically as a result of pre-harvest sprouting damage in the grain. Falling number above 400 may retard fermentation when used for baking. Deoxynivalenol (DON), a vomitoxin, was analyzed using Veratox DON 2/3 Quantitative test from the NEOGEN Corp. This test has a detection range of 0.5 to 5 ppm. Samples with DON values greater than 1 ppm are considered unsuitable for human consumption. One replicate of each variety was tested for DON and the results were all below the quantifiable level of the test (data not shown).

RESULTS

Seasonal precipitation and temperature recorded at a weather station at Borderview Research Farm are displayed below in Table 3.

Table 3. Seasonal weather data collected in Alburgh, VT, 2020-2021.

	2021			
	Apr	May	Jun	Jul
Average temperature (°F)	48.1	58.4	70.3	68.1
Departure from normal	2.52	-0.03	2.81	-4.37
Precipitation (inches)	3.52	0.66	3.06	2.92
Departure from normal	0.45	-3.10	-1.20	-1.14
Growing Degree Days (32°-95°F)	497	818	1149	1301
Departure from normal	85	-1	86	101

Based on weather data from a Davis Instruments Vantage Pro2 with WeatherLink data logger.

We plan to continue this research and to grow out seed for these varieties in 2022.

Figure 1. Yield and falling number for red and blue wheat varieties, 2021. Dashed line indicates acceptable falling number of 250 seconds.

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