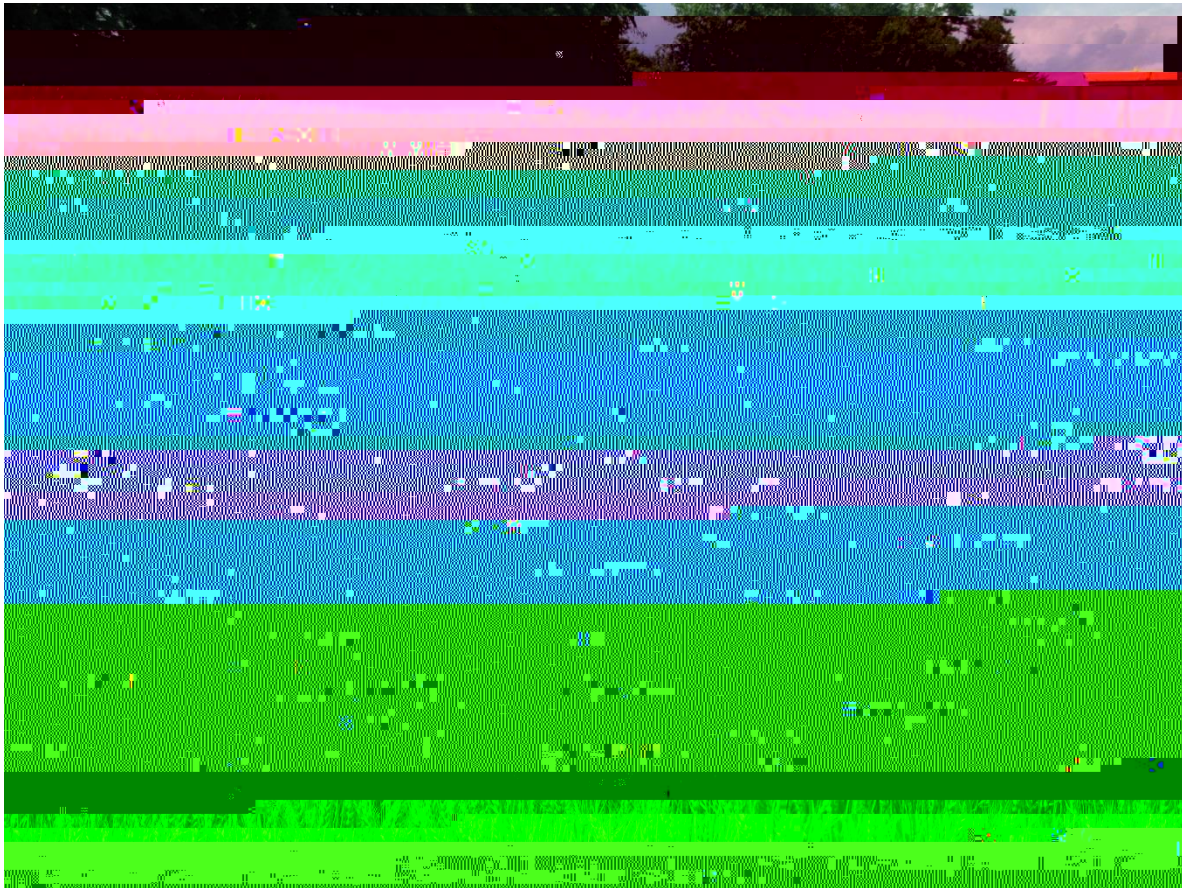


2018 Organic Heirloom Spring Wheat Variety Trial



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Table 2. Varietal information of the heirloom spring wheat, 2018.

Variety	Developed in	Pedigree	Release date
AC Barrie	Sask. Canada	Neepawa/Columbus//BW90	1996
Ceres 05	North Dakota	Marquis/Kota	1926
Champlain	Vermont	Black Sea/Golden Drop	1870
Defiance	Vermont	Golden Drop/White Hamburg	1878
Hope	South Dakota	Yaroslav emmer/Marquis	1927
Komar	North Dakota	Marquis/Kota; Sister selection of Ceres	1930
Ladoga	Leningrad, Rus.	-	1916
Marquis	Ont. Canada	Hard Red Calcutta/Red Fife	1910
Mida 05	North Dakota	Mercury//Ceres/Double Cross	1944
Mida 06	North Dakota	Mercury//Ceres/Double Cross	1944
Red Bobs	Sask. Canada	Selection from fields of Bobs	1926
Red Fife	Canada	-	1860
Reliance	Oregon	Kanred/Marquis	1926
Scarlett	Washington	Too many to list	1998
Spinkcota	Washington	Preston sel./red durum//Preston sel.	1944
Supreme	Sask. Canada	Selection from Red Bobs	1922
Surprise	Vermont	Chile Club/Michigan Club	1909

Variations in yield and quality can occur because of variations in genetics, soil, weather and other growing conditions. Statistical analysis makes it possible to determine whether a difference among varieties is real or whether it might have occurred due to other variations in the field. At the bottom of each table, a LSD value is presented for each variable (e.g. yield). Least Significant Differences at the 10% level of probability are shown. Where the difference between two varieties within a column is equal to or greater than the LSD value at the bottom of the column, you can be sure in 9 out of 10 chances that there is a real difference between the two varieties. In the example, variety A is significantly different from variety C, but not from variety B. The difference between A and B is equal to 725, which is less than the LSD value of 889. This means that these varieties did not differ in yield. The difference between A and C is equal to 1454, which is greater than the LSD value of 889. This means that the yields of these varieties were significantly different from one another. The asterisk indicates that variety B was not significantly lower than the top yielding variety.

RESULTS

Seasonal precipitation and temperatures were recorded with a Davis Instruments Vantage Pro2 with Weatherlink data logger on site in Alburgh, VT (Table 3). Over the 2018 growing season, there was 1.57 inches less rain than in an average year. The temperature was slightly cooler but only by 0.35 degrees. From April to July there was an accumulation of 3403 Growing Degree Days (GDDs) in Alburgh, VT, 50 GDDs more than the 30-year average.

Table 3. Temperature and precipitation summary for Alburgh, VT, 2017.

Alburgh, VT	Apr	May	Jun	Jul
Average Temperature (F)	39.2	59.5	64.4	74.1
Departure from Normal	-5.58			

The optimal protein level for wheat is above 12%, in 2018 protein levels ranged from 15.2% to 17.3%. Champlain (17.3%) had the highest crude protein concentrations; Defiance (17.0%), Spinkckota (16.9%), and Supreme (16.7%) were all statistically similar (Figure 1). All of the varieties had falling numbers over 300 seconds, indicating low enzymatic activity and sound quality wheat. The average falling number was 404. The variety with the highest falling number was Scarlett (463 seconds) and Supreme (439 seconds) was the only variety statistically similar. Only one replication of the trial was tested for DON concentrations and all were below the industry standard of 1ppm. Hence, no further analysis was conducted for trial plots.

Figure 1. Yield and protein of heirloom spring wheat varieties grown in Alburgh, VT, 2018. Treatments that share a letter did not differ significantly by variety in yield ($p=0.10$.)

DISCUSSION

The 2018 growing season had higher yields than the four previous years

