



2019 Heirloom Hulless Spring Barley Variety Trial



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There is an interest amongst bakers and the grain industry in the development of local grain varieties. Specialty grains, such as hulless barley (naked barley), can support local farm viability outside of commodity markets, and provide small-scale bakers and millers with a value-added opportunity as well. Hulless barley has an outer hull loosely attached to the kernel, which generally falls off during harvest, allowing the bran and germ to be retained. Due to this loose hull, hulless barley is a whole grain that requires minimal processing in comparison to barley that has hulls tightly adhered to the seed. In 2019, the University of Vermont Extension's Northwest Crops and Soils Program established a field trial of eighteen heirloom hulless barley varieties with seed provided by Sylvia Davatz of Solstice Seeds (Hartland, VT).

MATERIALS AND METHODS

The trial was initiated at Borderview Research Farm in Alburgh, VT. Plots were managed with practices similar to those used by organic producers in the surrounding area. Eighteen varieties of heirloom hulless spring barley were evaluated for yield. Fertility amendments consisting of 57 lbs N, 57 lbs P, 57 lbs K were applied on 25-Apr prior to planting. Plots were seeded with a Carter cone seeder at a rate of 350 live seeds m² on 29-Apr into 2.5' x 25' plots (Table 1). Due to limited seed quantities, only one replicate of each variety was planted for evaluation. The previous crop was summer annuals and the soil type was Benson rocky silt loam with 8 to 15% slopes. Heading dates were recorded when 50% or more of a plot was heading. Plots were harvested with an Almaco SPC50 small plot combine on 2-Aug. Yields were determined at harvest.

Table 1. Hulless spring barley agronomic information, 2019.

Trial information	Alburgh, VT Borderview Research Farm
Soil type	Benson rocky silt loam, 8-15% slopes
Previous crop	Summer annuals
Seeding rate	350 live seeds ac ⁻¹
Row spacing (in)	6
Planting date	29-Apr
Harvest date	2-Aug
Harvest area (ft)	2.5 x 25
Tillage operations	Fall plow, disk & spike tooth harrow

RESULTS

Seasonal precipitation and temperature were recorded onsite at the Alburgh, VT location with a Davis Instruments Vantage Pro2 weather station equipped with a WeatherLink data logger (Table 2). A cooler than average and wet spring led to a lag in Growing Degree Day (GDD) accumulation April through June. GDDs ceased to lag behind the 30-year normal in July, which saw higher than average temperatures and lower than average precipitation. July was 2.87° F warmer than normal and saw 1.81

inches less of rainfall. Overall, there were 4387 GDDs accumulated during the growing season, 104 below the normal.

Table 2. Seasonal weather data collected in Alburgh, VT, 2019.

	April	May	June	July	August
Average temperature (°F)	42.7	53.3	64.3	73.5	68.3
Departure from normal	-2.11	-3.11	-1.46	2.87	-0.51
Precipitation (inches)	3.65	4.90	3.06	2.34	3.50
Departure from normal	0.83	1.45	-0.63	-1.81	-0.41
Growing Degree Days (base 32°F)	346	660	970	1286	1125
Departure from normal	-38	-96	-44	88	-14

Based on weather data from a Davis Instruments Vantage Pro2 with WeatherLink data logger. Historical averages are for 30 years of NOAA data (1981-2010) from Burlington, VT.

Varieties, heading dates, and yields are displayed in Table 3. No statistical analysis was performed, and yields are presented as-is at harvest moisture. There was bird damage present in the Excelsior plot. The plots of the varieties Queen of Sheba, Arabian Blue, Burbank Purple, Excelsior Purple, Dolma Purple, Tibetan Purple, and Faust were lodged flat during a heavy rainfall, which may have impacted yields. Yields ranged from 275 lbs ac⁻¹ (Excelsior) to 3836 lbs ac⁻¹ (Glutinous). The average yield for all varieties was 1724 lbs ac⁻¹. Faust and Excelsior headed out first on 19-Jun, while Purple and Glutinous were the last to head out on 1-Jul. The average heading date for the trial was 24-Jun. Seed was saved from the trial to further evaluate the varieties under replicated plots for yield and quality.

Table 3. Spring barley varieties and yields at harvest moisture, Alburgh, VT, 2019.

Variety	Yield at harvest lbs ac ⁻¹	Heading date
Dolma Purple	822	26-Jun
Queen of Sheba	1844	26-Jun
Arabian Blue	1657	26-Jun
Purple	410	1-Jul
Burbank Purple	1454	26-Jun
Tibetan	2157	26-Jun
Excelsior Purple	1709	21-Jun
Dolma	2128	21-Jun
Sheba	2239	26-Jun
Sangatsuga	2377	21-Jun
Tibetan Purple	1578	21-Jun
Burbank	1143	26-Jun
Ethiopian	1539	26-Jun
Glutinous	3836	1-Jul
Faust	1325	19-Jun
Excelsior	275	19-Jun
Zwerggerste	1793	21-Jun
Valsengerste	2740	26-Jun
Trial mean	1724	24-Jun

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