

# 2021 Organic Spring Barley Variety Trial



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**2021 ORGANIC SPRING BARLEY VARIETY TRIAL**  
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With the revival of the small grains industry in the Northeast and the strength of the locavore movement, craft breweries and distilleries have expressed an interest in sourcing local barley for malting. Malting barley must meet specific quality characteristics such as low protein content and high germination. Depending on the variety, barley can be planted in either the spring or fall, and both two- and six-row barley can be used for malting. In 2021, UVM Extension, in collaboration with the Eastern Spring Malting Barley Nursery (ESBN) testing network, conducted a spring malting barley trial to evaluate yield and quality of 25 varieties. Some varieties that had not performed well or are no longer commercially available were dropped from the trial and new varieties were added.

## MATERIALS AND METHODS

In 2021, a spring barley variety trial was initiated at Borderview Research Farm in Alburgh, VT. The experimental plot design was a randomized complete block with four replications. The treatments were twenty-five spring malting barley varieties, listed in Table 1.

**Table 1. Twenty-five spring barley varieties trialed at Borderview Research Farm in Alburgh, VT, 2021.**

Spring barley variety	Type	Seed source
2ND32529	2-row	North Dakota State University
2ND36638	2-row	North Dakota State University
2ND36642	2-row	North Dakota State University
2ND37111	2-row	North Dakota State University
2ND37130	2-row	North Dakota State University
2ND37568	2-row	North Dakota State University
AAC Connect	2-row	Agricultur.04 Tf1 0 0 1 258.53 319.37 Tm0 g0 G

ND Genesis	2-row	North Dakota State University
Newdale	2-row	Agriculture and Agri-Food Canada
Pinnacle	2-row	North Dakota State University
Revanche	2-row	Ackermann (Germany)

All plots were managed with practices similar to those used by producers in the surrounding areas (Table 2). The previous crop planted at the site was soybeans. In April, the trial area was plowed, disked and spike tooth harrowed to prepare for planting. The plots were seeded with a Great Plains NT60 Cone Seeder on 9-Apr at a seeding rate of 300 live seeds m<sup>-2</sup> into a Benson rocky silt loam. Plot size was 5' x 20'.

**Table 2. Agronomic and trial information for spring barley variety trial, 2021.**

<b>Trial Information</b>	<b>Borderview Research Farm Alburgh, VT</b>
Soil type	Benson rocky silt loam
Previous crop	Soybeans
Tillage operations	Spring plow, disc, and spike tooth harrow
Harvest area (ft)	5 x 20

ml of water for 72 hours and counting the number of seeds that did not germinate. Each sample was run in duplicate.

All data was analyzed using a mixed model analysis where replicates were considered random effects. The LSD procedure was used to separate cultivar means when the F-test was significant ( $p < 0.10$ ).

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 this 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 t

### **Spring Barley Yield and Quality**

Yield and quality varied slightly between varieties of spring barley (Table 4, Figure 1). KWS Fantex had the highest yield at 4811 lbs ac<sup>-1</sup>. This was statistically similar to 2ND32529, 2ND36638, 2ND36642, AAC Connect, Esma, Excelsior Gold, Explorer, KWS Jessie, KWS Willis, ND Genesis, and Newdale, which all yielded above 3511 lbs ac<sup>-1</sup>. All varieties were above 14% moisture content at harvest and required drying down for storage.

**Table 4. Harvest results for the 25 spring barley varieties trialed in Alburgh, VT, 2021.**

Variety	Yield at 13.5% moistur e	Harvest moisture	Test weight	Protein at 12% moisture	Falling number	Germination
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## DISCUSSION

Overall, most varieties performed well with high quality and adequate yields. 2019 and 2020 had slightly higher yields than 2021's average yield of 3365 lbs ac<sup>-1</sup>. However, the 2021 average yield is higher than the grand mean yield from 2011-2017 of 2289 lbs ac<sup>-1</sup>.

In terms of quality parameters, most varieties performed within the industry standard of crude protein content, with only three varieties slightly over 11% crude protein. All but three varieties performed at a statistically similar plumpness, and most varieties performed at a statistically similar germination rate.

No varieties out-performed the others. All varieties that were statistically similar as high yielding varieties performed highly in other quality parameters. It is important to note that these results represent only one year of data. As farmers make variety selections, they should make sure to evaluate data from test sites that are similar to their own region as possible. It is our intention to continue this research in 2022.

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