NORTHWEST CROPS & SOILS PROGRAM

# 2019 Organic Winter Malting Barley Variety Trial

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THE UNIVERSITY OF VERMONT EXTENSION

**2019 ORGANIC WINTER MALTING BARLEY VARIETY TRIAL**

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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 the fall of 2018, a winter malting barley trial was conducted to evaluate yield and quality of 17 varieties.

# MATERIALS AND METHODS

In the fall of 2018, a winter malting barley variety trial was established at Borderview Research Farm in Alburgh, VT. The experimental plot design was a randomized complete block with three replications. The treatments were 17 winter malting barley varieties, listed in Table 1.

**Table 1. Varietal information for the 17 winter malting barley varieties, 2018-2019.**

| Winter barley variety | Type | Seed source |
|---|---|---|
| 08ARS509-1 | 2-row | USDA-ARS |
| 08ARS632-5 | 2-row | USDA-ARS |
| 13ARS537-13 | 2-row | USDA-ARS |
| 13ARS537-19 | 2-row | USDA-ARS |
| AC10/028/53 | 2-row | Ackermann Saatzucht |
| Charles | 2-row | Saved seed |
| DH120304 | 2-row | Oregon State University |
| DH130910 | 2-row | Oregon State University |
| DH140088 | 2-row | Oregon State University |
| DH140963 | 2-row | Oregon State University |
| Endeavor | 2-row | Saved seed |
| Flavia | 2-row | Ackermann Saatzucht |
| Hirondella | 6-row | Ackermann Saatzucht |
| Lyberac | 2-row | Ackermann Saatzucht |
| Rossignola | 2-row | Ackermann Saatzucht |
| Thoroughbred | 6-row | Saved seed |
| Wintmalt | 2-row | Saved seed |

All plots were managed with practices similar to those used by producers in the surrounding area (Table 2). The previous crop planted on this site was spring barley. The trial area was plowed, disked, and spike toothed harrowed before planting. The plots were seeded with a Great Plains NT60 Cone Seeder on 20-Sep 2018 with a seeding rate of 160 lbs $ac^{-1}$ into Benson rocky silt loam. Plot size was 5' x 20'. The trial was terminated in July 2019 due to extensive bird damage.

**Table 2. General plot management, 2018-2019.**

| Trial information | Alburgh, VT<br>Borderview Research Farm |
|---|---|
| **Soil type** | Benson rocky silt loam |
| **Previous crop** | Spring barley |
| **Tillage operations** | Fall plow, disk & spike tooth harrow |
| **Seeding Rates (lbs ac$^{-1}$)** | 160 |
| **Row spacing (in)** | 6 |
| **Replicates** | 3 |
| **Planting date** | 20-Sep 2018 |
| **Plot size (ft)** | 5 x 20 |

Fall and spring populations, winter survival, and flowering dates were recorded. Flowering dates were recorded when at least 50% of the plot was in bloom. Populations were measured in fall 2018 and spring 2019 by counting the number of plants in three twelve inch sections of a row. Winter survival was assessed by the ratio of spring to fall populations.

# RESULTS

The target seeding rate for the trial was 350 seeds m$^{-2}$. The average fall population for the trial was 259 plants m$^{-2}$ (Table 3). The variety with the highest fall population was Thoroughbred with 388 plants m$^{-2}$. Although it did not have the highest winter survival rate, Thoroughbred still had the highest spring population with 179 plants m$^{-2}$. DH140963 had the highest winter survival rate at 42.9%. Three other varieties (DH130910, Rossignola, and Thoroughbred) also had winter survival rates over 33%. The average flowering date was 5-Jun. There was only a five day range between 3-Jun and 7-Jun for flowering date for winter barley.

**Table 3. 2019 winter barley agronomic characteristics in Alburgh, VT.**

| Variety | Fall population | Spring population | Winter survival | Flowering date |
|---|---|---|---|---|
| | plants m$^{-2}$ | plants m$^{-2}$ | % | date |
| 08ARS509-1 | 251 | 32 | 15.4% | 6-Jun |
| 08ARS632-5 | 226 | 7 | 3.5% | 6-Jun |
| 13ARS537-13 | 233 | 0 | 0.0% | 6-Jun |
| 13ARS537-19 | 176 | 43 | 32.2% | 5-Jun |
| AC10/028/53 | 276 | 83 | 27.0% | 4-Jun |
| Charles | 291 | 90 | 29.8% | 4-Jun |
| DH120304 | 269 | 43 | 16.3% | 6-Jun |
| DH130910 | 233 | 93 | 38.7% | 5-Jun |
| DH140088 | 258 | 36 | 15.3% | 6-Jun |
| DH140963 | 233 | 97 | 42.9% | 7-Jun |
| Endeavor | 258 | 68 | 26.5% | 6-Jun |

| | | | | |
|---|---|---|---|---|
| Flavia | 334 | 93 | 29.6% | 4-Jun |
| Hirondella | 273 | 83 | 30.6% | 6-Jun |
| Lyberac | 262 | 32 | 13.1% | 6-Jun |
| Rossignola | 194 | 83 | 41.1% | 3-Jun |
| Thoroughbred | **388** | **179** | 36.2% | 3-Jun |
| Wintmalt | 244 | 29 | 12.4% | 7-Jun |
| *Trial Mean* | 259 | 64 | 24.2% | 5-Jun |

## DISCUSSION

Winter barley trials at Borderview are terminated due to low winter survival. Many of the varieties had adequate winter survival and were growing well. It was a great disappointment this season when birds decimated the barley crop in the weeks before harvest despite deploying multiple deterrents including bird netting. There was nearly 100% bird damage across the trial, and the trial was terminated.

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