



2017 Organic Winter Malting Barley Variety Trial



Dr. Heather Darby, UVM Extension Agronomist
Erica Cummings and Hillary Emick
UVM Extension Crops and Soils Coordinators
802-524-6501

Visit us on the web: <http://www.uvm.edu/extension/cropsoil>

2017 ORGANIC WINTER MALTING BARLEY VARIETY TRIAL

Dr. Heather Darby, University of Vermont Extension

heather.darby[at]uvm.edu

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 2016, UVM Extension, in collaboration with the Winter Malting Barley Trial (WMBT) testing network, conducted a winter malting barley trial to evaluate yield and quality of thirty varieties.

MATERIALS AND METHODS

In the fall of 2016, 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 thirty winter malting barley varieties, listed in Table 1.

Table 1. Varietal information for the 30 winter malting barley varieties, 2017.

Winter barley variety	Type	Seed source
Charles	2-row	USDA-ARS
McGregor	6-row	2016 Saved seed
Thoroughbred	6-row	2016 Saved seed
Endeavor	2-row	USDA-ARS
Wintmalt	2-row	2016 Saved seed
Violetta	2-row	Limagrain Cereal Seeds
Calypso	2-row	Limagrain Cereal Seeds
Puffin	2-row	Limagrain Cereal Seeds
LGBB13-W102	6-row	Limagrain Cereal Seeds
05ARS561-208	2-row	USDA-ARS
06ARS633-3	2-row	USDA-ARS
06ARS617-25	2-row	USDA-ARS
07ARS515-7	2-row	USDA-ARS
DH130004	2-row	Oregon State University
DH130939	2-row	Oregon State University
DH130718	2-row	Oregon State University
DH130910	2-row	Oregon State University
MW12_4028-007	6-row	University of Minnesota
MW12_4007-001	6-row	University of Minnesota
MW13_4159-012	6-row	University of Minnesota
MW13_4107-010	6-row	University of Minnesota
2WI14-7462	2-row	Busch Agricultural Resources, LLC
2WI14-7465	2-row	Busch Agricultural Resources, LLC
2WI14-7577	2-row	Busch Agricultural Resources, LLC
2WI14-7581	2-row	Busch Agricultural Resources, LLC
Flavia	2-row	Kilian Hundsrucker
SU-Mateo	2-row	Kilian Hundsrucker

AC09/327/2 (Lyberac)	2-row	Kilian Hundsrucker
Mission	2-row	Kilian Hundsrucker
Hirondella	6-row	Kilian Hundsrucker

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 winter wheat and rye. In September 2016, 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 22-Sep 2016 at a seeding rate of 140 lbs ac⁻¹ into a Benson rocky silt loam. Plot size was 7'x 20' (5'x 20' planted). A visual assessment of populations, winter survival, and vigor was conducted on 11-May.

Table 2. General plot management, 2017.

Trial information	Alburgh, VT	
	Borderview Research Farm	
Soil type	Benson rocky silt loam	
Previous crop	Winter wheat and rye	
Tillage operations	Fall plow, disk & spike tooth harrow	
Seeding Rates (lbs ac ⁻¹)	140	
Row spacing (in)	6	
Replicates	3	
Planting date	22-Sep 2016	
Planted area (ft)	5 x 20	
Harvest date	N/A	

RESULTS AND DISCUSSION

Seasonal precipitation and temperature recorded at a weather station in Alburgh, VT are shown in Table 3. Average precipitation and above average temperatures for the fall of 2016 lead to good establishment. Most of the winter months, except for March, were warmer and drier than the 30-year average. Overall, temperatures were very mild however, the lack of precipitation during the winter months resulted in no protective snow cover at the trial location in Alburgh.

Table 3. Seasonal weather data collected in Alburgh, VT, 2016 and 2017.

Alburgh, VT	Sep 2016	Oct 2016	Nov 2016	Mar 2017	Apr 2017	May 2017
Average temperature (°F)	63.6	50.0	40.0	25.1	47.2	55.7
Departure from normal	3.03	1.80	1.82	-6.05	2.37	-0.75
Precipitation (inches)	2.50	5.00	3.00	1.60	5.20	4.10
Departure from normal	-1.17	1.39	-0.13	-0.63	2.40	0.68
Growing Degree Days (base 32°F)	949	559	270	98	459	733
Departure from normal	91	57	85	-26	71	-20

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.

Many of the varieties in the trial were developed in environments much different from New England. Hence, it is important to evaluate the varieties for tolerance to our climate. The winter survival of the malting barley plots were assessed on 11-May 2017 (Table 4). There was severe winterkill in most of the plots and therefore, the trial was terminated.

Table 4. Populations, vigor, and winter survival of the 30 winter barley varieties.

Variety	Population	Vigor	Survival
	m ²	Scale (0-9)	%
05ARS561-208	10	1.33	10.7
06ARS617-25	0	0.00	0.00
06ARS633-3	2	0.00	1.00
07ARS515-7	2	0.67	2.00
2WI14-7462	10	0.33	1.67
2WI14-7465	0	0.00	0.00
2WI14-7577	0	0.00	0.00
2WI14-7581	2	0.00	0.33
AC09/327/2 (Lyberac)	7	2.00	15.0
Calypso	31	2.00	18.3
Charles	0	0.67	5.33
DH130004	0	0.00	0.00
DH130718	2	0.00	0.00
DH130910	7	3.33	13.3
DH130939	5	0.67	3.67
Endeavor	2	0.33	1.67
Flavia	88*	5.67	50.0
Hirondella	26	1.00	14.0
LGBB13-W102	77	7.67*	58.3
McGregor	26	5.67	41.7
Mission	22	1.00	10.3
MW12_4007-001	127*	4.00	83.3*
MW12_4028-007	5	3.00	7.33
MW13_4107-010	12	3.33	20.0
MW13_4159-012	31	4.33	36.7
Puffin	10	0.33	4.33
SU-Mateo	36	5.33	33.3
Thoroughbred	103*	8.00*	66.7
Violetta	74	7.00*	58.3
Wintmalt	22	5.00	31.7
<i>LSD (0.10)</i>	43	2.22	16.4
<i>Trial Mean</i>	25	2.42	19.6

Values shown in **bold** are of the highest value or top performing.

* Barley varieties that are not significantly different than the top performing variety in a column are indicated with an asterisk.

ACKNOWLEDGEMENTS

Thank you to the American Malting Barley Association, Brewers Association, Northeast SARE, and the US Wheat and Barley Scab Initiative for their financial contribution to this project. UVM Extension would like to thank the Borderview Research Farm and staff in Alburgh, VT. We would like to acknowledge Kelly Drollette, Abha Gupta, Freddy Morin, Lindsey Ruhl, Matt Sanders, Stuart Wolff-Goodrich and Sara Ziegler for their assistance with data collection and entry. This information is presented with the understanding that no product discrimination is intended and neither endorsement of any product mentioned, nor criticism of unnamed products, is implied.

UVM Extension helps individuals and communities put research-based knowledge to work.



Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. University of Vermont Extension, Burlington, Vermont, University of Vermont Extension, and U.S. Department of Agriculture, cooperating, offer education and employment to everyone without regard to race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or familial status.