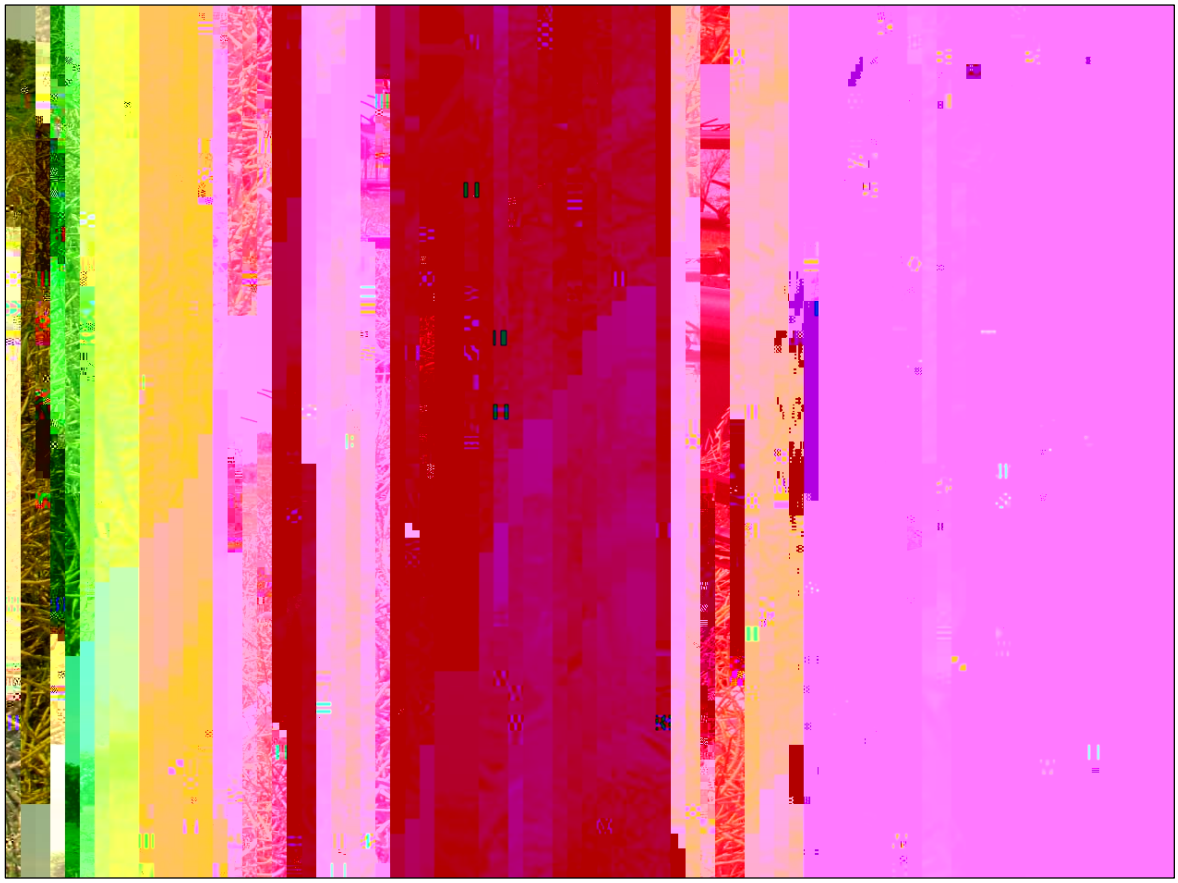
2020 Winter Canola Variety Trial



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2020 WINTER CANOLA VARIETY TRIAL

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The majority of the canola grown in North America is grown in the Midwestern U.S. and Canada for both culinary oil as well as biodiesel production. Winter canola is planted in the late summer where it grows through the fall before entering a period of dormancy for the winter. The following spring, the plants resume growth and seed is harvested during the summer months. Winter canola could potentially be a useful crop

ranked on a scale 1-5, where 1 indicated low vigor and 5 indicated very vigorous plants. Two tons lime ac^{-1} was applied on 4-Dec 2019, and 300 lbs ac^{-1} of 19-19-19 fertilizer was applied on 7-Apr 2020. Winter survival was visually assessed as a percentage on 23-Apr 2020. Bloom dates were recorded when 50% or more of the plot had bloomed and were reported as days after 1-Jan 2020. The trial was covered with bird netting from 23-Jun to 14-Jul 2020.

Table 2. Trial information and agronomic information 2019-2020.

Location	**Borderview Research Farm - Alburgh, VT**
Soil type	Covington silty clay loam with 0-3% slopes
Previous crop	Winter rye and silage corn
Plot size (ft)	5 x 20
Seeding rate (live seeds ac^{-1})	500,000 for OP varieties; 300,000 for hybrid varieties
Replicates	4
Planting date	26-Aug 2019
Fertilizer application	300 lbs ac^{-1} 19-19-19, 2 tons ac^{-1} lime
Harvest date	14-Jul 2020
Tillage operations	Fall chisel plow, disk and spring-toothed harrow

toothed harrow

RESULTS

Weather data were collected with an onsite Davis Instruments Vantage Pro2 weather station equipped with a WeatherLink data logger. Temperature, precipitation, and accumulation of Growing Degree Days (GDDs) are consolidated for the 2019-2020 growing season (Table 3). Historical weather data are from 1981-2010 at cooperative observation stations in Burlington, VT, approximately 45 miles from Alburgh, VT. August and September 2019 were slightly cooler than average, with average temperatures 0.51° F below normal, and cooler than average weather patterns continued in November, which was 6.76° F colder than average.

In the winter of 2019-2020, conditions were warmer than average in the coldest months of December through February. After a warm March, April was 3.19° F cooler than the 30-year average, followed by a cool and dry May. The cooler spring was followed by record-setting heat in July, which was 4.17° F hotter than the norm. Despite reduced Growing Degree Days (GDDs) in the spring, the unusually hot summer months leading up to harvest led to more GDDs than usual, with July having 1326 GDDs, 132 more than normal. Overall, precipitation across the entire canola growing season was 2.38” below normal.

Table 3. Weather data and GDDs for winter canola in Alburgh, VT, 2019-2020.

Table 4. Pre-harvest characteristics for 15 winter canola varieties, 2019

Table 5. Harvest characteristics for 15 winter canola varieties, 2020.

Variety	Plant height	Lodging	Shatter	Harvest moisture	Seed yield at 8% moisture	Test weight	Oil content	Oil yield at 7.5% moisture
	cm	%	%	%	lbs ac^{-1}			

DISCUSSION

Despite a range of variations in weather patterns- cooler than average temperatures in much of the fall, a warm winter and 2.38" less precipitation over the season than normal- all canola varieties successfully overwintered and produced seed in the summer of 2020. All varieties except for CPX60019 and MH 16JD085 produced over 1000 lbs ac^{-1} at 8% moisture. While no varieties met the standard test weight of 50 lbs bu^{-1}, many were close with a trial average of 47.8 lbs bu^{-1}. These data indicate that winter canola, when it survives winters in the Northeast, can produce decent yields but may have a lower potential compared to the common canola growing regions of the United States. By participating in the National Winter Canola Variety Trial, we hope to provide data and encouragement for the development of hardier, high yielding winter canola varieties suitable for this region.

Further research is needed, as this only represents one year of data. The performance of winter canola will be interesting to monitor in future years if we continue to observe deviations in weather patterns and GDDs as the regional climate fluctuates.

ACKNOWLEDGEMENTS

UVM Extension would like to thank Roger Rainville at Borderview Research Farm for his generous help implementing and maintaining this research trial. We would also like to acknowledge Henry Blair, John Bruce, Catherine Davidson, Hillary Emick, and Lindsey Ruhl of the UVM Extension Northwest Crops & Soils Program for their assistance with data collection and entry. The information is presented with the understanding that no product discrimination is intended and no endorsement of any product mentioned or criticism of unnamed products is implied.

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