

Western Rivers Conservancy /Rattray Ranch Winter Malting Barley Project Report

July, 2018

Sarah Windes, Patrick Hayes
Barley Project
Department of Crop and Soil Science, Oregon State University
sarah.windes@oregonstate.edu
patrick.m.hayes@oregonstate.edu

Mik McKee
Stewardship Director
Western Rivers Conservancy
mmckee@westernrivers.org

Background:

In 2015 Western Rivers Conservancy purchased the former Rattray Ranch and conserved over 18,000 acres of sagebrush steppe and grasslands along 10-miles of the Wild and Scenic John Day River, and 4-miles of Thirtymile Creek. The acquisition also included agricultural lands which presented WRC with an opportunity to test whether non-traditional farming techniques can provide competitive bottom-line results, while also achieving carbon sequestration and soil health benefits. In October 2018, WRC launched an experiment using no-till farming to grow malting barley in moisture-limited central Oregon. This experiment was conducted in partnership with Oregon State University College of Agricultural Sciences, Sierra Nevada Brewing Company and Bates Ranches, LLC.

The objectives of this project are to: (1) determine the feasibility of producing high quality winter malting barley under summer fallow conditions; (2) compare commercial (or nearly-commercial) varieties to the local check in terms of agronomic performance and quality attributes; and (3) if one or more of the barley varieties meets quality specifications, assess their brewing quality and identify sensory attributes.

A potential outcome of this project is the brewing of a specialty beer, using malt made from barley grown on the property, by Sierra Nevada Brewing. Marketing and sale of this regional beer could raise awareness of WRC conservation efforts, and more importantly demonstrate the economic viability and environmental benefits of no-till winter barley farming in central Oregon.

Materials and Methods:

Detailed cropping history, management, and variety information are available in the interim report posted at <http://barleyworld.org/breeding-genetics/variety-development-and-oregon-brand>. Briefly, ~ 500 acres were planted to Wintmalt following recommended seeding rate, date, and management practices. Test strips of three varieties (Calypso, Flavia, and Violetta) and one potentially commercial selection (OSU 10.0777) were planted in four-acre blocks within the larger field of Wintmalt. The test strips were harvested July 11.

Harvest of the test strips was completed in ~ three hours, thanks to the outstanding preparation, planning, and deployment of equipment by Sam Bates, his family, and his colleagues. Each test strip was harvested using two combines, each with a 30-foot header. After each test strip was harvested, the two combines transferred their barley to a weigh wagon. A 500 lb. sample from the weigh wagon was then transferred to a tote sack for subsequent analysis at OSU, Corvallis. The balance of the test strip grain went to the Mid Columbia Producers (MCP) elevator in Condon. Plump and thin measurements, and test weights, were taken in the field on grain direct from the weigh wagon in order to get a preliminary idea of grain quality. Uncleaned samples were tested for grain protein and moisture, by NIR, at the MCP elevator. Data from the uncleaned samples were encouraging but were likely biased by an excess of chaff and awn. Therefore, these preliminary results were corroborated using seed cleaned at the OSU Barley Project seed facility located at the Hyslop research station in Corvallis, Oregon. Plump and thin, and test weight, were determined mechanically. Grain protein and moisture were determined by NIR. The results are shown in the following table.

Grain quality parameters and grain yield from the Western Rivers Conservancy project. Rattray ranch, Condon, Oregon. Grain yield was estimated at harvest using a weigh wagon. Grain quality parameters were measured on subsamples of cleaned grain.

Variety	% Plump (6/64)	% Thin (through 5/64)	Grain protein (%)	Test weight (pounds/bushel)	Moisture (%)	Grain yield (tons/acre)
Calypso	94	0	8.2	51.9	9.7	1.29
Flavia	94	0	8.6	51.5	9.7	1.18
OSU 10.0777	98	0	8.6	51.4	9.8	1.30
Violetta	97	1	8.9	52.0	9.7	1.24
Wintmalt	96	0	9.2	49.6	9.9	1.18

Results: These data confirm that the barley varieties meet malting quality specifications. There were modest differences between varieties in terms of grain quality characteristics and grain yield. The 500 lb. subsamples of each variety will be a resource for (1) measuring germination and water sensitivity; (2) malting ~ 1.0 lb. each in the CLP malter at the OSU Barley project malt house and determining malting quality at the Hartwick Center for Craft Food and Beverage (HCCFB); (3) malting ~ 200 lbs each in the mini-malter at OSU and determining malting quality at the HCCFB; (4) pilot brewing with the OSU malt at Sierra Nevada Brewing; and (5) conducting beer sensory at Sierra Nevada Brewing. An option to consider is consumer beer sensory at the OSU Sensory Science Laboratory. Approximately two car-lots of the Wintmalt will potentially be malted by Great Western Malting and the resulting malt used by Sierra Nevada to brew a special regional beer focusing on the WRC connection and this project.



Figure 1 Measuring plump and thin in the field.



Figure 2 Harvesting a test strip.



Figure 3 Transferring grain from combines into weigh wagon.



Figure 4 Transferring a 500 lb subsample from the weigh wagon into a tote sack.



Figure 5 500 lb samples of each variety loaded and ready to go.