

2013 Montana Barley Crop Quality Report

K. Hertsgaard, J.M Barr and P.B. Schwarz - Institute of Barley and Malt Sciences, NDSU, Fargo, ND 58108

This is the fourth annual Regional Crop Quality Report for barley grown in Montana. Collection of barley samples was coordinated by the U.S. Department of Agriculture (USDA) Agriculture Statistics Services in Montana and North Dakota. Grain quality evaluations were performed by the Department of Plant Sciences at North Dakota State University and grade information was determined by the North Dakota Grain Inspection Service Inc. The Montana Wheat and Barley Committee provided financial support.

Production and Varieties

According to the USDA National Agricultural Statistics Service (NASS)

Small Grains Summary of September 30th, 830 thousand acres were harvested in Montana. This represents 84 percent of acres seeded.

Production was 44.8 million bushels (976 thousand metric tons) with average yields of 54 bu/acre (2.9 kg/ha). This is an increase of 40 thousand planted acres from 2012, and a 7 percent increase in production. Malting varieties were planted on approximately 66 percent of acres.

The USDA-NASS variety survey showed two-rowed malting barley varieties AC Metcalfe and Hockett to be the most widely grown varieties, accounting for 30 and 11 percent of sown acres, respectively. Moravian 115 and Conrad combined accounted for

about 13 percent of seeded acres. Tradition, a six-rowed barley variety, made up about 3 percent of barley acres while feed and forage varieties accounted for 25 percent.

Materials and Methods

During harvest a total of 75 samples weighing between 1 and 2 pounds were collected from farms and grain elevators in selected counties in Montana. The number of samples was determined from projected barley production and the objective was to collect a representative number of samples from each county within the survey region. Two- and six-rowed samples were differentiated by varietal identification by the grower or kernel morphology. The survey was conducted in

Montana Two-Rowed Malting Barley Quality Snapshot

- > A total of seventy-five barley samples (64 two-rowed malting barley) from 17 counties in Montana were collected at harvest
- > State averages for protein (11.6%), test weight (48.6 lb/bu) and plump kernels (88%) indicated good quality
- > Average protein levels ranged 11.2% in the northwest to 12.1% in the west
- > Test weights ranged from 45.6 lb/bu in the south to 53.6 lb/bu in central MT
- > All districts observed kernel plumpness above 83%
- > High quality was observed throughout the 2013 crop

Table 1. 2013 Barley Production Districts in Montana

District	Production	Counties
East (East and Northeast combined)	Two-rowed and Six-rowed malting, irrigated, Feed	East: Dawson, Richland, Northeast: Daniels, Roosevelt, Sheridan, Valley
Central	Two-rowed malting, dryland and irrigated	Judith Basin, Fergus
Northwest	Two-rowed malting, dryland	Glacier, Toole, Pondera
South	Two-rowed malting, dryland and irrigated	Yellowstone, Treasure, Big Horn
West	Two-rowed malting, dryland and irrigated, Feed	Lewis & Clark, Cascade, Teton

Table 2. Montana State and District Two-rowed Barley Crop Quality

State and District	Samples	Moisture Content (%)	Test Weight (lb/bu) (kg/hl)		1000 Kernel Weight (g)	Protein Content (%)	Color	Kernel Assortment % Plump % Thin	
Northwest	29	10.7	49.3	63.5	43.2	11.2	3	88	2
West	15	9.9	48.6	62.6	43.3	12.1	3	89	2
Central	4	9.2	53.6	69.0	45.7	11.8	3	95	1
East	6	12.0	47.3	60.9	40.1	11.3	6	87	2
South	10	10.9	45.6	58.7	39.0	10.9	4	83	2
State Average		10.6	48.6	62.6	42.4	11.6	3	88	2

Table 3. Montana Barley Crop Quality

Barley Type	Samples	Moisture Content (%)	Test Weight (lb/bu) (kg/hl)		1000 Kernel Weight (g)	Protein Content (%)	Color	Kernel Assortment % Plump % Thin	
Six-rowed malt barley	9	12.5	48.7	62.7	39.3	12.0	3	87	2
Two-rowed malt barley	64	10.6	48.6	62.6	42.4	11.6	3	88	2
Feed barley	3	10	48.3	62.2	39.9	12.8	2	65	4

Table 4. Montana Barley Grade

District	Dockage	Grade*	Test Weight (lb/bu) (kg/hl)		Suitable Malting Types (%)	Sound Barley** (%)	Skinned and Broken Kernels (%)	Thin Barley (%)
Northwest	0.9	U.S. No. 2 Two-Rowed Malting Barley	49.2	63.3	100.0	100.0	3.9	1.9
West	0.5	U.S. No. 2 Two-Rowed Malting Barley	48.8	62.8	100.0	100.0	2.2	2.2
Central	0.4	U.S. No. 2 Two-Rowed Malting Barley	53.9	69.4	100.0	100.0	5.5	0.9
South	0.4	U.S. No. 2 Barley	45.4	58.4	100.0	100.0	2.1	3.3
East Two-rowed	0.2	U.S. No. 1 Barley	47.2	60.8	100.0	99.8	1.1	2.9
East Six-rowed	0.4	U.S. No. 1 Six-Rowed Malting Barley	48.9	62.9	100.0	100.0	3.6	2.9

*Grade specifications provided in United States of Agriculture Grain Inspection, Packers and Stockyard Administration Federal Grain Inspection Service Grain Inspection Handbook, Book II, Barley, August 9, 2004.

**Injured-by-frost kernels and injured-by-mold kernels are not considered damaged or considered against sound barley.

six districts of the state (Table 1). Samples from the northeast district were combined with the east district for analysis and reporting purposes.

Feed barley varieties were analyzed separately from the malting barley varieties.

Sixty-four two-rowed malting variety samples were collected in all districts surveyed. Eight six-rowed samples were collected in the eastern district of Montana. Feed barley samples were collected from the east and west districts.

Upon receipt, the initial barley moisture content was recorded and samples in excess of 13.5 percent were allowed to air-dry prior to subsequent analyses. A portion of each sample was removed and bulked to create regional composite samples. Prior to further analysis, all samples collected were cleaned on a Carter dockage tester. Test weight, protein, kernel assortment, 1,000 kernel weight, and kernel color were determined for each of the dockage free samples. Color (brightness) is determined with a Hunter colorimeter. Color is ranked on a scale of 1 to 10, with 1 being bright barley. Scores of

3 and higher indicate progressively darker, more weathered, grain.

The values for state and district averages represent the average of all individual sample results for the respective quality parameters. State and district averages were calculated for both two- and six-rowed barley. The district composite samples were submitted to the North Dakota Grain Inspection Service Inc. for determination of grade. Dockage content was determined on each district composite sample.

Quality of Two-Rowed Malting Barley Varieties

State and district averages of individual two-rowed malting barley samples are presented in Table 2.

Northwest District

The northwest district of Montana produced barley with good protein, test weight and kernel plumpness. The average protein was 11.2 percent. Average test weight was 49.3 lb/bu (63.5 kg/hl) and the kernel assortment was a plump 88 percent.

West District

The highest district average protein level was observed in the west district (12.1 percent). Average test weight was 48.6 lb/bu (62.6 kg/hl) and kernel plumpness was a plump 89 percent.

Central District

Samples of barley from the central district presented Montana's highest average test weight, 1000 kernel weight and kernel plumpness. The average test weight was 53.6 lb/bu (69.0 kg/hl). One thousand kernel weight was 45.7 grams and the kernel assortment was 95 percent plump.

East District

Two-rowed samples in the east had an average protein level of 11.3 percent, test weight of 47.3 lb/bu (60.9 kg/hl) and kernel plumpness of 87 percent.

South District

The south district observed the lowest averages for protein, test weight and kernel plumpness. The district average protein was 10.9 percent, test weight was 45.6 lb/bu (58.7 kg/hl) and the kernel assortment was 83 percent plump.

Quality of Six-Rowed Malting Barley Varieties

Samples of six-rowed malting barley were collected in the east district of Montana (Table 1). These displayed an average protein level of 12.0 percent, test weight of 48.7 lb/bu (62.7 kg/hl) and kernel plumpness of 87 percent (Table 3).

Feed Barley

Three feed barley samples were collected and analyzed (Table 3). The samples average protein was 12.8 percent and the test weight was 48.3 lb/bu (62.2 kg/hl).

Barley Grades

Two-rowed barley district composite samples had grades ranging from U.S. No. 2 Two-Rowed Malting Barley down to U.S. No. 2 Barley (Table 4). Grades lower than U.S. No. 1 Two-Rowed Malting Barley were the result of test weights below 50.0 lb/bu and skinned and broken kernels above 4.0 percent. The majority of samples received the grade of U.S. No. 2 Two-Rowed Malting Barley. The composite six-rowed barley sample received the grade of U.S. No. 1 Six-Rowed Malting Barley.

References

Small Grains 2013 Summary (September 2013)
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