SPRING BARLEY VARIETY PERFORMANCE EVALUATION

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The variety performance evaluations conducted by the Wyoming Agricultural Experiment Station are a continuous and ongoing program. In cooperation with the Western Spring Barley Nursery and private seed companies, a wide range of germplasm is evaluated each year.

Advanced yield trials are grown at Research and Extension Centers in Powell, Sheridan and Torrington. During 2004 a trial was also conducted on the Padlock Ranch near Dayton, Wyoming. These trials are situated to best represent the major spring small grain growing areas in Wyoming.

A preliminary yield trial is conducted at Powell in conjunction with the advanced yield trial. This trial is used to screen new germplasm received each year. Varieties selected from this trial are then tested in the advanced trials.

The objective of these performance evaluations is to evaluate experimental germplasm for release as varieties for production in Wyoming. Growers should identify varieties which perform well in their area and then conduct on-farm variety trial evaluations using their management practices.

MATERIALS AND METHODS

The experimental design of all trials was 3 replications of a randomized complete block. Measurements included heading date, height, lodging, grain yield, test weight, and kernel plumpness. Data were analyzed using SAS procedures for analysis of variance.

UW-REC (POWELL): The experiment was located at the University of Wyoming Research and Extension Center in Powell, Wyoming during 2004. The soil, a Garland clay loam (fine, mixed, mesic; Typic Haplargid); had a cropping history of: 2003, beets; 2002, barley; and 2001, beans. The soil was fertilized for a yield goal of 100 bushels of grain per acre. Fertilizer was applied on 15 March, at the rate of 120 pounds N and 50 pounds P_2O_5 in the form of ammonium nitrate (34-0-0) and diammonium phosphate (11-52-0). The soil in the study area was prepared for planting by fall plowing, roller harrowing, and leveling. On 6 April, 40 barley varieties were established in plots 7.3 by 20 feet using double disk openers set at a row spacing of 7 inches. The seeding depth was 1.5 inches, and the seeding rate was 100 pounds of seed per acre. Weeds were controlled by a post application of a tank mixture of bromoxynil and MCPA (Bronate) and tralkoxydim (Achieve) broadcast at 0.50, 0.50, and 0.18 pounds active ingredient per acre. Furrow irrigations were 16 April, 01 June, 25 June, and 14 July. Subplots, 5.3 by 8 feet, were harvested on 30 August, using a Wintersteiger plot combine.

PADLOCK RANCH (DAYTON): The experiment was located at the Padlock Ranch near Dayton, Wyoming during 2004. The soil, a Nuncho-Emigrant Association (fine, montmorillonitic, mesic; Aridic Argiustolls), had a cropping history of: 2003, fallow; and 2002, small grains. The soil in the

study area was prepared for planting by spring chiseling and rotor-tilling. Fertilizer was applied at the rate of 100 pounds N per acre in the form of ammonium nitrate (34-0-0). Twelve barley varieties were established in plots 5 by 20 feet using double disk openers set at a row spacing of 8 inches on 13 April. The seeding depth was 2 inches, and the seeding rate was 100 pounds of seed per acre. The study site is sprinkler irrigated. Subplots, 5 by 15 feet, were harvested on 25 August, using a Wintersteiger plot combine.

UW-REC (SHERIDAN): The experiment was located at the University of Wyoming Research and Extension Center in Sheridan, Wyoming during 2004. The soil, a Wyarno clay loam (fine, montmorillonitic, mesic; Ustollic Haplargid), had a cropping history of: 2003, fallow; 2002, small grains; and 2001, fallow. The soil in the study area was prepared for planting by fall chiseling, followed by spring chiseling and roller harrowing. Twelve barley varieties were established in plots 5 by 20 feet using double disk openers set at a row spacing of 8 inches on 25 March. The seeding depth was 2.5 inches, and the seeding rate was 50 pounds of seed per acre. This location is a dry-land site with no irrigation. Rainfall during the growing period (1 April -31 July) was 5.65 inches. Subplots, 5 by 15 feet, were harvested on 25 August, using a Wintersteiger plot combine.

UW-REC (TORRINGTON): The experiment was located at the University of Wyoming Research and Extension Center in Torrington, Wyoming during 2003. The soil was fertilized for a yield goal of 100 bushels of grain per acre. Twelve barley varieties were established in plots 5 by 20 feet using double disk openers set at a row spacing of 9 inches on 17 April. Weeds were controlled by a post application of bromoxynil and MCPA (Bronate Advanced) broadcast at 0.40, and 0.40 pounds active ingredient per acre. Subplots, 5 by 15, were harvested on 11 August, using an Almaco plot combine. Data was not reported due to poor yields resulting from lack of irrigation water and aphid infestation.

Ed Reed Farm (CLARK): The experiment was located at Ed Reed's Farm in Clark, Wyoming. The purpose of the study was to evaluate varieties for resistance to net blotch under sprinkler irrigation. The disease never manifested itself until late in the season. The study area did not receive Cerone. And resulted in severe lodging across all entries.

ACKNOWLEDGMENTS

Appreciation is extended to the Padlock Ranch, Ed Reed and the Powell, Sheridan and Torrington Research and Extension Center staff for their assistance during 2004.

Table 1. Agronomic performance of spring barley genotypes grown at Powell, WY during 2004.

Variety	Row Type	Grade	Plant height	Heading date	Lodge	Grain yield	Test weight	Plumpness	
								6/64	5.5/64
			inches	Days from Jan. 1	1-9	bu/acre	lb/bu	% above screen	
Malt Use									
94Ab13449	6	M	37	167	1	177	49	98.5	99.6
98Ab12905	6	M	40	167	1	176	47	97.4	99.3
00NZ772	2	F/M	29	184	1	171	50	97.7	99.4
Samish 23	2	F/M	35	178	1	166	50	96.4	99.1
BA 5057(Conrad)	2	M	39	176	1.3	164	50	97.6	99.2
Stander	6	M	39	172	1	162	47	98.4	99.6
98Ab11993	2	M	37	176	1	161	51	98.2	99.4
Moravian 37	2	M	33	177	1.3	160	49	97.8	99.4
WA 8569-99	2	F/M	36	176	1.3	159	49	96.8	99.2
WA 9701-99	2	F/M	38	176	1	159	48	96.5	99.1
MT981091	2	F/M	35	173	1	158	50	97.5	98.8
6B99-9170	6	M	40	172	1	157	49	98.8	99.7
WA 10497-97	2	F/M	37	176	1.7	156	50	98.6	99.5
Morex	6	M	41	169	3.7	154	46	96.4	99.1
MT970229	2	F/M	41	176	1	153	51	99.3	99.7
2B99-2657	2	M	38	177	3	149	43	92.2	97.7
6B98-9022	6	M	38	172	1	149	49	99.4	99.9
MT981238	2	F/M	37	172	1.3	146	52	98.6	99.4
99NZ102	6	F/M	34	172	1	146	45	97.7	99.5
Merit	2	M	40	179	2	144	43	93.8	98.1
2B97-4004	2	M	38	176	1	143	48	96.0	99.0
B1202	2	M	41	176	2	143	49	98.1	99.7
WA 10701-99	2	F/M	35	176	1.7	141	50	97.9	99.3
WA 8601-97	2	F/M	40	176	1	140	51	98.3	99.6
PB1-97-2R-7010	2	F/M	38	178	1	138	50	99.3	99.8
Radiant (98-NZ 223)	2	F/M	37	176	2	138	49	96.4	99.0
2B99-2316	2	M	34	176	1.7	137	48	95.4	98.7
Harrington	2	M	39	176	3	133	49	97.3	98.9
ND16301	6	M	40	172	1	130	48	98.7	99.6
Feed Use									
Steptoe	6	F	40	169	1	171	48	98.9	99.8
UT00B1718-773	6	F	41	172	1	159	49	99.0	99.7
PB1-95-2R-522	2	F	36	176	1	157	52	98.8	99.6
YU 598-043	2	F	36	177	1	154	47	97.7	99.0
YU 597-432	2	F	40	176	1	152	49	98.2	99.3
Baronesse	2	F	38	176	1.3	149	49	97.7	99.4
98ID251	2	F	40	176	1	149	52	99.1	99.7
ND19854	2	F	37	168	1	146	49	98.9	99.6
UT97B1480-1534	6	F	40	165	1	146	48	97.2	99.3
UT00B1712-627	6	F	38	169	1	144	47	99.0	99.6
BZ 598-036	2	F	40	176	3	128	50	97.7	99.3
Mean			38	174	1.4	152	49	97.7	99.3
LSD $_{0.05}$			3.8		0.98	18.5	2.5	1.7	0.6
CV%			6.1		43.5	7.5	3.2	1.1	0.4

NS=non significant
Lodge= 1 upright, 9 flat.
M=Malting, F=Feed

Table 2. Agronomic performance of spring barley genotypes grown at Padlock Ranch, Dayton, WY during 2004.

Variety	Row Type	Grade	Plant height	Heading date	Grain yield	Test weight	Plumpness	
							6/64	5.5/64
			inches	Days from Jan. 1	bu/acre	lb/bu	% above screen	
Malt Use								
BA 5057	2	M	36	182	103	49	87.4	97.2
MT 970229	2	F/M	37	177	103	50	88.6	97.3
Radiant	2	F/M	36	180	102	47	67.0	90.5
2B97-4004	2	M	37	178	101	43	67.8	92.0
Merit	2	M	37	183	100	44	63.6	89.9
B1202	2	M	37	180	96	47	90.4	97.7
98Ab12905	6	M	35	171	96	43	76.3	93.0
Moravian 37	2	M	30	184	86	46	83.7	95.8
Feed Use								
Steptoe	6	F	35	169	105	42	84.5	95.6
PBI-95-2R-522	2	F	33	179	104	49	83.9	95.8
UT97B114801-1534	6	F	36	166	97	46	78.6	95.3
Baronesse	2	F	34	182	94	46	70.7	92.5
Mean			35	178	99	46	78	94
$LSD_{0.05}$			3	4	NS	3.0	12.1	4.3
CV%			5.8	1.4	10.3	4.5	10.7	3.1

NS=non significant
M=Malting, F=Feed

Table 3. Agronomic performance of spring barley genotypes grown at Sheridan, WY during 2004.

Variety	Row Type	Grade	Plant height	Heading date	Grain yield	Test weight	Plumpness	
							6/64	5.5/64
			inches	Days from Jan. 1	bu/acre	lb/bu	% above screen	
Malt Use								
Radiant	2	F/M	21	165	60	49	96.4	99.2
2B97-4004	2	M	22	171	55	46	94.5	98.7
BA 5057	2	M	20	183	54	47	96.5	99.1
Merit	2	M	21	185	53	46	94.7	98.6
Moravian 37	2	M	20	192	53	49	97.4	99.2
B1202	2	M	20	175	50	46	95.7	98.7
MT 970229	2	F/M	22	180	50	48	97.5	99.2
98Ab12905	6	M	22	164	47	45	97.0	99.2
Feed Use								
PBI-95-2R-522	2	F	21	187	64	48	95.0	98.7
Baronesse	2	F	21	181	61	48	97.4	99.3
UT97B114801-1534	6	F	23	163	54	46	94.1	98.5
Steptoe	6	F	22	170	54	44	98.1	99.5
Mean			21	176	54	47	96.2	99.0
$LSD_{0.05}$			NS	11	8	2	1.7	0.5
CV%			6.9	4.2	10.5	3.2	1.2	0.4

NS=non significant
M=Malting, F=Feed

Table 4. Agronomic performance of spring barley genotypes grown at Clark, WY during 2004.

Variety	Row Type	Grade	Lodge	Grain yield	Test weight	Plumpness	
						6/64	5.5/64
			1-9	bu/acre	lb/bu	% above screen	
Steptoe	6	F	4.9	108	44	96.2	99.0
BA 5057	2	M	6.3	93	48	95.4	98.7
B1202	2	M	7	80	46	94.9	98.6
Harrington	2	M	6.5	79	46	94.0	98.2
Merit	2	M	5.1	75	48	95.2	98.8
Moravian 69	2	M	8.3	75	44	93.0	98.3
Baronesse	2	F	7.5	73	46	92.6	97.9
Moravian 37	2	M	7.6	71	46	94.3	98.5
Moravian 65	2	M	8.8	62	44	91.1	97.7
Morex	6	M	7.6	51	45	93.1	98.3
Mean			6.9	77	46	94.0	98.4
LSD $_{0.05}$			1.0	15	2.0	2.0	0.6
CV%			14.8	19.1	3.8	2.1	0.6

NS=non significant
Lodge= 1 upright, 9 flat.
M=Malting, F=Feed