

# **SPRING BARLEY VARIETY PERFORMANCE EVALUATION**

**Michael Killen, Powell Research and Extension Center; Roger Hybner, Sheridan Research and Extension Center; Jerry Natchman Torrington Research and Extension Center.**

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 2003 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 2003. The soil, a Garland clay loam (fine, mixed, mesic; Typic Haplargid); had a cropping history of: 2002, dry beans; 2001, barley; and 2000, beans.

The soil was fertilized for a yield goal of 100 bushels of grain per acre. Fertilizer was applied on 10 April, at the rate of 120 pounds N and 50 pounds P<sub>2</sub>O<sub>5</sub> 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 14 April, 36 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 difenzoquat (Avenge) broadcast at 0.50, 0.50, and 0.75 pounds active ingredient per acre. Furrow irrigations were 28 April, 02 June, 18 June, 03 July, and 16 July. Subplots, 5.3 by 8 feet, were harvested on 12 August, using a Wintersteiger plot combine.

PADLOCK RANCH (DAYTON): The experiment was located at the Padlock Ranch near Dayton, Wyoming during 2003. The soil, a Nuncho-Emigrant Association (fine, montmorillonitic, mesic; Aridic Argiustolls), had a cropping history of: 2002, fallow; 2001, small grains. The soil in the study area was prepared for planting by spring chiseling and rototilling. 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 11 April. The seeding depth was 2 inches, and the seeding rate was 100 pounds of seed per acre. The study site is sprinkler irrigated. Data was not reported from the Padlock Ranch due to shatter losses from birds and problems with the irrigation.

UW-REC (SHERIDAN): The experiment was located at the University of Wyoming Research and Extension Center in Sheridan, Wyoming during 2003. The soil, a Wyarso clay loam (fine, montmorillonitic, mesic; Ustollic Haplargid), had a cropping history of: 2002, fallow; 2001, small grains; and 2000, 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 16 April. 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. Subplots, 5 by 15 feet, were harvested using an Almaco plot combine on 25 July.

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.

Growing conditions at Powell during 2003 were exceptional. Data was not reported from the Padlock Ranch due to shatter losses from birds and problems with the irrigation.

#### **ACKNOWLEDGMENTS**

Appreciation is extended to the Padlock Ranch and the Powell, Sheridan and Torrington Research and Extension Center staff for their assistance during 2003.

**Table 1. Agronomic performance of spring barley genotypes grown at the Powell Research and Extension Center, Powell, WY during 2003.**

Variety	Row type	Plant height inches	Heading date day of year	Grain yield bu/a	Test weight lb/bu	Kernel plumpness	
						6/64 %above screen	5.5/64
<b>Malt Use</b>							
Moravian 37	2	22	183	154	52	96	99
WA7194-98	2	31	183	149	53	97	99
WA8601-97	2	30	184	149	53	98	99
98-NZ 223	2	31	185	147	52	91	99
WA10497-97	2	31	184	146	55	98	99
Stander	6	32	185	145	49	96	99
98Ab12905	6	31	173	145	48	95	99
Bob (WA8682-96)	2	30	183	144	52	97	99
6B98-9940	6	33	176	144	50	97	99
B1202	2	30	183	142	51	98	99
2B97-4299	2	29	186	142	52	96	99
98ID242	2	31	185	142	51	97	99
MT960099	2	27	185	140	52	95	99
Samish 23	2	26	185	140	52	93	99
2B98-5312	2	31	186	139	53	95	99
94Ab13449	6	29	172	136	51	96	99
Harrington	2	29	185	134	52	98	99
2B97-4004	2	28	186	133	48	93	98
Merit	2	31	186	132	51	95	99
98Ab12362	6	32	177	132	49	93	99
98-NZ 015	2	27	186	131	50	97	99
95SR316A	2	30	186	129	52	98	99
MT970229	2	29	184	125	54	99	99
97ID1269A	6	31	177	125	49	95	99
6B98-9339	6	30	185	123	49	94	99
Morex	6	35	173	106	48	87	98
<b>Feed Use</b>							
Steptoe	6	31	172	151	49	97	99
MT960228	2	28	186	148	52	97	99
UT95B1216-4087	6	31	177	146	50	90	98
UT97B1480-1632	6	33	171	145	51	91	98
PB1-95-2R-522	2	30	184	144	51	97	99
Baronesse	2	25	184	143	51	98	99
BZ596-189	2	28	184	133	52	98	99
YU598-043	2	25	185	127	50	98	99
UT97B1480-1534	6	30	170	127	50	87	98
YU599-006	6	20	185	115	45	95	99
Mean		29	181	137	51	95	99
LSD <sub>0.05</sub>		4.2	1.6	20.6	2.4	2.0	0.5
CV%		8.7	0.5	9.2	2.9	1.3	0.3

NS = non significant

**Table 2. Agronomic performance of spring barley genotypes grown at the Sheridan Research and Extension Center, Sheridan, WY during 2003.**

Variety	Row type	Heading	Grain	Test	<u>Kernel plumpness</u>	
		date	yield	weight	6/64	5.5/64
		day of year	bu/a	lb/bu	%above screen	
<b>Malt Use</b>						
Merit	2	168	60	49	84	96
98Ab12362	6	170	60	49	82	95
2B97-4004	2	170	59	51	89	98
B1202	2	172	58	51	82	96
95SR316A	2	172	55	48	82	95
MT960099	2	172	54	49	86	98
Moravian 37	2	173	52	48	83	95
<b>Feed Use</b>						
MT960288	2	167	65	47	84	96
Steptoe	6	168	58	49	88	97
Baronesse	2	171	56	49	87	97
UT95B1216-4087	6	173	55	50	83	96
98NZ015	2	175	53	50	78	95
Mean		171	57	49	84	96
LSD <sub>0.05</sub>		NS	NS	NS	NS	2.0
CV%		1.8	11.8	3.4	5.1	1.2

NS = non significant.

**Table 3. Agronomic performance of spring barley genotypes grown at the Torrington Research and Extension Center, Torrington, WY during 2003.**

Variety	Row type	Heading	Plant	Grain	Test	<u>Kernel plumpness</u>	
		date	Height	yield	weight	6/64	5.5/64
		day of year	inches	bu/a	lb/bu	%above screen	
<b>Malt Use</b>							
MT960099	2	176	23	77	46	77	93
95SR316A	2	176	27	72	46	78	92
B1202	2	173	24	69	46	88	97
Moravian 37	2	173	22	65	46	82	94
Merit	2	176	25	64	45	78	93
98Ab12362	6	171	26	64	44	85	96
2B97-4004	2	172	25	63	43	78	93
<b>Feed Use</b>							
UT95B1216-4087	6	170	24	85	45	76	93
Steptoe	6	168	24	79	42	89	97
Baronesse	2	173	23	79	45	82	94
MT960288	2	173	26	77	47	88	96
98NZ015	2	176	22	54	43	74	91
Mean		173	24	71	45	81	94
LSD <sub>0.05</sub>		3.7	2.5	17.1	2.0	6.6	3.0
CV%		1.3	6.0	14.2	2.6	4.8	1.9

NS = non significant.