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 2002 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.

PADLOCK RANCH (DAYTON): The experiment was located at the Padlock Ranch near Dayton, Wyoming during 2002. The soil, a Nuncho-Emigrant Association (fine, montmorillonitic, mesic; Aridic Argiustolls), had a cropping history of: 2001, fallow; 2000, 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. The seeding depth was 2 inches, and the seeding rate was 100 pounds of seed per acre. Subplots, 4.5 by 15 feet, were harvested using a Wintersteiger plot combine.

UW-REC (POWELL): The experiment was located at the University of Wyoming Research and Extension Center in Powell, Wyoming during 2002. The soil, a Garland clay loam (fine, mixed, mesic; Typic Haplargid); had a cropping history of: 2001, dry beans; 2000, barley; and 1999, sugar beets. 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_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 25, April, 42 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 05 May, 05 June, 30, June, 11, July, and 22, July. Subplots, 4.5 by 8 feet, were harvested on 19, 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 2002. The soil, a Wyarno clay loam (fine, montmorillonitic, mesic; Ustollic Haplargid), had a cropping history of: 2001, fallow; 2000, small grains; and 1999, 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. The seeding depth was 2.5 inches, and the seeding rate was 50 pounds of seed per acre.

DAVE HINMAN FARM (WHEATLAND): The experiment was located at the Dave Hinman farm near Wheatland Wyoming during 2002. 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. Subplots were harvested using an Almaco combine.

The lack of moisture at the Sheridan R&E Center and the lack of irrigation water at the Dave Hinman farm reduced grain yields below 10 bushels per acre. There were extreme variations in the plots and the data so the trials were not reported.

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Table 1. Agronomic performance of spring barley genotypes grown at the Padlock Ranch in Dayton, WY during 2002.

Variety	Row type	Heading date	Plant height	Grain yield	Test weight	Kernel plumpness 6/64	Kernel plumpness 5.5/64
		day of year	inches	bu/a	lb/bu	%above screen	
Malt Use							
B1202	2	187	20	61	49	93	99
2B97-4299	2	188	21	61	48	88	98
MT960099	2	186	19	61	48	88	98
Merit	2	188	21	55	47	88	98
Moravian 37	2	186	20	49	50	94	99
92Ab5180	2	182	20	36	40	81	97
Feed Use							
UT95B1216-4087	6	181	24	74	47	94	99
Baronesse	2	186	21	67	50	97	99
ID93AB688	6	181	25	66	47	92	98
MT960288	2	186	19	61	48	88	98
Steptoe	6	180	20	56	45	96	99
Tango	6	181	21	51	43	90	99
$LSD_{0.05}$		1.9	2.8	NS	4.8	NS	NS
Mean		184	21	59	47	92	99

Coefficient of variation =27.6%.

NS = non significant.

Table 2. Agronomic performance of spring barley genotypes grown at Powell, WY during 2002.

Variety	Row type	Plant height	Heading date	Grain[1] yield	Test weight	Kernel plumpness 6/64	Kernel plumpness 5.5/64
		inches	day of year	bu/a	lb/bu	%above screen	
Malt Use							
2B98-5312	2	25	181	108	54	94	99
Harrington	2	27	180	101	53	97	99
2B97-4004	2	27	184	101	52	93	98
981D242	2	26	180	98	53	97	99
95SR316A	2	27	184	97	54	98	99
WA8792-96	6	25	181	97	54	98	99
98NZ223	2	25	180	97	55	91	99
B1202	2	25	181	94	51	97	99
971D1269B	6	28	178	94	52	95	99
98NZ015	2	21	181	94	52	97	99
CDC Copeland	2	28	183	93	54	98	99
CDC Select	2	28	180	93	52	97	99
Moravian 37	2	22	180	92	53	98	99
ND15422	6	28	178	92	50	95	99
98Ab12362	6	27	178	88	50	90	98
MT970116	2	28	178	87	52	97	99
92Ab5180	6	23	179	87	49	94	99
6B98-9940	6	28	178	86	52	96	99
2B97-4299	2	24	182	86	51	96	99
Merit	2	25	182	85	50	92	98
94Ab13449	6	25	176	85	52	95	98
WA8682-96	2	24	184	85	53	96	99
6B98-9339	6	26	179	84	52	91	98
BCD 47	2	21	181	82	52	96	99
98Ab12905	6	26	177	81	50	96	99
TR166	2	25	181	81	51	98	99
95SR149C	2	25	184	79	49	93	98
TR169	2	25	182	77	51	95	99
Morex	6	30	178	73	50	97	99
Stander	6	25	179	71	52	96	98
Feed Use							
Steptoe	6	24	177	98	49	97	99
Tango	6	25	176	97	52	84	97
WA10147-96	2	23	184	97	53	97	99
BZ594-20	2	25	179	97	54	98	99
ID93AB688	6	26	178	96	50	87	98
Baronesse	2	24	182	95	53	97	99
BZ596-117	2	25	179	93	55	96	98
UT95B1216-4087	6	25	179	91	50	93	98
PB1952R-522	2	24	180	89	54	95	99
MT970116	2	28	178	87	52	97	99
PB1972R-7090	2	23	180	77	55	96	99
MT960099	2	21	183	74	52	86	98
$LSD_{0.05}$		3.0	3.1	21.6	2.4	4.9	NS
Mean		25	180	90	52	95	99

[1]Coefficient of variation = 11.8%.
NS = non significant