

## **SPRING WHEAT VARIETY PERFORMANCE EVALUATION**

Lyle R. Bjornestad, Powell Research and Extension Center; Mike 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 Uniform Hard Red Spring Wheat 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 small grains 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 the new germplasm received each year. Varieties selected from this trial are then tested in the advanced trials conducted throughout Wyoming.

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, plant height, lodging, grain yield, and test weight. 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 fall chiseling and rototilling. Fertilizer was applied at the rate of 100 pounds N per acre in the form of ammonium nitrate (34-0-0). Ten wheat 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<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 spring plowing, roller harrowing and leveling. On 25, April, 42 wheat 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, 0.94 pounds active ingredient per acre on 25 May. Furrow irrigations were 05 May, 05 June, 30, June, 11, July, and 22, July. Subplots, 4.5 by 8 feet, were harvested on 20, 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. Ten wheat 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. Twelve spring wheat 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.

#### **ACKNOWLEDGMENTS**

Appreciation is extended to Dave Hinman and the Powell, Sheridan and Torrington Research and Extension Center staff for their assistance during 2002.

**Table 1. Agronomic performance of hard red spring wheat genotypes grown at Padlock Ranch in Dayton, WY during 2002.**

Variety	Plant height inches	Heading date days from Jan 1	Grain yield <sup>□</sup> bu/a	Test weight lb/bu
Verde	24	184	44	61
MN97063	26	183	41	62
WA7899	23	192	41	63
McNeal	22	180	39	60
FA900-720	21	185	38	64
Stoa	25	183	37	62
N99-0010	22	185	36	63
N97-0117	19	180	32	61
ID00560	23	180	28	54
ND740	24	191	25	58
LSD <sub>0.05</sub>	NS	NS	NS	NS
Mean	23	184	36	61

<sup>□</sup>Coefficient of variation = 32.3%.

NS = non significant.

**Table 2. Agronomic performance of hard red spring wheat genotypes grown at Powell, WY during 2002.**

Variety	Plant height inches	Heading date days from Jan 1	Grain <sup>□</sup> yield bu/a	Test weight lb/bu
WA007914	27	177	71	60
N980328	26	175	66	62
01M96	26	179	62	63
ID00560	24	177	62	61
MT9929	25	171	60	62
BW306	30	175	58	60
Verde	24	177	57	61
N980326	25	174	57	62
McNeal	28	179	56	61
MN97695-4	24	175	53	61
01M97	26	171	53	62
01M989	26	173	52	60
01M88	23	170	52	63
N99-0107	28	175	52	63
WA7899	25	176	50	61
ND741	26	178	50	61
MN97063	23	176	48	60
Stoa	32	176	47	61
Keene	34	178	47	61
2375	28	179	46	64
N99-0010	24	177	46	63
CA-901-712	24	170	46	64
N980286	25	176	46	61
ND750	28	176	45	60
NDSW0246	34	178	45	61
N97-0117	23	175	45	65
N96-0050	25	176	43	64
SD3641	26	171	42	61
SD3641	26	171	42	61
HY469	25	174	42	62
BW313	33	171	41	61
ND740	28	175	41	62
ND744	27	175	39	63
MT9874	27	179	36	59
SD3540	27	172	34	62
MN98389-A	25	176	34	61
Chris	33	180	33	59
ND739	29	174	28	63
FA900-720	26	179	27	63
SD3546	31	174	26	61
Marquis	32	180	24	60
SD3533	28	170	21	62
SD3623	31	170	20	60
LSD <sub>0.05</sub>	2.9	3.1	13.2	2.3
Mean	27	175	45	62

<sup>□</sup>Coefficient of variation = 18.5%