

## **SPRING OAT 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 Northwestern States Oats 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 trial sites are selected 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 new germplasm received each year. Varieties selected from this trial are then tested in the advanced trials conducted throughout Wyoming. The numbered varieties tested during 2002 are experimental germplasm lines.

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 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). Ten oat 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 1998 small grains. 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, spring roller harrowing and leveling. On 25, April, 30 oat 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 bromoxynil and MCPA (Bronate) broadcast at 0.50 and 0.50, pounds active ingredient per acre. Furrow irrigations were, 05 May, 09 June, 01 July 12, July and 24 July. Subplots, 4.5 by 8 feet, were harvested on 26, 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 oat 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. Ten oat 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. High winds at the Padlock Ranch during late June and early July created an irrigation gradient decreasing yields on part of the trial and increasing variability.

### **ACKNOWLEDGMENTS**

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**Table 1. Agronomic performance of oat genotypes grown at the Padlock Ranch in Dayton WY during 2002.**

Variety	Plant height	Heading date	Grain <sup>¶</sup> yield	Test weight
	inches	day of year	bu/a	lb/bu
95AB10854	20	190	42	38
Monida	23	187	41	34
96AB8796	19	185	41	33
Otana	29	185	35	36
91AB406	21	185	28	29
Powell	18	188	23	25
ABSP19-9	22	187	17	31
95Ab12743	8	184	16	23
Killdeer	24	184	14	22
95AB12584	20	184	7	14
LSD <sub>0.05</sub>	3.4	2.7	NS	NS
Mean	21	1	21	25

<sup>¶</sup>Coefficient of variation = 61%

NS = non significant.

**Table 2. Agronomic performance of oat genotypes grown at Powell, WY during 2002.**

Variety	Plant height	Heading date	Grain <sup>‡</sup> yield	Test weight
	inches	day of year	bu/a	lb/bu
90AB1322	23	181	124	42
96AB8796	22	180	119	40
98AB6491	23	180	119	41
87AB5632	23	180	116	42
ABSP9-2	27	177	119	43
96AB8597	26	182	114	41
Ajay	26	180	110	41
ND930122	24	176	110	41
ABSP19-9	25	182	108	40
95AB12743	21	180	106	40
97AB7571	26	182	105	41
Powell	26	181	104	42
95AB10854	25	184	104	41
Rio Grande	27	177	102	42
91AB406	22	182	101	44
95AB12584	24	177	101	39
94AB5943	24	180	100	41
95AB12661	26	181	99	42
98AB6646	24	181	95	41
OT382	27	180	94	42
UC128	25	176	93	38
Celsia	30	177	90	40
UC125	20	181	90	39
UC129	25	174	88	43
Cayuse	29	177	85	41
Monida	28	180	85	42
Whitestone	32	178	84	42
CDC Pacer	29	180	84	41
91AB502	22	186	82	41
Killdeer	25	176	81	39
Derby	32	179	74	41
CDC Dancer	24	181	72	43
Otana	31	179	71	40
LSD <sub>0.05</sub>	3.9	3.1	21.6	NS
Mean	25	180	98	41

<sup>‡</sup>Coefficient of variation = 13.1%

NS = non significant