

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 Uniform Northern States Oat 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 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.

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, dry beans; 2002, oats; and 2001, dry 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 P₂O₅, 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 spring leveling. On 7 April, 33 spring 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 a tank mixture of bromoxynil and MCPA (Bronate) broadcast at 0.50 and 0.50 pounds active ingredient per acre on 3 June. Furrow irrigations were 17 April, 4 June, 24 June, and 14 July. Subplots, 5.33 by 8 feet, were harvested on 20 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; 2002, small grains. The soil in the study area was prepared for planting by fall 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). Ten oat 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, 4.5 by 15 feet, were harvested using a Wintersteiger plot combine on 25 August.

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. Ten oat 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. The site 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 using a Wintersteiger combine on 25 August.

UW-REC (TORRINGTON): The experiment was located at the University of Wyoming Torrington Research and Extension Center in Torrington, Wyoming during 2004. Fertilizer was applied at the rate of 100 pounds N and 50 pounds P₂O₅ 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 on 30 March. 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 feet, were harvested using an Almaco combine on 11 August. The trial was affected by lack of steady irrigation water and aphid infestation but not as severely as other small grains at the site.

ACKNOWLEDGMENTS

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

Table 1. Agronomic performance of oat genotypes grown at University of Wyoming, Powell Research and Extension Center, Powell, WY during 2004.

Variety	Plant height	Heading date	Lodging	Grain yield	Test weight
	inches	Days from Jan. 1	1-9	bu/acre	lb/bu
Maverick (90AB1322)	39	176	1	220	34
98AB6491	41	176	1	205	34
Powell	36	180	1	204	34
96AB8597	45	182	1	202	37
Monico (ABSP-9-2)	43	180	1	200	41
95AB12743	41	176	1.3	197	34
Rio Grande	40	174	1	196	36
91AB406	40	176	1	194	38
ABSP-19-9	43	182	1	194	36
ND930122	42	174	1.3	193	37
87AB5632	43	176	1.7	190	35
Whitestone	45	176	1.7	186	39
Ajay	44	180	1.3	182	37
98AB6646	41	181	1	181	35
91AB502	45	176	1	179	35
OT382	47	180	1	179	36
UC128	39	172	1	177	35
95AB12584	41	174	1	174	36
Monida	43	182	2	174	36
95AB12661	41	182	1	172	37
Killdeer	46	176	1.7	172	35
96AB8796	39	180	1	169	36
97AB7571	42	180	1.3	165	35
Cayuse	48	176	1	165	36
95AB10854	40	182	1	163	37
Otana	50	176	1.7	161	36
94AB5943	41	176	1	158	37
Derby	48	180	1.3	158	35
CDC Pacer	47	176	1	155	36
UC129	40	172	1	155	35
UC125	33	176	1	152	36
Celsia	48	176	1	146	33
CDC Dancer	39	182	1	132	34
Mean	42	178	1.2	177	36
LSD _{0.05}	4		0.6	25	2
CV%	5.5		29.9	8.7	4.0

NS=non significant

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

Variety	Plant height	Heading date	Grain yield	Test weight
	inches	Days from Jan. 1	bu/acre	lb/bu
98AB6491	40	179	172	38
Powell	34	183	160	36
96AB8796	35	182	143	38
Maverick	37	179	141	38
96AB12584	38	178	128	36
Monico	42	179	126	43
96AB8597	40	183	121	35
95AB12661	40	180	120	39
Monida	41	183	110	36
Otana	47	178	77	35
Mean	39	181	130	37
LSD _{0.05}	4	2	29	5
CV%	6.7	0.8	13.1	7.1

NS=non significant

Table 3. Agronomic performance of oat wheat genotypes grown at University of Wyoming, Sheridan Research and Extension Center, Sheridan, WY during 2004.

Variety	Plant height	Heading date	Grain yield	Test weight
	inches	Days from Jan. 1	bu/acre	lb/bu
98AB6491	24	167	74	32
Monida	29	169	62	34
96AB8597	26	167	61	34
Maverick	22	168	55	35
Powell	22	168	53	36
96AB12584	26	164	52	34
Monico	24	166	50	40
95AB12661	25	167	46	34
Otana	35	165	44	34
96AB8796	21	168	37	35
Mean	25	167	53	35
LSD _{0.05}	1.5	2	12	2
CV%	4.0	0.9	15.2	4.1

NS=non significant

Table 4. Agronomic performance of oat genotypes grown at University of Wyoming, Torrington Research and Extension Center, Torrington, WY during 2004.

Variety	Plant height	Heading date	Grain yield	Test weight
	inches	Days from Jan. 1	bu/acre	lb/bu
Maverick	21	172	136	31
96AB8796	22	172	135	31
Powell	21	172	128	32
96AB12584	24	170	128	32
98AB6491	23	172	126	31
Monida	24	174	121	30
95AB12661	23	173	120	32
96AB8597	24	172	110	29
Otana	27	172	104	30
Monico	22	172	62	29
Mean	23	172	117	31
LSD _{0.05}	1	1	15	1
CV%	3.9	0.3	8.7	3.3

NS=non significant