# 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 2003 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 2003. The soil, a Garland clay loam (fine, mixed, mesic; Typic Haplargid), had a cropping history of: 2002, dry beans; 2001, small grains; and 2000, fallow. 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 spring leveling. On 15 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 2 June. Furrow irrigations were 24 April, 03 June, 18 June, 03 July, and 17 July. Subplots, 5.33 by 8 feet, were harvested on 19 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 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 oat 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. Subplots, 4.5 by 15 feet, were harvested using a Wintersteiger plot combine on 5 August. Losses from shattering were significant.

UW-REC (SHERIDAN): The experiment was located at the University of Wyoming Research and Extension Center in Sheridan, Wyoming during 2003. The soil, a Wyarno clay loam (fine, montmorillonitic, mesic; Ustollic Haplargid), had a cropping history of: 2002, fallow; 2001, 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 on 16 April. The seeding depth was 2.5 inches, and the seeding rate was 50 pounds of seed per acre. Subplots, 5 by 15 feet, were harvested using an Almaco combine on 25 July.

UW-REC (TORRINGTON): The experiment was located at the University of Wyoming Torrington Research and Extension Center in Torrington, Wyoming during 2003. Ten oat 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 at0.40 and 0.40 pounds active ingredient per acre. Subplots, 5 by 15 feet, were harvested using an Almaco combine on 5 August.

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

| Variety | Plant height | Heading date | Grain yield | Test weight |
|---|---|---|---|---|
| | inches | day of year | bu/a | lb/bu |
| 98AB6491 | 33 | 182 | 222 | 33 |
| 96AB8796 | 33 | 183 | 210 | 37 |
| 90AB1322 | 33 | 182 | 205 | 34 |
| 87AB5632 | 36 | 182 | 202 | 36 |
| 96AB8597 | 40 | 184 | 201 | 35 |
| 95AB12661 | 37 | 182 | 198 | 37 |
| Rio Grande | 35 | 179 | 197 | 41 |
| 94AB5943 | 33 | 182 | 193 | 37 |
| OT382 | 42 | 181 | 193 | 37 |
| ABSP9-2 | 40 | 182 | 191 | 39 |
| Monida | 37 | 178 | 189 | 39 |
| 95AB12743 | 36 | 181 | 188 | 34 |
| 98AB6646 | 35 | 184 | 188 | 37 |
| 91AB406 | 34 | 182 | 187 | 38 |
| ND930122 | 35 | 181 | 185 | 36 |
| ABSP19-9 | 36 | 182 | 184 | 38 |
| UC125 | 32 | 183 | 184 | 34 |
| 91AB502 | 37 | 182 | 184 | 34 |
| 97AB7571 | 40 | 182 | 179 | 35 |
| Ajay | 42 | 182 | 177 | 37 |
| 95AB10854 | 35 | 184 | 170 | 38 |
| Powell | 32 | 181 | 168 | 36 |
| CDC Pacer | 43 | 183 | 166 | 37 |
| Whitestone | 41 | 183 | 165 | 38 |
| 95AB12584 | 35 | 178 | 164 | 37 |
| Killdeer | 41 | 181 | 162 | 35 |
| UC128 | 34 | 177 | 161 | 34 |
| Celsia | 45 | 182 | 149 | 33 |
| Otana | 40 | 181 | 149 | 35 |
| Derby | 48 | 181 | 139 | 36 |
| UC129 | 33 | 175 | 136 | 34 |
| CDC Dancer | 34 | 182 | 132 | 36 |
| Cayuse | 41 | 182 | 130 | 36 |
| Mean | 37 | 181 | 177 | 36 |
| $LSD_{0.05}$ | 5.0 | 1.5 | 32.3 | 2.4 |
| CV% | 8.2 | 0.5 | 11.2 | 4.1 |

NS = non significant

**Table 2. Agronomic performance of oat genotypes grown at the Padlock Ranch in Dayton**

**WY during 2003.**

| Variety | Plant height | Heading date | Grain yield | Test weight |
|---|---|---|---|---|
| | inches | day of year | bu/a | lb/bu |
| Otana | 45 | 180 | 76 | 37 |
| 96AB8796 | 33 | 181 | 75 | 40 |
| ABSP19-9 | 44 | 183 | 61 | 35 |
| 95AB12584 | 40 | 179 | 59 | 37 |
| 95Ab12743 | 36 | 178 | 58 | 40 |
| Powell | 40 | 182 | 55 | 35 |
| 91AB406 | 37 | 181 | 52 | 37 |
| 95AB10854 | 39 | 186 | 51 | 29 |
| Killdeer | 39 | 178 | 36 | 34 |
| Monida | 45 | 179 | 30 | 31 |
| Mean | 40 | 181 | 55 | 35 |
| $LSD_{0.05}$ | NS | 3.8 | NS | 5.3 |
| CV% | 12.0 | 1.2 | 32.1 | 8.7 |

NS = non significant.

**Table 3. Agronomic performance of oat genotypes grown at the University of Wyoming, Sheridan Research and Extension Center, Sheridan, WY during 2003.**

| Variety | Heading date | Grain yield | Test weight |
|---|---|---|---|
| | day of year | bu/a | lb/bu |
| 95Ab12743 | 173 | 72 | 32 |
| 95AB12584 | 171 | 71 | 35 |
| ABSP19-9 | 175 | 71 | 33 |
| Otana | 174 | 70 | 34 |
| Monida | 175 | 63 | 31 |
| 96AB8796 | 174 | 60 | 30 |
| Killdeer | 171 | 57 | 35 |
| 95AB10854 | 178 | 57 | 29 |
| Powell | 174 | 52 | 31 |
| 91AB406 | 173 | 44 | 34 |
| Mean | 174 | 62 | 32 |
| $LSD_{0.05}$ | 1.7 | 12.5 | 2.7 |
| CV% | 0.6 | 11.8 | 4.9 |

NS = non significant.

**Table 4. Agronomic performance of oat genotypes grown at the Torrington Research and Extension Center, Torrington, WY during 2003.**

| Variety | Plant height | Heading date | Grain yield | Test weight |
|---|---|---|---|---|
| | inches | day of year | bu/a | lb/bu |
| 95AB12584 | 30 | 175 | 118 | 36 |
| 96AB8796 | 28 | 177 | 108 | 32 |
| 95AB10854 | 30 | 181 | 101 | 34 |
| 91AB406 | 29 | 177 | 99 | 34 |
| 95Ab12743 | 30 | 176 | 98 | 33 |
| ABSP19-9 | 30 | 178 | 96 | 33 |
| Killdeer | 32 | 175 | 93 | 36 |
| Monida | 33 | 178 | 91 | 33 |
| Powell | 29 | 178 | 77 | 32 |
| Otana | 34 | 177 | 76 | 31 |
| Mean | 31 | 177 | 96 | 34 |
| $LSD_{0.05}$ | 3.4 | 1.1 | NS | 2.9 |
| CV% | 6.4 | 0.4 | 16.6 | 5.1 |

NS = non significant.