MONTANA STATE UNIVERSITY
MONTANA AGRICULTURAL EXPERIMENT STATION

# RESULTS OF AGRONOMIC AND WEED SCIENCE RESEARCH CONDUCTED IN SOUTH CENTRAL MONTANA - 2005

The Annual Report of the Investigations at and Administration of the Southern Agricultural Research Center, Huntley, Montana

http://www.sarc.montana.edu/annualreport/2005/

**PROJECT TITLE:**

Off-Station Winter Wheat Variety Performance Trials in South Central Montana (Exps. 053880, 053881, 053882, 053883, 053884 and 053885). This research is partially supported by the Montana Wheat and Barley Committee.

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**OBJECTIVES:**

To provide wheat growers in south central Montana with a reliable, unbiased, up-to-date source of information that will permit valid comparisons among improved winter wheat varieties. This information should help winter wheat producers in south central Montana select varieties best suited to their particular area and growing conditions.

**METHODS:**

The 2005 off-station winter wheat trials were established under dryland conditions near Forsyth, Molt and Rapelje under conventional summer fallow conditions; Hardin and Lodge Grass under no-till, chemical fallow conditions; and under no-till, irrigation at Huntley (Fig. 1). Each trial contained 24 winter wheat entries (18 cultivars, 6 experimental lines), and was planted using a randomized complete block design with three replications. All entries were seeded at approximately 1 million seeds per acre under dryland conditions (~60 lb/a) and 1.5 million seeds per acre under irrigation (~90 lb/a). Actual seeding rates were calculated from the thousand kernel weight determined for the seed lot of each cultivar (Table 1), and varied from 57 to 86 pounds per acre for the dryland sites and from 85 to 129 pounds per acre under irrigation. Seeding rates were not adjusted for germination. Dryland test plots consisted of a 15-foot, 4-row plot with 14-inch row spacing. Irrigated test plots consisted of a 15-foot, 7-row plot with 7-inch row spacing. All rows of each harvested test plot were trimmed 36 inches and harvested using an experimental plot combine. Information pertaining to the traits and characteristics of the 24 winter wheat entries are provided in Table 2.

Recorded grain yields were adjusted to 13% grain moisture content, and are reported in bushels per acre based on a 60 pound standard bushel weight. Two year (2004-05) and three year (2003-05) yield averages are provided for cultivars tested during previous years. Test weight (pounds per bushel) and grain moisture content (percent) were obtained for each plot using a Dickey-john™ GAC 2100 grain analyzer. Grain protein content (percent) was determined by

near-infrared reflectance by the MSU Cereal Quality Lab for each entry bulked across replications. Reported grain protein values have been adjusted to a 12% grain moisture content. Plant height was measured in inches from the soil surface to the top of the head, excluding the awns if present. Lodging of all cultivars was noted at the irrigated Huntley location during 2005, and recorded on a 0 to 9 scale representing no lodging to all stems lying flat on the ground, respectively. Heading was noted at Huntley when 50% of the heads in a plot had extended above the flag leaf collar. Heading dates were recorded in Julian days (number of days from January 1) for statistical purposes. Corresponding calendar dates also are presented. Information pertaining to the specific cultural management of each study site is listed at the bottom of their respective data table (Tables 3 through 8).

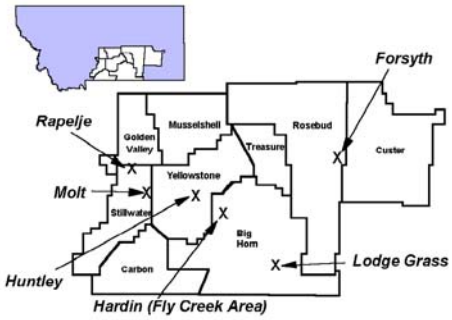


Figure 1. 2005 off-station winter wheat trial locations in south central Montana.

**RESULTS:**

All six of the winter wheat test locations planted in the fall of 2004 received enough fall precipitation to facilitate germination and emergence, but moisture conditions below the top few inches of the soil surface remained marginal for extended growth at the dryland sites. Because of the limited soil moisture and elevated cost of nitrogen fertilizer, most of the dryland cooperators elected not to fall apply nitrogen to the fields where the plots were established. The irrigated site near Huntley was pre-irrigated in late August to saturate the soil profile before the trial was planted. Pre-plant soil testing also revealed more than 150 pounds of $NO_3$-N was present in the top four feet of the soil profile at the Huntley site, negating the need to top dress with additional nitrogen at this location.

Winter wheat stands appeared fairly uniform at all sites before winter weather conditions occurred. All of the sites experienced unusually dry conditions over-winter. Dry conditions prevailed during spring growth until mid-May, when late-spring rains produced above average precipitation for the region during May, June and into early July. Huntley received slightly more than 8 inches of precipitation during this period in 2005, nearly double the 4.5 inches this location normally receives from May 1 through the first week of July. Winter wheat growth was promoted by the additional moisture, greatly enhancing the yield potential of the crop. Hot, dry weather resumed in early July, hastening maturation of the crop. Stripe rust (*Puccinia striiformis*), which adversely impacted winter wheat yields and grain quality in other regions of the state, was present only at trace levels on susceptible cultivars before the crop matured in south central Montana. Overall, winter wheat yields were above average, test weights below average to average, and grain protein content elevated only at sites that apparently possessed higher residual soil nitrogen levels.

Average winter wheat yield under irrigated condition in Huntley during 2005 was 82.1 bu/a (Table 3), about 20 percent less than winter wheat yield for this site the previous year. Heavy rains and the elevated soil nitrogen levels resulted in severe lodging among all 24 entries tested at this location. Yields ranged from 56.5 bu/a for ‘NuSky’ to 101.1 bu/a for ‘Yellowstone’. ‘BigSky’, ‘CDC Falcon’,

'Jagalene', 'Jerry', 'MT1159CL', 'MT0097', 'MT01148', 'MTW01133', 'Neeley', 'Norris', 'Pryor', and 'Vanguard', produced yields between 81.5 bu/a to 99.2 bu/a, which were statistically equal with the highest yielding entry. 'BigSky' hard red winter wheat produced the heaviest test weight during 2005, averaging 62.1 lb/bu, with only 9 of the 24 entries producing test weights heavier than or equal to 60 lb/bu. Grain protein averaged 13.9 percent and ranged from 13.1 to 15.6 percent. Two-year average yield for winter wheat varieties tested during 2004 and 2005 averaged 92.9 bu/a. Three-year average yield for winter wheat varieties tested during 2003 to 2005 averaged 102.8 bu/a with Yellowstone producing the highest average grain yield at 122.2 bu/a. Only two other entries (Neeley and Pryor) produced yields equal to the yields of Yellowstone under irrigation at this site for the past three years.

Average yield under dryland, summer fallow conditions at Rapelje in 2005 was 52.8 bu/a (Table 4), more than 4 times the winter yields produced at this site in 2003, the successful last harvest year at Rapelje. Yields ranged from 36.4 bu/a for CDC Falcon to 68.9 bu/a for Jagalene. Seven entries, Jerry, 'MTCL0306', MTW01133, 'Promontory', Pryor, 'Wahoo', and Yellowstone produced equal yields with that of Jagalene. Average test weight was 55.4 lb/bu. Grain protein averaged 14.6 percent and ranged from 12.8 to 16.2 percent.

Average yield under dryland, summer fallow conditions at Forsyth in 2005 was 49.6 bu/a (Table 5). Grain yields ranged from 66.0 bu/a for Pryor to 37.0 bu/a for MT1159CL. Only BigSky produced a yield, 57.0 bu/a, that was statically equal to the yield of Pryor at this location in 2005. Average test weight was 62.1 lb/bu, with all 24 entries producing test weights heavier than 60 lb/bu. Grain protein averaged 7.6 percent and ranged from 6.3 to 8.7 percent. Two-year average yield for winter wheat varieties tested during 2004 and 2005, averaged 41.5 bu/a. Three-year average yield for winter wheat varieties tested during 2003 to 2005 averaged 46.4 bu/a. No differences in yield were detected between varieties tested for either the pass two or three years.

Agronomic performance of the winter wheat cultivars and experimental lines tested under dryland conditions near Lodge Grass during 2005 is presented in Table 6. This site was severely trampled by cattle during early spring, resulting in damage that the test site never recovered from. Harvested yields were poor. Average grain yield was less than 10 bu/a, with 'Tiber' producing the highest yield of only 15.1 bu/a. Average test weight was 59.4 lb/bu. Grain protein averaged 10.7 percent and ranged from 9.3 to 12.3 percent.

Winter wheat yields under dryland, no-till conditions at the Fly Creek site near Hardin averaged 52.2 bu/a in 2005 (Table 7), and varied from 44.4 bu/a for NuSky to 65.6 bu/a for Pryor. Jagalene, Jerry, MTW01133, Norris, Wahoo and Yellowstone, produced yields between 55.7 bu/a to 62.7 bu/a, which were statistically equal with the highest yielding entry. Average test weight was 59.7 lb/bu, and varied from 56.4 lb/bu for 'Paul' to 63.1 lb/bu for Jagalene. Grain protein levels averaged 14.9 percent among the 24 entries, with 'Rampart' possessing the highest protein level at 16.6 percent.

Average yield under dryland, summer fallow conditions at Molt in 2005 was 50.0 bu/a (Table 8). Yields ranged from 41.2 bu/a for MTW01133 to 59.0 bu/a for Wahoo. Nine entries, 'Genou', Neeley, MT0097, MT01148, Norris, Paul, Promontory, Pryor, and Tiber produced yields between 52.8 and 56.8 bu/ac, statistically equal to the yield of Wahoo. Average test weight was 60.6 lb/bu. Grain protein averaged 10.6 percent and ranged from 9.6 to 12.0 percent.

**SUMMARY:**

Significant differences in yield among cultivars tested in 2005 were obtained under both dryland and irrigated conditions (Tables 9, 10 and 11). Yellowstone produced the highest yield of 56.5 bu/a, averaged across all six of the test locations harvested, and produced the highest yield (101.1 bu/a) among entries tested at the irrigated site near Huntley. Pryor produced yields equal to that of

Yellowstone under irrigation at Huntley, and was the highest yielding entry tested at the five dryland sites (Table 9). Since 2003, experiments representing 14 location-years of testing have uniformly tested 16 cultivars at several dryland and irrigated sites in south central Montana (Table 10). Under both dryland and irrigated conditions, averaged across three years, Pryor hard red winter wheat has been the highest yielding cultivar averaging 65.5 bu/a, with only Yellowstone producing yields equal to those of Pryor under these conditions. Pryor and Yellowstone also have been the highest yielding cultivars tested over three years, 52.1 and 49.9 bu/a, respectively, when comparing only dryland environments (Table 11).

**FUTURE PLANS:**

All six off-station winter wheat variety evaluations will be planted during the fall of 2005 for continuation of the program through 2006.

Table 1. Adjusted seeding rates used to establish 24 winter wheat cultivars tested at six off-station sites in south central Montana during 2005.

| 1/ Cultivar | Thousand Kernel Weight | Seeds per Pound | 2/ Dryland Seeding Rate | | 3/ Irrigated Seeding Rate | |
|---|---|---|---|---|---|---|
| | | | per plot | per acre | per plot | per acre |
| | grams | # | grams | pounds | grams | pounds |
| BigSky | 31.9 | 14,232 | 51.2 | 70 | 76.8 | 105 |
| Bynum (MTCL0318) | 31.9 | 14,232 | 51.2 | 70 | 76.8 | 105 |
| CDC Falcon | 27.9 | 16,272 | 44.8 | 61 | 67.2 | 92 |
| Genou | 27.4 | 16,569 | 43.9 | 60 | 66.0 | 91 |
| Jagalene | 35.7 | 12,717 | 57.3 | 79 | 85.9 | 118 |
| Jerry | 36.1 | 12,576 | 57.9 | 79 | 86.9 | 119 |
| Morgan | 30.2 | 15,033 | 48.4 | 66 | 72.7 | 100 |
| MT1159CL | 39.0 | 11,641 | 62.6 | 86 | 93.9 | 129 |
| Neeley | 35.0 | 12,971 | 56.1 | 77 | 84.2 | 116 |
| Norris (MTCL0316) | 33.0 | 13,758 | 52.9 | 73 | 79.4 | 109 |
| NuSky | 27.1 | 16,753 | 43.5 | 60 | 65.2 | 90 |
| Paul | 26.7 | 17,004 | 42.8 | 59 | 64.3 | 88 |
| Promontory | 34.3 | 13,236 | 55.0 | 76 | 82.6 | 113 |
| Pryor | 25.8 | 17,597 | 41.4 | 57 | 62.1 | 85 |
| Rampart | 29.9 | 15,184 | 48.0 | 66 | 72.0 | 99 |
| Rocky | 29.6 | 15,338 | 47.5 | 65 | 71.2 | 98 |
| Tiber | 33.0 | 13,758 | 52.9 | 73 | 79.4 | 109 |
| Vanguard | 31.8 | 14,277 | 51.0 | 70 | 76.5 | 105 |
| Wahoo | 31.4 | 14,459 | 50.4 | 69 | 75.6 | 104 |
| Yellowstone | 33.6 | 13,512 | 53.9 | 74 | 80.9 | 111 |
| MT0097 | 33.5 | 13,552 | 53.7 | 74 | 80.6 | 111 |
| MT01148 | 37.8 | 12,011 | 60.6 | 83 | 91.0 | 125 |
| MTCL0306 | 28.7 | 15,819 | 46.0 | 63 | 69.1 | 95 |
| MTW01133 | 27.8 | 16,331 | 44.6 | 61 | 66.9 | 92 |

1/ All seed lots treated with 1.0 fl oz of Dividend XL/cwt, and 0.8 fl oz of Cruiser 5FS/cwt.
2/ Equivalent to 1 million seeds per acre on a mass basis.
3/ Equivalent to 1.5 million seeds per acre on a mass basis.

Table 2. Selected characteristics and traits of 24 winter wheat cultivars performance tested at six off-station sites in south central Montana during 2005.

| Cultivar | 1/ Origin | Year of Release | 2/ Market Class | 3/ PVP | 4/ Maturity | 5/ Coleoptile Length | Chaff Color | 6/ Winter Survival | 7/ Straw Strength | Solid Stem | 8/ Disease Resistance | | | | 9/ Quality | | 10/ Clearfield Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Leaf Rust | Stem Rust | Stripe Rust | Dwarf Smut | Milling | Baking | |
| | | | | Yes/No | | | | 1-5 | | Yes/No | | | | | 1-5 | 1-5 | Yes/No |
| Commercial Entries | | | | | | | | | | | | | | | | | |
| BigSky | MSU | 2001 | HRW | Y | M | M | White | 4 | S | N | S | R | S | S | 4 | 3 | N |
| Bynum§ | MSU | ‡ | HRW | - | E | - | Brown | - | - | Y | - | - | R | - | 4 | 4 | Y |
| CDC Falcon§ | CDC | 1999 | HRW | Y | M-L | M | White | 4 | MS | N | R | R | MS | S | 3 | 3 | N |
| Genou | MSU | 2004 | HRW | Y | M | L | White | 2 | MS | Y | - | - | MS | S | 4 | 4 | N |
| Jagalene | AgriPro | 2002 | HRW | Y | E | M | White | 2 | S | N | MR | - | R | S | 3 | 3 | N |
| Jerry | NDSU | 2001 | HRW | N | M-L | M | White | 5 | MS | N | R | R | MR | S | 3 | 3 | N |
| Morgan | WestBred | 1996 | HRW | Y | M | S | White | 5 | MS | N | MS | MR | S | S | 3 | 3 | N |
| MT1159CL§ | MSU | 2004 | HRW | Y | M | M | Brown | 3 | S | N | - | - | R | S | 3 | 3 | Y |
| Neeley | UI | 1980 | HRW | N | M | M | White | 3 | MS | N | S | S | S | S | 3 | 3 | N |
| Norris§ | MSU | ‡ | HRW | - | E | - | Brown | - | - | N | - | - | MS | - | 3 | 3 | Y |
| NuSky | MSU | 2001 | HW | N | M | S | White | 4 | M | N | S | R | VS | S | 5 | 4 | N |
| Paul | MSU | 2003 | HRW | Y | M | M | White | 4 | W | N | S | R | VS | S | 4 | 4 | N |
| Promontory | USU | 1990 | HRW | N | E | M | Brown | 2 | MS | N | S | S | R | R | 5 | 4 | N |
| Pryor | WestBred | 2002 | HRW | Y | M-L | M | White | 3 | S | N | - | S | S | S | 3 | 3 | N |
| Rampart | MSU | 1996 | HRW | N | M | L | Brown | 2 | M | Y | S | MR | R | S | 4 | 4 | N |
| Rocky | AgriPro | 1978 | HRW | N | E | M | White | 2 | MW | N | - | R | MS | S | 3 | 3 | N |
| Tiber | MSU | 1988 | HRW | N | M | M | Brown | 3 | S | N | - | S | VS | S | 3 | 3 | N |
| Vanguard | MSU | 1995 | HRW | N | M | L | White | 2 | MS | Y | S | S | MR | S | 4 | 4 | N |
| Wahoo | UNL | 2000 | HRW | Y | E | M | White | 3 | S | N | MR | MR | MS | S | 3 | 2 | N |
| Yellowstone | MSU | 2005 | HRW | Y | M | S | White | 4 | MS | N | S | S | R | S | 3 | 4 | N |
| Experimental Entries | | | | | | | | | | | | | | | | | |
| MT0097 | MSU | - | HRW | - | M | M | White | 4 | M | N | S | MS | R | S | 3 | 3 | N |
| MT01148 | MSU | - | HRW | - | M | M | White | 3 | S | N | - | - | R | MR | 3 | 3 | N |
| MTCL0306 | MSU | ‡ | HW | - | E | - | White | - | - | N | - | - | S | - | 3 | 3 | Y |
| MTW01133 | MSU | - | HW | - | E | M | White | 3 | MS | N | - | - | VS | S | 3 | 3 | N |

1/ AgriPro=AgriPro Seeds Inc. Berthoud, Colorado; CDC=Crop Development Centre, University of Saskatchewan; MSU=Montana State University-Bozeman; NDSU=North Dakota State University; UI=University of Idaho; UNL=University of Nebraska-Lincoln; USU=Utah State University; WestBred=WestBred LLC (formerly Western Plant Breeders), Bozeman, Montana.

2/ HRW=hard red winter wheat market class; HW=hard white wheat market class.

3/ Indicates a cultivar is protected under the Federal Plant Variety Protection Act of 1970 and amended in 1995.

4/ E=early maturity, M=medium maturity, L=late maturity.

5/ L=long coleoptile length, M=medium coleoptile length, S=short coleoptile length.

6/ Winter survival rated from 1 to 5 where 1=poor and 5=best winter survival, respectively, based on years of observations at Sidney, Moccasin and Williston, North Dakota.

7/ S=strong straw strength, MS=moderately strong straw strength, M=medium straw strength, MW=moderately weak straw strength, W=weak straw strength.

8/ R=resistant, MR=moderately resistant, MS=moderately susceptible, S=susceptible, VS=very susceptible.

9/ Milling and baking quality rated from 1 to 5 where 1=poor and 5=superior quality, respectively.

10/ Signifies a cultivar possessing the Clearfield trait imparting tolerance to Beyond® (imazamox) herbicide.

§ 'Bynum', 'CDC Falcon', 'MT1159CL' and 'Norris' licensed for sale on an exclusive basis by WestBred LLC, Bozeman, Montana.

‡ Release pending.

Table 3. Performance of 24 winter wheat cultivars and experimental lines tested using conventional tillage under no-till, irrigated conditions near Huntley, Montana during 2005. Cultivars listed alphabetically. (Exp. 053880).

| Cultivar | 1/ Grain Yield | | | Test Weight | Grain Moisture | 2/ Grain Protein | Plant Height | 3/ Lodging | Heading Date | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2005 | 2004-05 | 2003-05 | | | | | | Julian | Calendar |
| | bushels per acre | | | lb/bu | % | % | inches | 0-9 | | |
| BigSky | **86.9*** | 99.8 | 106.5 | 62.1 | 10.7 | 13.4 | 48.4 | 8.0 | 165.0 | Jun 13 |
| Bynum (MTCL0318) | 78.5 | | | 60.9 | 10.4 | 14.8 | 44.1 | 7.7 | 161.0 | Jun 9 |
| CDC Falcon | **82.7*** | 95.3 | 107.1 | 59.6 | 9.7 | 13.5 | 45.6 | 8.0 | 164.3 | Jun 12 |
| Genou | 74.6 | 85.7 | 94.0 | 60.5 | 11.2 | 14.3 | 42.6 | 8.0 | 164.7 | Jun 12 |
| Jagalene | **95.7*** | 90.0 | | 61.2 | 10.2 | 13.2 | 43.4 | 8.7 | 159.3 | Jun 7 |
| Jerry | **86.8*** | 94.1 | 100.7 | 59.9 | 10.5 | 14.9 | 46.3 | 8.7 | 164.3 | Jun 12 |
| Morgan | 79.0 | 91.1 | 101.4 | 59.1 | 11.8 | 13.7 | 44.9 | 8.0 | 165.0 | Jun 13 |
| MT1159CL (MTCL01159) | **84.5*** | 83.8 | | 58.4 | 9.9 | 14.0 | 43.7 | 6.7 | 160.3 | Jun 8 |
| Neeley | **87.3*** | 103.4 | **110.9*** | 59.8 | 12.7 | 14.2 | 46.2 | 8.0 | 168.3 | Jun 16 |
| Norris (MTCL0316) | **99.2*** | | | 61.8 | 10.6 | 14.2 | 45.7 | 7.7 | 158.7 | Jun 6 |
| NuSky | 56.5 | 79.1 | 86.0 | 57.7 | 12.7 | 13.1 | 44.4 | 8.3 | 165.7 | Jun 13 |
| Paul | 68.5 | 91.1 | 105.1 | 59.2 | 12.6 | 13.5 | 42.3 | 8.3 | 165.0 | Jun 13 |
| Promontory | 77.0 | 92.0 | 107.2 | 59.0 | 10.8 | 13.3 | 44.8 | 8.0 | 165.3 | Jun 13 |
| Pryor | **82.2*** | 102.2 | **114.7*** | 59.0 | 12.1 | 13.4 | 44.8 | 6.7 | 165.0 | Jun 13 |
| Rampart | 76.7 | 83.2 | 88.8 | 60.7 | 11.9 | 15.6 | 43.9 | 8.7 | 165.0 | Jun 13 |
| Rocky | 77.5 | 87.7 | 98.2 | 61.1 | 10.6 | 14.1 | 45.8 | 9.0 | 162.7 | Jun 10 |
| Tiber | 73.5 | 85.0 | 95.3 | 61.8 | 11.3 | 13.4 | 48.6 | 7.7 | 165.0 | Jun 13 |
| Vanguard | **92.4*** | 97.2 | 101.9 | 61.8 | 10.4 | 14.1 | 43.9 | 8.3 | 165.0 | Jun 13 |
| Wahoo | 75.9 | 87.5 | | 57.9 | 9.8 | 13.9 | 41.6 | 8.0 | 161.0 | Jun 9 |
| Yellowstone (MT00159) | **101.1**** | 111.7 | **122.2**** | 59.3 | 10.2 | 13.9 | 47.4 | 8.3 | 164.7 | Jun 12 |
| MT0097 | **81.5*** | 98.4 | 105.0 | 59.5 | 11.0 | 14.0 | 43.9 | 8.0 | 165.0 | Jun 13 |
| MT01148 | **87.1*** | 103.9 | | 59.6 | 12.3 | 14.5 | 45.3 | 8.0 | 166.0 | Jun 14 |
| MTCL0306 | 80.4 | | | 59.5 | 10.3 | 14.2 | 43.5 | 8.3 | 158.7 | Jun 6 |
| MTW01133 | **84.1*** | 89.1 | | 58.1 | 10.1 | 13.1 | 41.1 | 8.0 | 158.0 | Jun 6 |
| Average | 82.1 | 92.9 | 102.8 | 59.9 | 11.0 | 13.9 | 44.7 | 8.0 | 163.5 | Jun 11 |
| PLSD (p=0.05) | 20.0 | ns | 12.6 | 2.1 | 2.6 | -.- | 3.4 | 1.1 | 1.3 | |
| CV% | 14.8 | 18.6 | 12.7 | 2.1 | 14.4 | -.- | 4.7 | 8.2 | 0.5 | |

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 13 percent moisture content.
2/ Grain protein values determined from samples bulked across replications and adjusted to 12 percent grain moisture content.
3/ Lodging severity scores of 0 to 9 represent no lodging to all stems flat on the ground, respectively.
ns Indicates no significant difference between cultivars within a column based on Fisher's protected LSD (p=0.05).
** Indicates highest yielding cultivar within a column. * Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).

Huntley Irrigated Winter Wheat (Exp. 053880)

| | | | |
|---|---|---|---|
| Planted: | October 11, 2004 | Harvested: | August 4, 2005 |
| Fertility: | 11-52-00, 100 lbs/a at planting | | |
| Herbicide: | Roundup Ultra @ 16 oz/a + AMS @ 3 lb/a, October 12, 2004; Bronate @ 16 oz/a + Harmony Extra @ 0.33 oz/a + R-11 @ 4 oz/a, April 8, 2005 | | |
| Previous crop: | spring wheat | | |
| Irrigation: | profile flooded, August 26, 2004 (preplant). | | |
| Precipitation: | 14.46 inches | | |

Table 4. Performance of 24 winter wheat cultivars and experimental lines tested under conventional, dryland conditions near Rapelje, Montana during 2005. Cultivars listed alphabetically. (Exp. 053881).

| Cultivar | Grain Yield 1/ | Test Weight | Grain Moisture | Grain Protein 2/ | Plant Height |
|---|---|---|---|---|---|
| | bu/are | lb/bu | % | % | inches |
| BigSky | 41.7 | 52.6 | 13.0 | 16.1 | 40.9 |
| Bynum (MTCL0318) | 51.0 | 57.0 | 11.3 | 15.7 | 40.2 |
| CDC Falcon | 36.4 | 55.1 | 13.5 | 14.1 | 34.2 |
| Genou | 45.0 | 53.9 | 11.4 | 16.2 | 41.2 |
| Jagalene | **68.9**** | 59.4 | 14.3 | 14.2 | 36.0 |
| Jerry | **64.0*** | 56.6 | 13.2 | 14.1 | 43.9 |
| Morgan | 52.9 | 54.9 | 12.7 | 14.6 | 40.2 |
| MT1159CL (MTCL01159) | 51.1 | 55.0 | 12.1 | 14.6 | 37.1 |
| Neeley | 51.7 | 53.0 | 16.9 | 13.6 | 38.5 |
| Norris (MTCL0316) | 54.8 | 56.0 | 11.9 | 15.0 | 39.4 |
| NuSky | 44.3 | 53.3 | 13.6 | 15.3 | 42.4 |
| Paul | 45.5 | 49.4 | 16.3 | 14.8 | 38.7 |
| Promontory | **63.1*** | 59.1 | 13.9 | 12.8 | 37.7 |
| Pryor | **57.1*** | 53.9 | 12.6 | 14.0 | 36.6 |
| Rampart | 44.3 | 56.6 | 11.7 | 14.9 | 39.4 |
| Rocky | 43.6 | 58.7 | 13.7 | 14.5 | 39.3 |
| Tiber | 48.6 | 57.0 | 12.5 | 14.2 | 43.3 |
| Vanguard | 47.6 | 56.8 | 12.8 | 15.9 | 40.6 |
| Wahoo | **63.0*** | 55.7 | 12.7 | 15.2 | 39.5 |
| Yellowstone (MT00159) | **68.0*** | 55.2 | 17.0 | 13.5 | 37.3 |
| MT0097 | 53.4 | 53.1 | 13.1 | 15.6 | 39.0 |
| MT01148 | 54.4 | 53.9 | 14.4 | 14.8 | 41.5 |
| MTCL0306 | **59.7*** | 57.0 | 14.3 | 14.6 | 40.5 |
| MTW01133 | **58.1*** | 56.1 | 12.6 | 15.2 | 35.1 |
| Average | 52.8 | 55.4 | 13.4 | 14.6 | 39.3 |
| LSD (p=0.05) | 13.5 | 2.5 | 2.3 | -.- | 3.2 |
| CV% | 15.5 | 2.8 | 10.3 | -.- | 4.9 |

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 13 percent moisture content.
2/ Grain protein values determined from samples bulked across replications and adjusted to 12 percent grain moisture content.
** Indicates highest yielding cultivar within a column.
* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).

Rapelje Dryland Winter Wheat (Exp. 053881)

| | |
|---|---|
| Planted: | September 29, 2004 |
| Harvested: | July 28, 2005 |
| Fertility: | 11-52-00, 100 lbs/a at planting |
| Herbicide: | Bronate Advanced @ 16 oz/a + Harmony Extra @ 0.33 oz/a + R-11 @ 4 oz/a, April 8, 2005 |
| Previous crop: | conventional summer fallow |

Table 5. Performance of 24 winter wheat cultivars and experimental lines tested under conventional, dryland conditions near Forsyth, Montana during 2005. Cultivars listed alphabetically. (Exp. 053882).

| Cultivar | Grain Yield 1/ 2005 | 2004-05 | 2003-05 | Test Weight | Grain Moisture | Grain Protein 2/ | Plant Height |
|---|---|---|---|---|---|---|---|
| | bushels/acre | | | lb/bu | % | % | inches |
| BigSky | **57.0*** | 42.4 | 46.9 | 63.6 | 10.0 | 7.8 | 36.0 |
| Bynum (MTCL0318) | 41.9 | | | 62.7 | 9.8 | 8.5 | 33.2 |
| CDC Falcon | 50.7 | 41.3 | 45.5 | 62.4 | 9.9 | 7.2 | 30.7 |
| Genou | 50.7 | 40.3 | 45.1 | 63.1 | 10.1 | 6.8 | 33.5 |
| Jagalene | 44.9 | 37.0 | | 62.9 | 9.8 | 7.8 | 30.6 |
| Jerry | 47.8 | 41.8 | 45.4 | 60.2 | 9.9 | 8.0 | 34.3 |
| Morgan | 48.0 | 42.7 | 45.6 | 63.2 | 9.7 | 8.5 | 36.0 |
| MT1159CL (MTCL01159) | 37.0 | 33.7 | | 60.2 | 9.3 | 8.7 | 30.8 |
| Neeley | 51.4 | 40.7 | 45.9 | 62.5 | 10.0 | 6.9 | 35.4 |
| Norris (MTCL0316) | 50.5 | | | 62.3 | 9.7 | 6.8 | 33.2 |
| NuSky | 47.7 | 40.0 | 46.0 | 61.2 | 10.0 | 6.4 | 34.6 |
| Paul | 54.3 | 43.1 | 47.3 | 62.1 | 9.9 | 6.6 | 32.3 |
| Promontory | 51.8 | 39.8 | 47.7 | 63.6 | 9.9 | 7.6 | 34.4 |
| Pryor | **66.0**** | 53.9 | 55.6 | 61.9 | 9.8 | 6.3 | 32.4 |
| Rampart | 46.4 | 34.3 | 39.7 | 62.6 | 9.8 | 8.6 | 34.8 |
| Rocky | 50.5 | 42.9 | 45.5 | 61.5 | 10.1 | 7.1 | 35.7 |
| Tiber | 49.5 | 43.2 | 46.8 | 62.6 | 9.8 | 7.8 | 38.0 |
| Vanguard | 47.9 | 37.0 | 42.9 | 62.9 | 9.9 | 8.6 | 34.4 |
| Wahoo | 51.2 | 42.8 | | 60.0 | 9.5 | 8.0 | 30.6 |
| Yellowstone (MT00159) | 52.7 | 47.5 | 51.3 | 60.6 | 9.6 | 7.7 | 34.9 |
| MT0097 | 43.8 | 41.4 | 45.0 | 61.1 | 9.8 | 7.9 | 33.2 |
| MT01148 | 52.4 | 44.2 | | 62.4 | 9.9 | 7.4 | 32.8 |
| MTCL0306 | 45.2 | | | 62.3 | 10.0 | 8.0 | 32.5 |
| MTW01133 | 51.7 | 42.5 | | 61.2 | 9.6 | 7.5 | 32.4 |
| Average | 49.6 | 41.5 | 46.4 | 62.1 | 9.8 | 7.6 | 33.6 |
| PLSD (p=0.05) | 9.1 | ns | ns | 0.6 | 0.2 | -.- | 2.6 |
| CV% | 11.1 | 18.4 | 15.7 | 0.5 | 1.5 | -.- | 4.7 |

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 13 percent moisture content.
2/ Grain protein values determined from samples bulked across replications and adjusted to 12 percent grain moisture content.
ns Indicates no significant difference between cultivars within a column based on Fisher's protected LSD (p=0.05).
** Indicates highest yielding cultivar within a column.
* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).

Forsyth Dryland Winter Wheat (Exp. 053882)

| | |
|---|---|
| Planted: | September 27, 2004 |
| Harvested: | July 21, 2005 |
| Fertility: | 28-28-0-17, 90 lbs/ac preplant incorporated; 11-52-00, 100 lbs/a in furrow at planting |
| Herbicide: | Roundup Ultra @ 16 oz/a, September 30, 2004 |
| Previous crop: | conventional summer fallow |

Table 6. Performance of 24 winter wheat cultivars and experimental lines tested under conventional, dryland conditions near Lodge Grass, Montana during 2005. Cultivars listed alphabetically. (Exp. 053883).

| Cultivar | Grain Yield 1/ 2005 | Grain Yield 1/ 2004-05 | Grain Yield 1/ 2003-05 | Test Weight 2/ | Grain Moisture | Grain Protein 3/ | Plant Height |
|---|---|---|---|---|---|---|---|
| | bushels/acre | | | lb/bu | % | % | inches |
| BigSky | **12.6*** | 20.2 | 30.4 | 61.2 | 13.8 | 10.9 | 31.0 |
| Bynum (MTCL0318) | 9.5 | | | 59.8 | 13.0 | 11.4 | 28.2 |
| CDC Falcon | 4.7 | 20.0 | 31.3 | 59.9 | 12.6 | 10.0 | 24.9 |
| Genou | **11.3*** | 21.9 | 31.1 | 60.0 | 13.7 | 9.3 | 28.1 |
| Jagalene | 3.0 | 17.5 | | 53.1 | 12.5 | 11.7 | 25.9 |
| Jerry | 6.5 | 20.4 | 30.5 | 58.2 | 13.2 | 12.3 | 30.1 |
| Morgan | 11.0 | 22.3 | 29.6 | 59.9 | 13.2 | 11.0 | 29.5 |
| MT1159CL (MTCL01159) | 4.7 | 15.4 | | 59.2 | 12.6 | 11.2 | 26.6 |
| Neeley | **14.6*** | 26.0 | 37.5 | 59.8 | 14.0 | 10.1 | 27.9 |
| Norris (MTCL0316) | 9.8 | | | 60.9 | 12.8 | 10.1 | 29.2 |
| NuSky | 9.0 | 21.6 | 33.8 | 59.8 | 13.9 | 10.5 | 27.0 |
| Paul | 10.4 | 27.4 | 38.2 | 58.9 | 13.9 | 10.4 | 25.3 |
| Promontory | 7.8 | 18.9 | 36.2 | 60.1 | 13.4 | 11.1 | 26.9 |
| Pryor | 8.0 | 29.0 | 40.9 | 60.1 | 13.1 | 10.6 | 23.2 |
| Rampart | 9.7 | 20.4 | 29.7 | 59.4 | 13.1 | 11.4 | 28.0 |
| Rocky | 10.3 | 18.9 | 30.8 | 60.3 | 13.2 | 10.6 | 31.1 |
| Tiber | **15.1**** | 24.4 | 34.0 | 60.3 | 13.2 | 11.3 | 29.4 |
| Vanguard | 10.5 | 20.4 | 32.7 | 59.4 | 13.4 | 10.8 | 29.8 |
| Wahoo | 6.3 | 24.9 | | 58.0 | 13.7 | 10.8 | 25.2 |
| Yellowstone (MT00159) | 7.7 | 23.2 | 34.6 | 59.7 | 13.9 | 11.3 | 26.1 |
| MT0097 | 9.4 | 26.9 | 37.8 | 58.8 | 13.0 | 9.8 | 26.0 |
| MT01148 | **13.8*** | 26.7 | | 59.3 | 13.9 | 10.2 | 26.7 |
| MTCL0306 | 6.4 | | | 59.7 | 13.5 | 11.6 | 27.0 |
| MTW01133 | 11.1 | 25.6 | | 59.5 | 13.3 | 9.3 | 24.4 |
| Average | 9.3 | 22.5 | 33.7 | 59.4 | 13.3 | 10.7 | 27.4 |
| PLSD (p=0.05) | 4.0 | ns | ns | -.- | 0.7 | -.- | 2.7 |
| CV% | 26.3 | 38.3 | 26.8 | -.- | 3.3 | -.- | 6.1 |

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 13 percent moisture content.
2/ Test weight values determined from samples bulked across replications.
3/ Grain protein values determined from samples bulked across replications and adjusted to 12 percent grain moisture content.
ns Indicates no significant difference between cultivars within a column based on Fisher's protected LSD (p=0.05).
** Indicates highest yielding cultivar within a column.
* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).

Lodge Grass Dryland Winter Wheat (Exp. 053883)

| | |
|---|---|
| Planted: | September 28, 2004 |
| Harvested: | July 27, 2005 |
| Fertility: | 11-52-00, 100 lbs/a at planting |
| Herbicide: | Roundup Ultra @ 16 oz/a, September 30, 2004 |
| Previous crop: | conventional summer fallow |

Table 7. Performance of 24 winter wheat cultivars and experimental lines tested under no-till, dryland conditions at the Fly Creek location west of Hardin, Montana during 2005. Cultivars listed alphabetically. (Exp. 053884).

| Cultivar | Grain Yield 1/ 2005 | 2004-05 | 2003-05 | Test Weight | Grain Moisture | Grain Protein 2/ | Plant Height |
|---|---|---|---|---|---|---|---|
| | ---------- bushels/acre---------- | | | lb/bu | % | % | inches |
| BigSky | 52.8 | 47.3 | 47.3 | 60.7 | 8.6 | 13.9 | 38.5 |
| Bynum (MTCL0318) | 45.9 | | | 60.8 | 8.3 | 14.3 | 34.6 |
| CDC Falcon | 51.5 | 49.6 | 49.6 | 58.3 | 8.0 | 15.9 | 31.6 |
| Genou | 50.7 | 48.2 | 50.4 | 59.1 | 8.2 | 14.5 | 39.2 |
| Jagalene | **62.7*** | 51.7 | | 63.1 | 8.8 | 13.9 | 34.0 |
| Jerry | **58.6*** | **54.6*** | 51.3 | 60.1 | 8.5 | 15.6 | 42.7 |
| Morgan | 46.5 | 46.5 | 48.7 | 60.4 | 8.6 | 14.6 | 36.5 |
| MT1159CL (MTCL01159) | 45.0 | 42.6 | | 58.3 | 8.0 | 14.6 | 37.2 |
| Neeley | 50.5 | 48.9 | 49.8 | 60.0 | 8.5 | 13.7 | 35.8 |
| Norris (MTCL0316) | **55.7*** | | | 58.9 | 8.0 | 15.0 | 39.0 |
| NuSky | 44.4 | 43.7 | 47.0 | 58.2 | 8.3 | 16.0 | 38.1 |
| Paul | 50.5 | 49.1 | 49.4 | 56.4 | 8.1 | 16.2 | 33.2 |
| Promontory | 51.9 | 45.2 | 49.9 | 60.8 | 8.4 | 14.5 | 37.5 |
| Pryor | **65.6**** | **62.6**** | 58.1 | 60.9 | 8.3 | 13.5 | 33.0 |
| Rampart | 47.2 | 44.4 | 47.4 | 59.3 | 7.9 | 16.6 | 36.9 |
| Rocky | 49.4 | 48.7 | 51.3 | 60.1 | 8.5 | 15.3 | 38.0 |
| Tiber | 47.0 | 48.6 | 50.9 | 60.8 | 8.5 | 15.3 | 37.2 |
| Vanguard | 47.4 | 42.2 | 44.9 | 60.3 | 8.3 | 15.7 | 37.7 |
| Wahoo | **59.9*** | 52.6 | | 59.3 | 8.4 | 13.7 | 34.2 |
| Yellowstone (MT00159) | **59.1*** | **55.2*** | 57.6 | 59.1 | 8.9 | 15.1 | 35.9 |
| MT0097 | 48.0 | 45.7 | 44.5 | 58.5 | 8.3 | 15.6 | 35.5 |
| MT01148 | 51.7 | 51.4 | | 59.2 | 8.5 | 15.2 | 36.1 |
| MTCL0306 | 53.5 | | | 59.6 | 8.3 | 15.2 | 37.6 |
| MTW01133 | **56.3*** | **54.6*** | | 60.1 | 8.2 | 14.4 | 34.1 |
| Average | 52.2 | 49.2 | 49.9 | 59.7 | 8.3 | 14.9 | 36.4 |
| PLSD (p=0.05) | 10.3 | 8.5 | ns | 2.0 | 0.5 | -.- | 3.9 |
| CV% | 12.0 | 14.4 | 16.6 | 2.0 | 4.0 | -.- | 6.5 |

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 13 percent moisture content.
2/ Grain protein values determined from samples bulked across replications and adjusted to 12 percent grain moisture content.
ns Indicates no significant difference between cultivars within a column based on Fisher's protected LSD (p=0.05).
** Indicates highest yielding cultivar within a column.
* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).

Fly Creek Dryland Winter Wheat (Exp. 053884)

| | |
|---|---|
| Planted: | September 28, 2004 |
| Harvested: | July 22, 2005 |
| Fertility: | 11-52-00, 100 lbs/a at planting |
| Herbicide: | Express @ 0.17 oz/a + Banvel @ 2 oz/a + LV6 @ 6 oz/a, May 5, 2005 |
| Previous crop: | chemical fallow |

Table 8. Performance of 24 winter wheat cultivars and experimental lines tested under conventional, dryland conditions near Molt, Montana during 2005. Cultivars listed alphabetically. (Exp. 053885).

| Cultivar | Grain Yield 1/ | Test Weight | Grain Moisture | Grain Protein 2/ | Plant Height |
|---|---|---|---|---|---|
| | bu/acre | lb/bu | % | % | inches |
| BigSky | 47.8 | 58.9 | 17.9 | 10.4 | 35.4 |
| Bynum (MTCL0318) | 44.5 | 61.1 | 11.9 | 12.0 | 32.9 |
| CDC Falcon | 48.2 | 61.0 | 12.0 | 11.4 | 30.0 |
| Genou | **54.1*** | 61.0 | 11.6 | 11.2 | 35.1 |
| Jagalene | 47.4 | 62.1 | 13.4 | 11.2 | 32.6 |
| Jerry | 43.8 | 61.4 | 12.8 | 10.6 | 35.0 |
| Morgan | 45.7 | 60.6 | 16.0 | 10.3 | 36.4 |
| MT1159CL (MTCL01159) | 49.8 | 58.6 | 12.9 | 11.5 | 32.7 |
| Neeley | **56.8*** | 60.3 | 16.4 | 10.1 | 35.7 |
| Norris (MTCL0316) | **53.0*** | 62.2 | 13.5 | 9.8 | 34.7 |
| NuSky | 50.5 | 57.0 | 19.3 | 10.8 | 34.5 |
| Paul | **54.4*** | 60.2 | 15.5 | 9.9 | 32.8 |
| Promontory | **53.0*** | 62.9 | 13.9 | 10.1 | 34.1 |
| Pryor | **52.8*** | 60.3 | 14.5 | 9.6 | 31.3 |
| Rampart | 47.1 | 60.8 | 11.9 | 11.4 | 33.4 |
| Rocky | 44.9 | 62.2 | 14.4 | 11.0 | 34.6 |
| Tiber | **53.5*** | 60.9 | 14.3 | 9.6 | 37.6 |
| Vanguard | 48.9 | 61.3 | 12.3 | 11.3 | 35.7 |
| Wahoo | **59.0**** | 60.5 | 12.0 | 10.2 | 34.6 |
| Yellowstone (MT00159) | 50.4 | 58.6 | 17.4 | 10.1 | 33.2 |
| MT0097 | **55.3*** | 61.2 | 13.1 | 11.1 | 34.0 |
| MT01148 | **55.6*** | 58.6 | 16.2 | 10.4 | 34.3 |
| MTCL0306 | 43.3 | 61.0 | 15.2 | 10.6 | 32.0 |
| MTW01133 | 41.2 | 61.3 | 14.6 | 11.0 | 28.1 |
| Average | 50.0 | 60.6 | 14.3 | 10.6 | 33.8 |
| PLSD (p=0.05) | 7.6 | 2.3 | 2.9 | -.- | 3.1 |
| CV% | 9.2 | 2.3 | 12.1 | -.- | 5.5 |

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 13 percent moisture content.
2/ Grain protein values determined from samples bulked across replications and adjusted to 12 percent grain moisture content.
** Indicates highest yielding cultivar within a column.
* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).

Molt Dryland Winter Wheat (Exp. 053885)

| | |
|---|---|
| Planted: | September 29, 2004 |
| Harvested: | July 28, 2005 |
| Fertility: | 11-52-00, 100 lbs/a at planting |
| Herbicide: | Ally @ 0.1 oz/a, 2,4-D @ 16 oz/a, May, 2005 |
| Previous crop: | conventional summer fallow |

Table 9. Grain yield[1/] of 24 winter wheat cultivars tested at six locations in south central Montana during 2005. Varieties listed by declining average yield across all locations.

| Cultivar | Rapelje Dryland | Forsyth Dryland | Lodge Grass Dryland | Hardin Dryland | Molt Dryland | Dryland Locations Average | Huntley Irrigated | All Locations Average |
|---|---|---|---|---|---|---|---|---|
| | bushels per acre | | | | | | | |
| Yellowstone (MT00159) | **68.0*** | 52.7 | 7.7 | **59.1*** | 50.4 | **47.6*** | **101.1**** | **56.5**** |
| Pryor | **57.1*** | **66.0**** | 8.0 | **65.6**** | **52.8*** | **49.9**** | **82.2*** | **55.3*** |
| Jagalene | **68.9**** | 44.9 | 3.0 | **62.7*** | 47.4 | **45.4*** | **95.7*** | **53.8*** |
| Norris (MTCL0316) | 54.8 | 50.5 | 9.8 | **55.7*** | **53.0*** | **44.8*** | **99.2*** | **53.8*** |
| Wahoo | **63.0*** | 51.2 | 6.3 | **59.9*** | **59.0**** | **47.9*** | 75.9 | **52.5*** |
| MT01148 | 54.4 | 52.4 | **13.8*** | 51.7 | **55.6*** | **45.6*** | **87.1*** | **52.5*** |
| Neeley | 51.7 | 51.4 | **14.6*** | 50.5 | **56.8*** | **45.0*** | **87.3*** | **52.0*** |
| Jerry | **64.0*** | 47.8 | 6.5 | **58.6*** | 43.8 | **44.1*** | **86.8*** | **51.2*** |
| Promontory | **63.1*** | 51.8 | 7.8 | 51.9 | **53.0*** | **45.5*** | 77.0 | **50.8*** |
| MTW01133 | **58.1*** | 51.7 | 11.1 | **56.3*** | 41.2 | **43.7*** | **84.1*** | **50.4*** |
| BigSky | 41.7 | **57.0*** | **12.6*** | 52.8 | 47.8 | 42.4 | **86.9*** | **49.8*** |
| Vanguard | 47.6 | 47.9 | 10.5 | 47.4 | 48.9 | 40.5 | **92.4*** | 49.1 |
| MT0097 | 53.4 | 43.8 | 9.4 | 48.0 | **55.3*** | 42.0 | **81.5*** | 48.6 |
| MTCL0306 | **59.7*** | 45.2 | 6.4 | 53.5 | 43.3 | 41.6 | 80.4 | 48.1 |
| Tiber | 48.6 | 49.5 | **15.1**** | 47.0 | **53.5*** | 42.8 | 73.5 | 47.9 |
| Genou | 45.0 | 50.7 | **11.3*** | 50.7 | **54.1*** | 42.4 | 74.6 | 47.7 |
| Paul | 45.5 | 54.3 | 10.4 | 50.5 | **54.4*** | 43.0 | 68.5 | 47.3 |
| Morgan | 52.9 | 48.0 | 11.0 | 46.5 | 45.7 | 40.8 | 79.0 | 47.2 |
| Rocky | 43.6 | 50.5 | 10.3 | 49.4 | 44.9 | 39.7 | 77.5 | 46.0 |
| CDC Falcon | 36.4 | 50.7 | 4.7 | 51.5 | 48.2 | 38.3 | **82.7*** | 45.7 |
| MT1159CL (MTCL01159) | 51.1 | 37.0 | 4.7 | 45.0 | 49.8 | 37.5 | **84.5*** | 45.4 |
| Rampart | 44.3 | 46.4 | 9.7 | 47.2 | 47.1 | 38.9 | 76.7 | 45.2 |
| Bynum (MTCL0318) | 51.0 | 41.9 | 9.5 | 45.9 | 44.5 | 38.6 | 78.5 | 45.2 |
| NuSky | 44.3 | 47.7 | 9.0 | 44.4 | 50.5 | 39.2 | 56.5 | 42.1 |
| Average | 52.8 | 49.6 | 9.3 | 52.2 | 50.0 | 42.8 | 82.1 | 49.3 |
| PLSD (p=0.05) | 13.5 | 9.1 | 4.0 | 10.3 | 7.6 | 6.8 | 20.0 | 7.0 |
| CV% | 15.5 | 11.1 | 26.3 | 12.0 | 9.2 | 21.8 | 14.8 | 21.4 |

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 13.0 percent moisture content.

** Indicates highest yielding cultivar within a column.

* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).

Table 10. Performance of 24 winter wheat cultivars and experimental lines tested under dryland and irrigated conditions at 6 locations in south central Montana during 2005. Cultivars listed alphabetically.

| Cultivar | Grain Yield 1/ 2005 | Grain Yield 1/ 2004-05 | Grain Yield 1/ 2003-05 | Test Weight | Grain Moisture | Grain Protein | Plant Height |
|---|---|---|---|---|---|---|---|
| | bushels per acre | | | lb/bu | % | % | inches |
| BigSky | **49.8*** | 50.9 | 55.9 | 59.7 | 12.4 | 12.1 | 38.4 |
| Bynum (MTCL0318) | 45.2 | | | 60.5 | 10.8 | 12.8 | 35.5 |
| CDC Falcon | 45.7 | 49.7 | 56.1 | 59.3 | 11.0 | 12.0 | 32.8 |
| Genou | 47.7 | 49.1 | 53.6 | 59.5 | 11.0 | 12.1 | 36.6 |
| Jagalene | **53.8*** | 50.8 | | 61.2 | 11.5 | 12.0 | 33.7 |
| Jerry | **51.2*** | 52.9 | 56.6 | 59.5 | 11.4 | 12.6 | 38.7 |
| Morgan | 47.2 | 50.4 | 55.3 | 59.7 | 12.0 | 12.1 | 37.3 |
| MT1159CL (MTCL01159) | 45.4 | 45.9 | | 58.2 | 10.8 | 12.4 | 34.7 |
| Neeley | **52.0*** | 54.6 | 60.1 | 59.2 | 13.1 | 11.4 | 36.6 |
| Norris (MTCL0316) | **53.8*** | | | 60.3 | 11.1 | 11.8 | 36.9 |
| NuSky | 42.1 | 46.4 | 52.4 | 57.6 | 13.0 | 12.0 | 36.9 |
| Paul | 47.3 | 52.1 | 58.6 | 57.5 | 12.7 | 11.9 | 34.1 |
| Promontory | **50.8*** | 50.8 | 59.9 | 61.0 | 11.7 | 11.6 | 35.9 |
| Pryor | **55.3*** | **60.5**** | **65.5**** | 59.3 | 11.7 | 11.2 | 33.5 |
| Rampart | 45.2 | 45.6 | 50.6 | 60.0 | 11.0 | 13.1 | 36.1 |
| Rocky | 46.0 | 48.5 | 54.7 | 60.7 | 11.7 | 12.1 | 37.4 |
| Tiber | 47.9 | 50.4 | 55.9 | 60.6 | 11.6 | 11.9 | 39.0 |
| Vanguard | 49.1 | 49.0 | 54.6 | 60.6 | 11.2 | 12.7 | 37.0 |
| Wahoo | **52.5*** | 53.8 | | 58.6 | 11.0 | 12.0 | 34.3 |
| Yellowstone (MT00159) | **56.5**** | **59.0*** | **63.3*** | 58.6 | 12.8 | 11.9 | 35.8 |
| MT0097 | 48.6 | 53.4 | 57.5 | 58.7 | 11.4 | 12.3 | 35.3 |
| MT01148 | **52.5*** | **56.2*** | | 58.8 | 12.5 | 12.1 | 36.1 |
| MTCL0306 | 48.1 | | | 59.9 | 11.9 | 12.4 | 35.5 |
| MTW01133 | **50.4*** | 52.3 | | 59.4 | 11.4 | 11.8 | 32.5 |
| Average | 49.3 | 51.5 | 56.9 | 59.5 | 11.7 | 12.1 | 35.9 |
| LSD (p=0.05) | 7.0 | 5.4 | 4.5 | 1.4 | 1.1 | 0.8 | 1.6 |
| CV% | 21.4 | 20.7 | 18.6 | 3.5 | 14.8 | 5.6 | 6.6 |
| Location Years | 6 | 10 | 14 | 6 | 6 | 6 | 6 |

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 13.0 percent moisture content.

** Indicates highest yielding cultivar within a column.

* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).

Table 11. Performance of 24 winter wheat cultivars and experimental lines tested under dryland conditions only in south central Montana during 2005. Cultivars listed alphabetically.

| Cultivar | Grain Yield 1/ 2005 | 2004-05 | 2003-05 | Test Weight | Grain Moisture | Grain Protein | Plant Height |
|---|---|---|---|---|---|---|---|
| | ---------- bushels/acre ---------- | | | lb/bu | % | % | inches |
| BigSky | 42.4 | 38.6 | 42.1 | 59.1 | 12.7 | 11.8 | 36.4 |
| Bynum (MTCL0318) | 38.6 | | | 60.4 | 10.9 | 12.4 | 33.8 |
| CDC Falcon | 38.3 | 38.3 | 42.2 | 59.3 | 11.2 | 11.7 | 30.3 |
| Genou | 42.4 | 40.0 | 43.5 | 59.3 | 11.0 | 11.6 | 35.4 |
| Jagalene | **45.4*** | 41.1 | | 61.2 | 11.8 | 11.8 | 31.8 |
| Jerry | **44.1*** | 42.6 | 44.5 | 59.4 | 11.5 | 12.1 | 37.2 |
| Morgan | 40.8 | 40.2 | 42.7 | 59.8 | 12.0 | 11.8 | 35.7 |
| MT1159CL (MTCL01159) | 37.5 | 35.5 | | 58.1 | 11.0 | 12.1 | 32.9 |
| Neeley | **45.0*** | 42.5 | 46.2 | 59.0 | 13.1 | 10.9 | 34.6 |
| Norris (MTCL0316) | **44.8*** | | | 59.9 | 11.2 | 11.3 | 35.1 |
| NuSky | 39.2 | 38.2 | 43.2 | 57.6 | 13.0 | 11.8 | 35.3 |
| Paul | 43.0 | 42.4 | 45.9 | 57.2 | 12.8 | 11.6 | 32.5 |
| Promontory | **45.5*** | 40.5 | 47.1 | 61.5 | 11.9 | 11.2 | 34.1 |
| Pryor | **49.9**** | **50.1**** | **52.1**** | 59.3 | 11.6 | 10.8 | 31.3 |
| Rampart | 38.9 | 36.2 | 40.2 | 59.8 | 10.9 | 12.6 | 34.5 |
| Rocky | 39.7 | 38.7 | 42.8 | 60.6 | 12.0 | 11.7 | 35.7 |
| Tiber | 42.8 | 41.8 | 45.2 | 60.3 | 11.7 | 11.6 | 37.1 |
| Vanguard | 40.5 | 37.0 | 41.6 | 60.3 | 11.3 | 12.5 | 35.7 |
| Wahoo | **47.9*** | **45.3*** | | 58.8 | 11.3 | 11.6 | 32.8 |
| Yellowstone (MT00159) | **47.6*** | **46.3*** | **49.9*** | 58.5 | 13.4 | 11.5 | 33.5 |
| MT0097 | 42.0 | 42.1 | 44.6 | 58.5 | 11.5 | 12.0 | 33.5 |
| MT01148 | **45.6*** | 44.3 | | 58.6 | 12.6 | 11.6 | 34.3 |
| MTCL0306 | 41.6 | | | 60.0 | 12.3 | 12.0 | 33.9 |
| MTW01133 | **43.7*** | 43.1 | | 59.7 | 11.7 | 11.5 | 30.8 |
| Average | 42.8 | 41.2 | 44.6 | 59.4 | 11.8 | 11.7 | 34.1 |
| LSD (p=0.05) | 6.8 | 5.0 | 4.1 | 1.7 | 1.3 | 0.9 | 1.6 |
| CV% | 21.8 | 21.1 | 18.9 | 3.6 | 15.2 | 6.1 | 6.6 |
| Location Years | 5 | 8 | 11 | 5 | 5 | 5 | 5 |

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 13.0 percent moisture content.

** Indicates highest yielding cultivar within a column.

* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).