MONTANA STATE UNIVERSITY
AGRICULTURAL EXPERIMENT STATION

# RESULTS OF AGRONOMIC AND WEED SCIENCE RESEARCH CONDUCTED IN SOUTH CENTRAL MONTANA - 2000

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

http://www.sarc.montana.edu/annualreport/2000/

**PROJECT TITLE:**

Dryland Soft White Winter Wheat Performance Trial near Huntley, Montana. (Exp. 005008).

**PROJECT LEADERS:**

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**PROJECT PERSONNEL:**

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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 new experimental lines and existing soft white winter wheat varieties. This information should help wheat producers in south central Montana select varieties best suited to their particular area and growing conditions.

**METHODS:**

The 2000 on-station soft white winter wheat trial had 15 soft white winter wheat entries and one hard red winter wheat check. The trial was planted using a randomized complete block design with three replications. Test plots consisted of a 15-foot, 4-row plot with 12-inch row spacing. All rows of each test plot were trimmed 36 inches and harvested using an experimental-plot combine. 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. Test weight (pounds per bushel) and percent grain moisture content were obtained for each plot using a Dickey-john GAC 2100 grain analyzer. Grain protein (%) was determined for each entry bulked across replications. Grain protein values were adjusted to 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. Reported values have been rounded to the nearest inch. Heading date was noted 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.

**RESULTS and SUMMARY:**

Timely rainfall resulted in good germination during late September of 1999, but soil moisture conditions remained marginal for crop growth during most of the fall growth period. Adequate stands of all soft white winter wheats survived the winter. Warmer than average temperatures during February and March resulted in early spring green up and fair growing conditions. Spring weather was unusually warm and dry throughout the region, developing into drought conditions at Huntley by late spring or early summer. Russian wheat aphids (*Diuraphis noxia* Mord.) infested the Huntley location during mid-May, or at approximately the boot stage of crop development. This study also experienced brief exposure to hail on July 9$^{th}$, partially shattering most entries.

No differences in grain yield were observed among the soft white winter wheats tested in 2000 (Table 1). Yields averaged 77.8 bu/ac and ranged from 84.9 bu/ac for 'Malcolm' to 63.1 bu/ac for 'Brundage'. Test weights averaged 59.0 lb/bu, 1.3 pounds heavier than average test weights experienced among the soft white winter wheats tested the previous year. Brundage, 'Hill 81', 'Stephens' and 'Neeley' were the only entries possessing a test weight greater than 60.0 lb/bu.

Grain protein averaged 13.7 percent and ranged from 15.0 percent for 'MAC-1' to 12.9 percent for Brundage.

**FUTURE PLANS:** The soft white winter wheat performance trial will continue in 2001 at Southern Agricultural Research Center.

Table 1. Performance of 15 soft white winter wheat cultivars tested under dryland conditions near Huntley, Montana during 2000. Cultivars listed alphabetically. (Exp. 005008).

| Cultivar | Grain Yield 1/ 2000 | Grain Yield 1/ 1999-00 | Test Weight | Grain Moisture | Plant Height | Heading Date Julian | Heading Date Calendar | Grain Protein 2/ |
|---|---|---|---|---|---|---|---|---|
| | bushels/acre | | lb/bu | % | inches | | | % |
| Brundage | 63.1 | 65.8 | 60.7 | 10.9 | 26 | 152.0 | Jun 1 | 12.9 |
| Cashup | 73.4 | 66.4 | 57.5 | 10.3 | 24 | 157.3 | Jun 6 | 13.2 |
| Daws | 73.9 | 67.9 | 59.6 | 10.8 | 27 | 157.7 | Jun 6 | 13.0 |
| Eltan | 82.8 | 73.1 | 58.8 | 12.7 | 31 | 158.3 | Jun 7 | 14.2 |
| Hill 81 | 89.3 | 71.3 | 60.5 | 10.8 | 31 | 158.0 | Jun 7 | 13.1 |
| Kmor | 81.7 | 72.6 | 58.5 | 10.6 | 27 | 157.7 | Jun 6 | 13.5 |
| Lambert | 83.6 | 71.4 | 58.3 | 10.8 | 32 | 155.3 | Jun 4 | 13.2 |
| Lewjain | 78.6 | 69.7 | 59.4 | 11.2 | 27 | 159.7 | Jun 8 | 14.0 |
| MAC-1 | 73.2 | | 59.4 | 10.7 | 31 | 154.7 | Jun 3 | 15.0 |
| Macvicar | 76.4 | 66.6 | 57.9 | 10.6 | 28 | 155.7 | Jun 4 | 13.5 |
| Madsen | 69.7 | 63.3 | 59.3 | 10.6 | 28 | 156.3 | Jun 5 | 14.8 |
| Malcolm | 84.9 | 71.2 | 58.7 | 10.8 | 28 | 153.3 | Jun 2 | 13.7 |
| Neeley (HRWW) | 78.9 | 70.8 | 60.9 | 10.9 | 33 | 156.0 | Jun 5 | 13.8 |
| Rod | 75.7 | 66.2 | 56.5 | 10.5 | 26 | 159.0 | Jun 8 | 14.0 |
| Stephens | 84.6 | 71.1 | 60.2 | 11.0 | 28 | 157.7 | Jun 6 | 13.3 |
| W301 | 75.2 | 64.1 | 58.3 | 10.6 | 28 | 154.0 | Jun 3 | 13.9 |
| Average | 77.8 | 68.8 | 59.0 | 10.9 | 28.4 | 156.4 | Jun 5 | 13.7 |
| LSD (p=0.05) | ns | ns | 1.4 | 0.8 | 2.9 | 1.3 | | - |
| CV% | 19.9 | 15.2 | 1.4 | 4.2 | 6.2 | 0.5 | | - |

1/ Yields are based on 60 pound standard bushel weight and adjusted to 13.0 percent moisture content.
2/ Grain protein values adjusted to 12 percent grain moisture content.

Huntley Dryland Soft White Winter Wheat (Exp. 005008)

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|---|---|
| Planted: | September 21, 1999 |
| Harvested: | July 20, 2000 |
| Fertility: | 18-46-0, 100 lb/a preplant incorporated, August 18, 1999<br>34-0-0, 88 lb/a broadcast, May 18, 2000 |
| Herbicide: | Harmony Extra, 0.33 oz/a; Buctril, 1 pt/a; R-11, 1 pt/a, April 21, 2000 |
| Insecticide: | Di-Syston 8E, 12 oz/a; R-11, 1 pt/a, May 19, 2000 |
| Previous Crop: | summer fallow |
| Precipitation: | 8.40 inches |