

**PROJECT TITLE:** Long-Term Small Grain Variety Performance Evaluation Under Mechanical or Chemical Fallow Conditions Off-Station in Northern Montana Counties.

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### **OBJECTIVES:**

Diverse cropping environments exist within that five-county area most closely served by this Research Center (Blaine, Chouteau, Hill, Liberty, and Phillips counties). Winter and spring wheat, barley, and oat production together in the five counties represents 29.1 percent of the 2002-2006 statewide total (43 percent and 26 percent for winter and spring wheat alone, respectively). Producers are keenly interested in variety performance data generated under local conditions. It is our objective, within budget and other resource limitations, to evaluate small grain variety performance, over time, under conditions representative of specific areas of Northern Montana yet differing from those of the Research Center.

It is also our objective to develop and maintain databases which are not only specific to differing major crop environments, but which are further augmented by as much associated climatic and production management information as is practical and feasible to collect. Since 1982 we have recorded and reported supportive information of this nature along with the crop performance data for each investigation. A new, standardized system was initiated in 1995 for better management and dissemination of such 'base data' in more detail than that provided previously. An abridged version of such 'base data' is included in this report for each trial at each location.

### **RESULTS:**

Data details for individual trials conducted from 1982-2006 were included in respective previous annual reports, but long-term yield and test weight data from the past ten years are presented in abridged form for summary purposes here as applicable. For winter and spring wheat, selected variety performance comparisons on the basis of gross dollar return for these off-station locations as well as the principal statewide trials conducted on-station at Havre are included in a separate report.

Cropping environments in 2007 ranged from fair to excellent across North Central Montana. At Havre, total annual growing season precipitation (9/1/06 through 8/31/07) was 12.42 inches, 4.46 percent more than the average for all years since 1916. April 1 through July 31 precipitation was 7.43 inches or 111 percent of the 92-year average. Heat units expressed as "Growing Degree Days" (GDD, base 50) from May through July were 1429.5, 109.7 percent of the average for the last 57 years (1951-2007). The last spring frost was 20 days early with the first fall frost 4 days early, resulting in 145 frost-free days, 16 days longer than the 92-year average. September 2006 through March 2007 precipitation was 116 percent of the long-term average. The April through July growing season saw an average daily temperature at 59.6 degrees F, 2.4 degrees above normal. July and August average temperatures were 6.9 percent higher than normal with the high for 2007 recorded on July 24 at 107 degrees F. There were 37 days 90 degrees F or above, and 8 days with temperatures 100 degrees F or above. Early growing season conditions were generally wetter than normal with March through May precipitation 155 percent of normal. June and July were slightly drier than normal at 78 percent of the long-term average for those months. The overall growing season was on average warmer than normal, and heat stress coinciding with critical growth stages in spring grains resulted in reduced test weights and elevated grain protein; at both on- and off-station locations. The minimum winter temperature was -25 degrees F on February 14 and 15. Although crop outlook was initially very good with adequate fallow-stored soil moisture and

generally favorable conditions, spring crop performance in some areas was poorer than expected whereas winter wheat performance varied from good to excellent depending upon location. Yield and test weight comparisons with long-term comparable averages varied according to crop and location. On-Station WW at Havre had increased yields (109 percent of the 10-year comparable average of 49.8 bu/ac) and lower than normal test weights (1.5 lbs less than the 10-year comparable average of 61.1 lbs/bu); SW had increased yields (103 percent of the 10-year comparable average of 34.4 bu/ac) and reduced test weights (2.0 lbs less than the 10-year comparable average of 57.9 lbs/ac); BLY had increased yields (122 percent of the 10-year comparable average of 53.9 bu/ac) and increased test weights (0.7 lbs more than the 10-year comparable average of 47.7 lbs/bu).

Off-station cropping environments were somewhat variable in 2007. The Loma location had adequate precipitation and favorable conditions for the production of winter and spring cereal crops. Compared to eight-year Loma comparable average WW yields, 2007 yields were up 28 percent with average test weights. SW yields increased six percent from the ten-year Loma comparable average with test weights up 1.8 lbs/bu. DURUM yields were up nine percent from the five-year Loma comparable average with test weights 1.7 lbs/bu above average. Nine-year Loma comparable average BLY yields were 19 percent lower than 2007 yields with test weight down 1.7 lbs/bu. The Turner location had above normal precipitation; however the moisture and heat were poorly timed with critical spring cereal developmental stages. Yields of the SW were down 39.3 percent from the nine-year comparable average with test weights down 4.5 lbs/bu. DURUM yields were 28 percent lower than the six-year Turner comparable average with test weights down 2.1 lb/bu. Turner BLY yields were down 75 percent with test weights down 5 lbs/bu compared to the nine-year comparable average. Ten-year Loring comparable average SW yields were 12 percent higher than the 2007 yield of 31.1 bu/ac, with test weights down 2.9 lbs/bu. Ten-year Loring comparable average barley yields were one percent lower than the 2007 yield of 54.1 bu/ac, with test weights down 5.7 lbs/bu. The North Havre location, established in 2005 for purposes of conducting agronomic investigations in a wheat stem sawfly environment, saw generally increased yields and average or increased test weights for WW, SW, DURUM and BLY. Sawfly pressure on winter wheat was minimal at Loma and extremely severe at North Havre. Sawfly pressure on spring wheat was minimal at Loma, Loring and North Havre and severe at Turner. Most locations recorded yields generally commensurate with available moisture, with the exception of Turner. Protein levels for appropriately fertilized wheat and barley were generally excellent, but protein values were abnormally high in those areas where yields and/or test weights were most seriously affected by heat stress during critical development stages.

Stand percent, plant height, yield, moisture, test weight, protein and sawfly cutting data, where appropriate, for the 2007 Peterson (North Havre) and McKeever (Loma) dryland winter wheat trials are summarized in Tables 1 and 3, respectively. Multi-year yield and test weight summary data for selected winter wheat entries at the Peterson location for 2003-2007 are presented in Table 2 and data for the McKeever location for 1999-2007 are presented in Table 4.

Stand percent, plant height, yield, moisture, test weight, protein and sawfly cutting data, where appropriate, for the 2007 Cederberg (Turner), Peterson (North Havre), Flansaas/Lumsden (Loring) and McKeever (Loma) dryland spring wheat trials are summarized in Tables 5, 7, 9 and 11, respectively. The Cederberg location, in place since 1982, further featured "fertilized vs. unfertilized" spring wheat variety performance evaluations (1994-1998). The Peterson location was added in 2005 due to the presence of significant sawfly pressure. The Flansaas/Lumsden location replaced the 10-year Solberg location at Dodson (1986-1995). The McKeever location replaces the former, long-term Myers location (Big Sandy, 1988-1997). Multi-year yield and test weight summaries for selected spring wheat entries at the Cederberg, Peterson, Flansaas/Lumsden and McKeever locations are presented in Tables 6, 8, 10 and 12, respectively.

Stand percent, plant height, yield, moisture, test weight, protein and sawfly cutting data, where appropriate, for the 2007 Cederberg (Turner), Peterson (North Havre) and McKeever (Loma) dryland durum trials are summarized in Tables 13, 15 and 17, respectively. The evaluation of durum varieties was added at the Cederberg location in 2002, the Peterson location in 2005, and at the McKeever location in 2003. Multi-year yield and test weight summaries for selected durum entries at the Cederberg, Peterson and McKeever locations are presented in Tables 14, 16 and 18, respectively.

Stand percent, plant height, yield, moisture, test weight, plump/thin, protein and sawfly cutting data, where appropriate, for the 2007 Cederberg (Turner), Peterson (North Havre), Flansaas/Lumsden (Loring) and McKeever (Loma) dryland spring barley trials are summarized in Tables 19, 21, 23 and 25 respectively. The Cederberg location, in place since 1982, further featured "fertilized vs. unfertilized" barley variety performance evaluations (1994-1998). The Peterson location was added in 2005 due to the presence of significant sawfly pressure. The Flansaas/Lumsden location replaces the 10-year Solberg location at Dodson (1986-1995). The McKeever location replaces the former long-term

Myers location (Big Sandy, 1988-1997), but barley variety evaluation was not initiated there until 1999. Multi-year yield and test weight summaries for selected spring barley entries at the Cederberg, Peterson, Flansaas/Lumsden, and McKeever locations are presented in Tables 20, 22, 24 and 26, respectively.

### **SUMMARY:**

Thirteen, standard, off-station variety performance trials were conducted in 2007 on mechanical or chemical fallow at four locations in four northern Montana counties.

#### Dryland Winter Wheat Trials:

- |   |              |            |
|---|--------------|------------|
| 1. McKeever Farm & Seed Inc., Chouteau County | (12N Loma)   | 20-27N-10E |
| 2. Mark Peterson Farm, Hill County            | (35NW Havre) | 29-36N-13E |

#### Dryland Spring Wheat Trials:

- |  |              |            |
|--|--------------|------------|
| 1. Leon Cederberg Farm, Blaine County        | (3NE Turner) | 13-36N-25E |
| 2. Mark Peterson Farm, Hill County           | (35NW Havre) | 29-36N-13E |
| 3. Flansaas/Lumsden Farm, Phillips County    | (1SW Loring) | 24-35N-29E |
| 4. McKeever Farm & Seed Inc, Chouteau County | (12N Loma)   | 20-27N-10E |

#### Dryland Spring Durum Trials:

- |  |              |            |
|--|--------------|------------|
| 1. Leon Cederberg Farm, Blaine County        | (3NE Turner) | 13-36N-25E |
| 2. Mark Peterson Farm, Hill County           | (35NW Havre) | 29-36N-13E |
| 3. McKeever Farm & Seed Inc, Chouteau County | (12N Loma)   | 20-27N-10E |

#### Dryland Spring Barley Trials:

- |  |              |            |
|--|--------------|------------|
| 1. Leon Cederberg Farm, Blaine County        | (3NE Turner) | 13-36N-25E |
| 2. Mark Peterson Farm, Hill County           | (35NW Havre) | 29-36N-13E |
| 3. Flansaas/Lumsden Farm, Phillips County    | (1SW Loring) | 24-35N-29E |
| 4. McKeever Farm & Seed Inc, Chouteau County | (12N Loma)   | 20-27N-10E |

All trials were seeded in replicated, 3-row, 22-foot plots on a 12-inch row spacing utilizing a self-propelled cone seeder. Trials (1988-1991) were planted with hoe openers fitted with 'Acra-Plant' or JD 3" shovels. Beginning with spring planting in 1992, all off-station trials were planted with modified 'Haybuster' openers. Beginning with spring planting in 2005, all off-station trials were planted with 'Haybuster' openers further modified to provide narrow, paired-row seed placement for enhanced seed/fertilizer separation. A randomized complete block design was standard for all trials with three replications. Beginning in 1997, a 'Wintersteiger 1541-21' plot combine, funded in part by MWBC was used to harvest each 3-row plot after end-trimming to 16'. Prior to 1997, a 'Hege 125C' plot combine, also funded in part by MWBC in 1984, was used. Some 1991 plots were harvested via the former binder/thresher method due to breakdown of the Hege plot combine. Other variables specific to each individual trial are listed with the current year data tables.

### **FUTURE PLANS:**

It is planned, with drought, budget and other resources allowing, to continue off-station cereal variety investigations in the five-county area. This work has been strongly supported by producers near each of the locations, and by the Northern Ag Research Center Advisory Council. Budgets aside, expanded overall workload suggested that the number of replicated, off-station variety trial locations needed to be reduced - at least for the time being. Spring grains were dropped in 1997 (after 10 years of data) at the Myers (Big Sandy) location. This was an excellent location with outstanding producer cooperation and support. However, sawfly-resistant variety development efforts were initiated in 1997 involving establishment and maintenance of 2,000-3,000 plots on the McKeever Farm (Loma) only a few miles away where conditions (other than sawfly pressure) were quite similar. Thus, the Big Sandy location was put on hold; and standard off-station winter wheat, spring wheat, durum and barley variety trials were established at the Loma site. A steady reduction in sawfly pressure at the Loma location later resulted in relocation of the sawfly-resistant variety development work to northern Hill County as of the 2005 crop year. However, it is our intent to continue standard off-station variety evaluation work at Loma until at least ten years of performance data are collected there. This has also been an excellent location with outstanding producer cooperation and support.

It is planned to continue winter wheat variety investigations at the Peterson (North Havre) and McKeever (Loma) locations. It is also planned to continue off-station spring wheat and barley variety evaluations at the Cederberg

(Turner), Peterson (North Havre), Flansaas/Lumsden (Loring) and McKeever (Loma) locations; and durum evaluations at the Cederberg, Peterson and McKeever locations. The Loring location is entering its' thirteenth year, and the cooperator and area producer interest and support has been outstanding. The Turner location is only 32 miles from the Loring site, but conditions there are quite different; and it is our opinion that the Turner location should be continued. 2007 marked 20 years at the present site (plus 5 years on a different soil series at a site nearby). Double plantings initiated in 1994 at Turner comparing fertilized vs. unfertilized plots were terminated following the 1998 crop year as originally planned. Cooperating producer and general community interest and support at Turner is outstanding.

Data processed by the Center will normally be limited to trials where the Center performs all field functions from planting to harvest. Special arrangements may be made with Extension Agents desiring to conduct additional replicated trials on their own. Packaged seed can likely again be provided to the County Extension Agents as per their needs for non-replicated demonstration locations. Such demonstrations will be for display and discussion use by the County Extension Agent; and performance data will not be collected or processed by the Research Center for any such demonstration plantings.

It is our current opinion that effort put forth to generate quality multi-year data at a few sites, carefully chosen to represent principal differences in average growing season conditions, is superior to an approach involving less concentrated work at greater numbers of locations. This is particularly true when critical season workload would otherwise result in less than timely planting and maintenance of certain sites.

**TABLE 1. Dryland Fallow Winter Wheat Cultivar Evaluation Nursery Grown Off-Station at the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2007. (Exp# 07-3852-WW)**

| ID                            | CULTIVAR or SELECTION       | STAND<br>% | PLNT HT<br>Inches | 1/             |               | 2/                |              | 3/          |
|-------------------------------|-----------------------------|------------|-------------------|----------------|---------------|-------------------|--------------|-------------|
|                               |                             |            |                   | YIELD<br>Bu/Ac | MOISTURE<br>% | TEST WT<br>Lbs/Bu | PROTEIN<br>% | SAWFLY<br>% |
| MTS04114                      | L'Govskaya167/Rmp//MT940    | 88.6       | 29.2              | 64.8           | 8.9           | 61.1              | 12.2         | 31.7        |
| MTS0031                       | GENOU                       | 89.8       | 34.4              | 63.3           | 9.1           | 61.3              | 12.2         | 20.0        |
| PI619098                      | WAHOO                       | 92.6       | 30.8              | 62.9           | 8.6           | 60.1              | 13.0         | 56.7        |
| MTS04120                      | L'Govskaya 167/Rampart      | 91.4       | 33.5              | 61.2           | 9.1           | 61.0              | 12.8         | 16.7        |
| PI555458                      | PROMONTORY                  | 88.0       | 32.9              | 59.3           | 8.4           | 61.4              | 11.6         | 78.3        |
| MT0495                        | MT9640/NB1133               | 92.3       | 30.7              | 59.0           | 8.3           | 59.4              | 13.8         | 71.7        |
| BZ96-788                      | LEDGER                      | 88.0       | 29.5              | 58.6           | 9.0           | 61.5              | 11.5         | 65.0        |
| PI593891                      | VANGUARD                    | 91.4       | 33.1              | 57.1           | 9.0           | 61.2              | 12.7         | 18.3        |
| MT 9432                       | BigSKY                      | 93.2       | 34.1              | 56.8           | 8.7           | 61.0              | 13.4         | 30.0        |
| ND9257                        | JERRY                       | 92.6       | 34.4              | 55.2           | 8.9           | 60.7              | 12.4         | 68.3        |
| BZ96-919                      | PRYOR                       | 89.5       | 29.9              | 54.6           | 8.6           | 60.1              | 12.4         | 43.3        |
| PI599336                      | MORGAN                      | 92.0       | 31.2              | 54.5           | 8.9           | 61.0              | 11.5         | 41.7        |
| CI 17879                      | ROCKY                       | 92.0       | 34.5              | 54.0           | 8.9           | 62.1              | 12.5         | 56.7        |
| PI593889                      | RAMPART                     | 93.5       | 35.1              | 53.9           | 9.0           | 61.1              | 13.5         | 11.7        |
| S94-4                         | CDC FALCON                  | 91.9       | 27.9              | 53.6           | 8.7           | 60.2              | 12.9         | 50.0        |
| MT00159                       | YELLOWSTONE                 | 92.3       | 33.0              | 53.4           | 8.4           | 60.1              | 12.8         | 81.7        |
| JAGALENE                      | JAGALENE                    | 87.7       | 28.9              | 53.2           | 8.6           | 62.6              | 12.6         | 76.7        |
| PI517194                      | TIBER                       | 88.0       | 34.8              | 52.6           | 8.4           | 60.9              | 12.8         | 78.3        |
| MTW9441                       | NuSKY                       | 88.0       | 32.1              | 52.4           | 8.3           | 60.1              | 13.8         | 70.0        |
| MTCL0477                      | MT9409*2//IMMIBC303//Neeley | 94.1       | 32.6              | 52.2           | 8.5           | 59.7              | 12.5         | 81.7        |
| MTCL0316                      | NORRIS                      | 95.3       | 33.4              | 52.1           | 8.7           | 61.7              | 12.3         | 46.7        |
| MTCL0318                      | BYNUM                       | 85.8       | 32.2              | 51.7           | 8.7           | 61.3              | 13.8         | 23.3        |
| MTCL0306                      | HYALITE                     | 92.3       | 32.4              | 50.7           | 8.7           | 61.1              | 12.3         | 55.0        |
| CI 17860                      | NEELEY                      | 92.6       | 32.5              | 50.1           | 8.8           | 60.4              | 12.9         | 91.7        |
| EXPERIMENTAL MEANS            |                             | 90.9       | 32.2              | 55.7           | 8.7           | 60.9              | 12.7         | 52.7        |
| LSD (0.05)                    |                             | 6.0        | 2.6               | 8.7            | 0.3           | 1.0               | -            | 21.1        |
| C.V.2: (S of MEAN / MEAN)*100 |                             | 2.3        | 2.8               | 5.5            | 1.2           | 0.6               | -            | 14.1        |

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight for wheat.

2/ Protein values are adjusted to 12 percent grain moisture.

3/ Sawfly rating is reported as the percentage of cut stems.

| Site Resource & Management Data: (Exp# 07-3852-WW) |              |                           |           |                              |              |
|--|--------------|---------------------------|-----------|------------------------------|--------------|
| Field  |              | SaltHaz(MMHOS/cm) 6-24    | -         | Dry Surf Soil (in.) @ Plnt'g | 1.25         |
| Quarter  | SW           | S (ppm) 0-24              | 60        | 2" Soil Temp (°F) @ Plnt'g   | 57           |
| Section  | 29           | Zn (ppm) 0-6              | 0.76      | 4" Soil Temp (°F) @ Plnt'g   | 56           |
| Township   | 36N          | Fe (ppm) 0-6              | 42.5      | Fertilizer Formulation       | Gran Blend   |
| Range  | 13E          | Mn (ppm) 0-6              | 17.23     | Fertilizer Placement         | Bnd at Plntg |
| Latitude   | N48 50.370'  | Cu (ppm) 0-6              | 1.23      | Fert. Rate (lbs/ac) N        | 70           |
| Longitude  | W110 42.165' | CEC 0-6                   | 9.8       | Fert. Rate (lbs/ac) P2O5     | 40           |
| Soil Series  | unk          | Soil Texture 0-6          | CL        | Fert. Rate (lbs/ac) K2O      | 25           |
| pH 0-6   | 6.1          | Soil Texture 6-24         | CL        | Herbicide App. Date          | 5/1          |
| Org.Matter (%) 0-6                                 | 1.5          | Soil Texture 24-36        | CL        | Herbicide Product            | Bronate Adv  |
| N (lbs/ac) 0-6                                     | 36           | Soil Texture 36-48        | CL-       | Herbicide Rate (/ac)         | 20oz         |
| N (lbs/ac) 6-24                                    | 36           | Init PAW (in.) 0-6"       | 0.85      | Precip (in.) Plnt'g-Harvest  | -            |
| N (lbs/ac) 24-36                                   | 28           | Init PAW (in.) 6-24"      | 3.43      | Precip (>.1) Plnt'g-Harvest  | -            |
| N (lbs/ac) 36-48                                   | 60           | Init PAW (in.) 24-36"     | 1.50      | Harvest Date                 | 8/15         |
| N (lbs/ac) 0-48                                    | 160          | Init PAW (in.) 36-48"     | 1.60      | Rooting Depth (in.)          | 31"          |
| P (ppm) Olsen 0-6                                  | 28           | Init PAW (in.) 0-48"      | 7.38      | Post PAW (in.) 0-6"          | 0.25         |
| K (ppm) 0-6  | 271          | Cropping System           | NT-ChmFlw | Post PAW (in.) 6-24"         | 1.49         |
| Ca (ppm)   | 1122         | Previous Crop             | WW        | Post PAW (in.) 24-36"        | -            |
| Mg (ppm) 0-6                                       | 405          | Planting Date             | 9/27      | Post PAW (in.) 36-48"        | -            |
| Na (ppm) 0-6                                       | 23           | Planting Depth (in.)      | 1.5       | Post PAW (in.) 0-48"         | 1.74         |
| SaltHaz (MMHOS/cm) 0-6                             | 0.1          | Moist Soil Depth @ Plnt'g | 48+       | Precip (>.1) Hvst-Post       | 0            |

**TABLE 2. Four-Year Yield and Test Weight Summary of Selected Entries from Dryland Fallow Winter Wheat Variety Nurseries Grown Off-Station in a Wheat Stem Sawfly Environment at the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2003-2007. (Exp# 3852-WW)**

| 2/ VARIETY or SELECTION               | No. of YEARS TESTED<br>3/          | 1/ YIELD (Bushels Per Acre) |            |      |      |      | TEST WEIGHT (Pounds Per Bushel) |                        |             |            |      | 4-YR COMP. AVE. TEST WT<br>5/ |      |      |                             |                          |             |
|---------------------------------------|------------------------------------|-----------------------------|------------|------|------|------|---------------------------------|------------------------|-------------|------------|------|-------------------------------|------|------|-----------------------------|--------------------------|-------------|
|                                       |                                    | 2003                        | 2004<br>6/ | 2005 | 2006 | 2007 | AVE. for YEARS TESTED<br>3/     | % of CHECK YIELD<br>4/ | 2003        | 2004<br>6/ | 2005 |                               | 2006 | 2007 | AVE. for YEARS TESTED<br>3/ | % of CHECK TEST WT<br>4/ |             |
| MTS 0031 GENOU (sawfly res.)(+)       | 4                                  | 55.0                        |            | 36.9 | 40.1 | 63.3 | 48.8                            | 111.7                  | <b>48.8</b> | 59.6       |      | 55.1                          | 61.6 | 61.3 | 59.4                        | 102.8                    | <b>59.4</b> |
| MTCL0316 NORRIS (P, CL++)             | 3                                  |                             |            | 35.8 | 40.5 | 52.1 | 42.8                            | 111.0                  | <b>48.5</b> |            |      | 55.7                          | 62.9 | 61.7 | 60.1                        | 103.6                    | <b>59.9</b> |
| PI619098 WAHOO (+)                    | 3                                  |                             |            | 31.4 | 30.0 | 62.9 | 41.4                            | 107.5                  | <b>47.0</b> |            |      | 53.8                          | 60.8 | 60.1 | 58.2                        | 100.3                    | <b>58.0</b> |
| PI555458 PROMONTORY                   | 4                                  | 56.2                        |            | 37.2 | 29.4 | 59.3 | 45.5                            | 104.1                  | <b>45.5</b> | 61.8       |      | 57.4                          | 61.8 | 61.4 | 60.6                        | 104.8                    | <b>60.6</b> |
| PI599336 MORGAN (P+)                  | 4                                  | 56.4                        |            | 35.3 | 34.6 | 54.5 | 45.2                            | 103.4                  | <b>45.2</b> | 58.0       |      | 53.6                          | 59.6 | 61.0 | 58.0                        | 100.4                    | <b>58.0</b> |
| PI593891 VANGUARD (sawfly res.)       | 4                                  | 46.8                        |            | 38.2 | 36.5 | 57.1 | 44.7                            | 102.1                  | <b>44.7</b> | 59.5       |      | 55.4                          | 61.5 | 61.2 | 59.4                        | 102.8                    | <b>59.4</b> |
| PI593889 RAMPART (sawfly res.)        | 4                                  | 54.8                        |            | 35.9 | 34.0 | 53.9 | 44.6                            | 102.1                  | <b>44.6</b> | 59.6       |      | 55.1                          | 61.2 | 61.1 | 59.3                        | 102.5                    | <b>59.3</b> |
| MTW 9441 NUSKY (HW)                   | 4                                  | 55.9                        |            | 30.5 | 39.7 | 52.4 | 44.6                            | 102.0                  | <b>44.6</b> | 60.4       |      | 55.3                          | 61.3 | 60.1 | 59.3                        | 102.5                    | <b>59.3</b> |
| ND9257 JERRY                          | 4                                  | 61.4                        |            | 34.3 | 27.4 | 55.2 | 44.6                            | 102.0                  | <b>44.6</b> | 57.8       |      | 54.1                          | 59.7 | 60.7 | 58.1                        | 100.5                    | <b>58.1</b> |
| CI 17879 ROCKY (P)                    | 4                                  | 51.7                        |            | 35.8 | 35.8 | 54.0 | 44.3                            | 101.4                  | <b>44.3</b> | 61.3       |      | 57.2                          | 62.6 | 62.1 | 60.8                        | 105.2                    | <b>60.8</b> |
| JAGALENE JAGALENE (P+)                | 3                                  |                             |            | 32.9 | 30.6 | 53.2 | 38.9                            | 100.8                  | <b>44.1</b> |            |      | 56.9                          | 62.3 | 62.6 | 60.6                        | 104.4                    | <b>60.3</b> |
| CI 17860 NEELEY                       | 4                                  | 59.2                        |            | 31.4 | 34.2 | 50.1 | 43.7                            | 100.0                  | <b>43.7</b> | 57.1       |      | 55.2                          | 58.5 | 60.4 | 57.8                        | 100.0                    | <b>57.8</b> |
| S94-4 CDC FALCON (P+)                 | 4                                  | 54.1                        |            | 31.4 | 34.8 | 53.6 | 43.5                            | 99.4                   | <b>43.5</b> | 59.0       |      | 54.3                          | 61.2 | 60.2 | 58.7                        | 101.5                    | <b>58.7</b> |
| MTCL0318 BYNUM (sf res.)(P, CL++)     | 3                                  |                             |            | 33.8 | 28.7 | 51.7 | 38.1                            | 98.7                   | <b>43.2</b> |            |      | 56.4                          | 60.5 | 61.3 | 59.4                        | 102.4                    | <b>59.2</b> |
| MT 9432 BIGSKY (+)                    | 4                                  | 45.9                        |            | 32.8 | 33.2 | 56.8 | 42.2                            | 96.4                   | <b>42.2</b> | 61.1       |      | 55.0                          | 61.4 | 61.0 | 59.6                        | 103.2                    | <b>59.6</b> |
| BZ96-919 PRYOR (P+)                   | 4                                  | 48.6                        |            | 31.6 | 33.3 | 54.6 | 42.0                            | 96.1                   | <b>42.0</b> | 57.4       |      | 54.0                          | 61.2 | 60.1 | 58.2                        | 100.7                    | <b>58.2</b> |
| PI517194 TIBER                        | 4                                  | 45.0                        |            | 34.5 | 34.0 | 52.6 | 41.5                            | 95.0                   | <b>41.5</b> | 59.8       |      | 55.4                          | 61.3 | 60.9 | 59.4                        | 102.7                    | <b>59.4</b> |
| MEANS (For Entries Listed)            |                                    | 53.1                        |            | 34.1 | 33.9 | 55.1 |                                 |                        | <b>44.6</b> | 59.4       |      | 55.3                          | 61.1 | 61.0 |                             |                          | <b>59.2</b> |
| 7/ Growing Season Precipitation (in.) |                                    | 3.7                         |            | n/a  | 4.7  | 3.9  | 4.1                             |                        |             |            |      |                               |      |      |                             |                          |             |
| Soil PAW (in.) to SD @ Planting       |                                    | 8.6                         |            | 8.0  | 4.5  | 7.4  | 7.1                             |                        |             |            |      |                               |      |      |                             |                          |             |
| Total Plant Available Water (in.)     |                                    | 12.3                        |            | 8    | 9    | 9    | 10                              |                        |             |            |      |                               |      |      |                             |                          |             |
| Soil NO3 (lbs.) to SD at Planting     |                                    | 80.0                        |            | 108  | 178  | 364  | 183                             |                        |             |            |      |                               |      |      |                             |                          |             |
| Fertilizer Applied                    | (# N)                              | 70                          |            | 70   | 70   | 70   | 70                              |                        |             |            |      |                               |      |      |                             |                          |             |
|                                       | (# P <sub>2</sub> O <sub>5</sub> ) | 40                          |            | 40   | 40   | 40   | 40                              |                        |             |            |      |                               |      |      |                             |                          |             |
|                                       | (# K <sub>2</sub> O)               | 25                          |            | 25   | 25   | 25   | 25                              |                        |             |            |      |                               |      |      |                             |                          |             |

Check Variety is Neeley.

1/ See MCES Bulletin 1098 or the Plant Sciences & Plant Pathology website at <http://plantsciences.montana.edu/> for evaluation of other important variety performance characteristics to include protein, quality, winter hardiness, disease resistance, etc. before making cultivar selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending, HW = Hard White Wheat, CL = Clearfield Line.

3/ Only the most recent 5 years shown, but summary calculations include all years noted.

4/ Percent of Neeley yield or test weight for the same data years as those in which a given entry was tested.

5/ 4-Yr Comparable Average = (x/y) \* z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Neeley for the same years, and z = 4-Yr average yield or test weight for the check variety Neeley.

6/ 2004 Nursery not harvested due to extreme variability not associated with varietal differences.

7/ April 1 to 14 days prior to harvest maturity.

**TABLE 3. Dryland Fallow Winter Wheat Cultivar Evaluation Nursery Grown Off-Station at the McKeever Farm & Seed, Inc., Loma. Northern Agricultural Research Center. Havre, Montana. 2007. (Exp# 07-3853-WW)**

| ID                            | CULTIVAR or SELECTION      | STAND<br>% | PLNT HT<br>Inches | 1/             | MOISTURE<br>% | TEST WT<br>Lbs/Bu | 2/           | 3/          |
|-------------------------------|----------------------------|------------|-------------------|----------------|---------------|-------------------|--------------|-------------|
|                               |                            |            |                   | YIELD<br>Bu/Ac |               |                   | PROTEIN<br>% | SAWFLY<br>% |
| PI619098                      | WAHOO                      | 98.3       | 31.3              | 73.9           | 7.2           | 59.0              | 12.9         | 5.3         |
| MTCL0477                      | MT9409*2/IMMIBC303//Neeley | 96.9       | 34.5              | 68.8           | 7.4           | 57.6              | 12.9         | 2.3         |
| CI 17879                      | ROCKY                      | 97.9       | 37.4              | 68.2           | 7.5           | 61.2              | 12.7         | 2.3         |
| MT0495                        | MT9640/NB1133              | 100.0      | 35.6              | 67.6           | 7.1           | 58.7              | 12.7         | 4.0         |
| S94-4                         | CDC FALCON                 | 96.9       | 30.8              | 67.5           | 7.4           | 59.1              | 13.1         | 0.7         |
| MTS04114                      | L'Govskaya 167/Rmp//MT940  | 100.0      | 32.5              | 65.7           | 7.7           | 61.1              | 12.1         | 0.7         |
| MT00159                       | YELLOWSTONE                | 98.6       | 35.2              | 65.5           | 7.2           | 58.6              | 12.8         | 2.3         |
| PI599336                      | MORGAN                     | 97.2       | 35.3              | 64.7           | 7.1           | 58.6              | 13.3         | 3.7         |
| PI555458                      | PROMONTORY                 | 99.3       | 35.0              | 64.4           | 7.6           | 61.9              | 11.9         | 11.7        |
| MTS04120                      | L'Govskaya 167/Rampart     | 99.0       | 36.0              | 63.8           | 7.3           | 59.2              | 13.0         | 0.7         |
| JAGALENE                      | JAGALENE                   | 97.2       | 33.0              | 62.9           | 7.5           | 62.2              | 13.3         | 5.3         |
| MTW9441                       | NUSKY                      | 98.6       | 35.8              | 62.5           | 7.4           | 59.3              | 13.1         | 1.0         |
| MTCL0306                      | HYALITE                    | 99.3       | 36.3              | 61.7           | 7.3           | 60.2              | 13.6         | 3.7         |
| BZ96-788                      | LEDGER                     | 97.9       | 33.4              | 61.5           | 7.4           | 60.6              | 12.8         | 3.7         |
| MTCL0316                      | NORRIS                     | 96.5       | 36.0              | 61.2           | 7.3           | 60.4              | 12.4         | 11.7        |
| ND9257                        | JERRY                      | 97.9       | 38.8              | 60.7           | 7.2           | 58.3              | 13.0         | 6.7         |
| CI 17860                      | NEELEY                     | 96.9       | 36.7              | 60.4           | 7.2           | 57.9              | 13.3         | 7.0         |
| PI593889                      | RAMPART                    | 99.0       | 37.4              | 60.0           | 7.1           | 59.5              | 13.4         | 0.0         |
| MTCL0318                      | BYNUM                      | 99.0       | 35.3              | 59.6           | 7.1           | 60.5              | 13.9         | 2.3         |
| MT 9432                       | BIGSKY                     | 97.2       | 37.1              | 59.4           | 7.3           | 58.5              | 14.5         | 3.7         |
| BZ96-919                      | PRYOR                      | 98.3       | 32.2              | 59.3           | 7.0           | 57.8              | 13.7         | 0.3         |
| PI517194                      | TIBER                      | 99.3       | 37.4              | 58.7           | 7.2           | 59.4              | 13.8         | 5.0         |
| MTS0031                       | GENOU                      | 99.0       | 35.0              | 58.5           | 7.2           | 58.6              | 12.8         | 2.0         |
| PI593891                      | VANGUARD                   | 99.7       | 36.1              | 57.8           | 7.1           | 59.3              | 14.1         | 1.0         |
| EXPERIMENTAL MEANS            |                            | 98.3       | 35.2              | 63.1           | 7.3           | 59.5              | 13.1         | 3.6         |
| LSD (0.05)                    |                            | 3.0        | 2.5               | 9.1            | 0.2           | 1.0               | -            | 4.0         |
| C.V.2: (S of MEAN / MEAN)*100 |                            | 1.1        | 2.5               | 5.1            | 1.1           | 0.6               | -            | 39.0        |

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight for wheat.

2/ Protein values are adjusted to 12 percent grain moisture.

3/ Sawfly rating is reported as the percentage of cut stems.

| Site Resource & Management Data: (Exp# 07-3853-WW) |              |                          |           |                             |              |
|--|--------------|--------------------------|-----------|-----------------------------|--------------|
| Field  |              | SaltHaz (MMHOS/cm) 6-24  | -         | Dry Surf Soil (in.) @Plnt'g | 0.25         |
| Quarter  | SE           | S (ppm) 0-24             | -         | 2" Soil Temp (°F) @ Plnt'g  | 57           |
| Section  | 20           | Zn (ppm) 0-6             | -         | 4" Soil Temp (°F) @ Plnt'g  | 55           |
| Township   | 27N          | Fe (ppm) 0-6             | -         | Fertilizer Formulation      | Gran Blend   |
| Range  | 10E          | Mn (ppm) 0-6             | -         | Fertilizer Placement        | Bnd at Plntg |
| Latitude   | N48 42.897'  | Cu (ppm) 0-6             | -         | Fert. Rate (lbs/ac) N       | 70           |
| Longitude  | W110 27.481' | CEC 0-6                  | -         | Fert. Rate (lbs/ac) P2O5    | 40           |
| Soil Series  | unk          | Soil Texture 0-6         | -         | Fert. Rate (lbs/ac) K2O     | 25           |
| pH 0-6   | -            | Soil Texture 6-24        | -         | Herbicide App. Date         | 5/1          |
| Org.Matter (%) 0-6                                 | -            | Soil Texture 24-36       | -         | Herbicide Product           | Bronate Adv  |
| N (lbs/ac) 0-6                                     | -            | Soil Texture 36-48       | -         | Herbicide Rate (/ac)        | 20oz         |
| N (lbs/ac) 6-24                                    | -            | Init PAW (in.) 0-6"      | -         | Precip (in.) Plnt'g-Harvest | -            |
| N (lbs/ac) 24-36                                   | -            | Init PAW (in.) 6-24"     | -         | Precip (>.1) Plnt'g-Harvest | -            |
| N (lbs/ac) 36-48                                   | -            | Init PAW (in.) 24-36"    | -         | Harvest Date                | 7/31         |
| N (lbs/ac) 0-48                                    | -            | Init PAW (in.) 36-48"    | -         | Rooting Depth (in.)         | -            |
| P (ppm) Olsen 0-6                                  | -            | Init PAW (in.) 0-48"     | -         | Post PAW (in.) 0-6"         | -            |
| K (ppm) 0-6  | -            | Cropping System          | NT-ChmFlw | Post PAW (in.) 6-24"        | -            |
| Ca (ppm)   | -            | Previous Crop            | SW        | Post PAW (in.) 24-36"       | -            |
| Mg (ppm) 0-6                                       | -            | Planting Date            | 9/28      | Post PAW (in.) 36-48"       | -            |
| Na (ppm) 0-6                                       | -            | Planting Depth (in.)     | 1.5       | Post PAW (in.) 0-48"        | -            |
| SaltHaz (MMHOS/cm) 0-6                             | -            | Moist Soil Depth @Plnt'g | 48+       | Precip (>.1) Hvst-Post      | -            |

**TABLE 4. Eight-Year Yield and Test Weight Summary of Selected Entries from Dryland Fallow Winter Wheat Variety Nurseries Grown Off-Station at McKeever Farms, Loma, Northern Agricultural Research Center. Havre, Montana. 1999-2007. (Exp# 3853-WW)**

| 2/ VARIETY or SELECTION               | No. of YEARS TESTED<br>3/          | 1/ YIELD (Bushels Per Acre) |      |      |      |      | TEST WEIGHT (Pounds Per Bushel) |                        |                             |      |      | 8-YR COMP. AVE. TEST WT<br>5/ |      |      |      |                   |                          |
|---------------------------------------|------------------------------------|-----------------------------|------|------|------|------|---------------------------------|------------------------|-----------------------------|------|------|-------------------------------|------|------|------|-------------------|--------------------------|
|                                       |                                    | 2003                        | 2004 | 2005 | 2006 | 2007 | AVE. TESTED<br>3/               | % of CHECK YIELD<br>4/ | 8-YR COMP. AVE. YIELD<br>5/ | 2003 | 2004 |                               | 2005 | 2006 | 2007 | AVE. TESTED<br>3/ | % of CHECK TEST WT<br>4/ |
| CI 17860 NEELEY                       | 8                                  | 38.8                        | 82.3 | 79.4 | 64.5 | 60.4 | 51.5                            | 100.0                  | <b>51.5</b>                 | 55.9 | 56.4 | 62.9                          | 60.6 | 57.9 | 58.6 | 100.0             | <b>58.6</b>              |
| PI619098 WAHOO (+)                    | 4                                  |                             | 88.8 | 75.3 | 48.2 | 73.9 | 71.5                            | 99.8                   | <b>51.4</b>                 |      | 58.3 | 61.2                          | 60.1 | 59.0 | 59.6 | 100.3             | <b>58.8</b>              |
| BZ96-919 PRYOR (P+)                   | 5                                  | 43.5                        | 81.8 | 79.6 | 57.4 | 59.3 | 64.3                            | 98.8                   | <b>50.9</b>                 | 55.9 | 56.0 | 62.2                          | 62.5 | 57.8 | 58.9 | 100.2             | <b>58.7</b>              |
| CI 17879 ROCKY (P)                    | 8                                  | 48.1                        | 91.1 | 71.9 | 28.6 | 68.2 | 50.2                            | 97.4                   | <b>50.2</b>                 | 58.5 | 60.7 | 63.2                          | 60.8 | 61.2 | 60.7 | 103.5             | <b>60.7</b>              |
| S94-4 CDC FALCON (P+)                 | 5                                  | 42.7                        | 81.4 | 75.0 | 48.8 | 67.5 | 63.1                            | 96.9                   | <b>49.9</b>                 | 55.0 | 57.0 | 62.8                          | 61.3 | 59.1 | 59.1 | 100.5             | <b>58.9</b>              |
| PI555458 PROMONTORY                   | 8                                  | 46.7                        | 81.0 | 64.3 | 56.6 | 64.4 | 49.7                            | 96.5                   | <b>49.7</b>                 | 56.2 | 59.7 | 63.0                          | 61.7 | 61.9 | 60.6 | 103.4             | <b>60.6</b>              |
| MTCL0316 NORRIS (P, CL++)             | 3                                  |                             |      | 71.5 | 60.9 | 61.2 | 64.5                            | 94.7                   | <b>48.8</b>                 |      |      | 62.8                          | 62.4 | 60.4 | 61.9 | 102.3             | <b>60.0</b>              |
| PI517194 TIBER                        | 8                                  | 45.4                        | 74.2 | 66.2 | 51.2 | 58.7 | 48.8                            | 94.7                   | <b>48.8</b>                 | 59.5 | 57.6 | 62.0                          | 61.3 | 59.4 | 59.9 | 102.2             | <b>59.9</b>              |
| PI599336 MORGAN (P+)                  | 8                                  | 40.6                        | 79.1 | 58.3 | 57.7 | 64.7 | 48.6                            | 94.4                   | <b>48.6</b>                 | 54.4 | 54.1 | 60.1                          | 60.7 | 58.6 | 58.1 | 99.1              | <b>58.1</b>              |
| JAGALENE JAGALENE (P+)                | 4                                  |                             | 93.0 | 64.6 | 48.2 | 62.9 | 67.2                            | 93.8                   | <b>48.3</b>                 |      | 61.7 | 63.6                          | 62.8 | 62.2 | 62.6 | 105.2             | <b>61.7</b>              |
| MT 9426 PAUL                          | 6                                  | 37.8                        | 83.8 | 72.2 | 59.2 |      | 49.2                            | 93.1                   | <b>48.0</b>                 | 53.0 | 54.5 | 61.4                          | 60.2 |      | 57.2 | 98.3              | <b>57.6</b>              |
| MTW 9441 NUSKY (HW)                   | 8                                  | 40.7                        | 79.1 | 63.0 | 60.3 | 62.5 | 47.7                            | 92.7                   | <b>47.7</b>                 | 57.6 | 57.1 | 61.5                          | 62.0 | 59.3 | 59.4 | 101.4             | <b>59.4</b>              |
| PI593891 VANGUARD (sawfly res.)       | 8                                  | 40.8                        | 74.4 | 68.5 | 50.3 | 57.8 | 47.7                            | 92.6                   | <b>47.7</b>                 | 59.1 | 57.3 | 61.6                          | 60.6 | 59.3 | 59.6 | 101.7             | <b>59.6</b>              |
| MT 9432 BIGSKY (+)                    | 8                                  | 35.8                        | 73.7 | 73.1 | 48.3 | 59.4 | 47.5                            | 92.2                   | <b>47.5</b>                 | 55.6 | 54.7 | 62.6                          | 60.7 | 58.5 | 59.1 | 100.8             | <b>59.1</b>              |
| ND9257 JERRY                          | 5                                  | 43.2                        | 88.2 | 63.2 | 44.5 | 60.7 | 59.9                            | 92.1                   | <b>47.4</b>                 | 57.4 | 57.1 | 61.3                          | 60.2 | 58.3 | 58.9 | 100.2             | <b>58.7</b>              |
| MTS 0031 GENOU (sawfly res.)(+)       | 5                                  | 39.4                        | 73.5 | 69.3 | 57.3 | 58.5 | 59.6                            | 91.5                   | <b>47.2</b>                 | 56.1 | 58.2 | 62.2                          | 61.2 | 58.6 | 59.3 | 100.9             | <b>59.1</b>              |
| PI593889 RAMPART (sawfly res.)        | 8                                  | 37.0                        | 70.5 | 61.7 | 49.0 | 60.0 | 46.7                            | 90.6                   | <b>46.7</b>                 | 59.2 | 56.9 | 61.5                          | 61.0 | 59.5 | 59.6 | 101.7             | <b>59.6</b>              |
| MTCL0318 BYNUM (sf res.)(P, CL++)     | 3                                  |                             |      | 61.2 | 46.7 | 59.6 | 55.8                            | 82.0                   | <b>42.2</b>                 |      |      | 61.4                          | 60.4 | 60.5 | 60.8 | 100.5             | <b>58.9</b>              |
| MEANS (For Entries Listed)            |                                    | 41.5                        | 81.0 | 68.8 | 52.1 | 62.3 |                                 |                        | <b>48.5</b>                 | 56.7 | 57.3 | 62.1                          | 61.1 | 59.5 |      |                   | <b>59.3</b>              |
| 6/ Growing Season Precipitation (in.) |                                    | 4.0                         | 7.4  | n/a  | 8.6  | 6.9  | 6.7                             |                        |                             |      |      |                               |      |      |      |                   |                          |
| Soil PAW (in.) to SD @ Planting       |                                    | 8.0                         | 5.7  | 4.0  | 7.6  | n/a  | 6.3                             |                        |                             |      |      |                               |      |      |      |                   |                          |
| Total Plant Available Water (in.)     |                                    | 12.0                        | 13.1 | 4.0  | 16.2 | n/a  | 11.3                            |                        |                             |      |      |                               |      |      |      |                   |                          |
| Soil NO3 (lbs.) to SD at Planting     |                                    | 170                         | 286  | 514  | 192  | n/a  | 291                             |                        |                             |      |      |                               |      |      |      |                   |                          |
| Fertilizer Applied                    | (# N)                              | 70                          | 70   | 70   | 70   | 70   | 69                              |                        |                             |      |      |                               |      |      |      |                   |                          |
|                                       | (# P <sub>2</sub> O <sub>5</sub> ) | 40                          | 40   | 40   | 40   | 40   | 40                              |                        |                             |      |      |                               |      |      |      |                   |                          |
|                                       | (# K <sub>2</sub> O)               | 25                          | 25   | 25   | 25   | 25   | 25                              |                        |                             |      |      |                               |      |      |      |                   |                          |

Check Variety is Neeley.

1/ See MCES Bulletin 1098 or the Plant Sciences & Plant Pathology website at <http://plantsciences.montana.edu/> for evaluation of other important variety performance characteristics to include protein, quality, winter hardiness, disease resistance, etc. before making cultivar selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending, HW = Hard White Wheat, CL = Clearfield Line.

3/ Only the most recent 5 years shown, but summary calculations include all years noted.

4/ Percent of Neeley yield or test weight for the same data years as those in which a given entry was tested.

5/ 8-Yr Comparable Average = (x/y) \* z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Neeley for the same years, and z = 8-Yr average yield or test weight for the check variety Neeley.

6/ April 1 to 14 days prior to harvest maturity.

2002 Nursery abandoned due to extreme drought stress at this location.

**TABLE 5. Dryland Fallow Spring Wheat Cultivar Evaluation Nursery Grown Off-Station at the Leon Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, Montana. 2007. (Exp# 07-9951-SW)**

| ID                            | CULTIVAR or SELECTION | STAND<br>% | PLNT HT<br>Inches | 1/             | MOISTURE<br>% | TEST WT<br>Lbs/Bu | 2/           | 3/          |
|-------------------------------|-----------------------|------------|-------------------|----------------|---------------|-------------------|--------------|-------------|
|                               |                       |            |                   | YIELD<br>Bu/Ac |               |                   | PROTEIN<br>% | SAWFLY<br>% |
| BZ992322                      | HANK                  | 98.6       | 24.4              | 25.1           | 11.1          | 54.1              | 18.5         | 38.3        |
| BZ996434                      | CORBIN                | 99.7       | 24.9              | 25.0           | 11.3          | 55.0              | 18.0         | 5.0         |
| BZ992588                      | CONAN                 | 99.3       | 23.2              | 24.4           | 11.1          | 56.2              | 17.1         | 11.7        |
| PI632252                      | OUTLOOK               | 99.7       | 23.1              | 24.3           | 10.9          | 53.3              | 16.1         | 41.7        |
| PI633974                      | CHOTEAU               | 99.3       | 22.3              | 24.0           | 11.5          | 54.3              | 17.6         | 6.7         |
| PI642366                      | VIDA                  | 99.3       | 24.2              | 23.9           | 11.4          | 53.9              | 16.7         | 38.3        |
| MT 0414                       | MT9408/MT9406//REEDER | 99.3       | 25.2              | 23.8           | 10.8          | 53.4              | 17.9         | 28.3        |
| CI 13596                      | FORTUNA               | 99.7       | 27.4              | 23.7           | 11.2          | 55.3              | 17.2         | 16.7        |
| PI574642                      | MCNEAL                | 100.0      | 24.7              | 23.6           | 10.7          | 53.0              | 18.0         | 56.7        |
| BZ996472                      | AGAWAM                | 99.0       | 25.1              | 23.1           | 11.9          | 57.4              | 17.0         | 8.3         |
| MT 0415                       | MT9408/MT9406//REEDER | 99.3       | 25.7              | 23.0           | 11.1          | 54.7              | 17.8         | 36.7        |
| MT 0515                       | REEDER/MT9929         | 100.0      | 23.0              | 22.9           | 11.2          | 54.5              | 17.4         | 23.3        |
| PI592761                      | ERNEST                | 99.7       | 26.2              | 22.4           | 11.3          | 54.5              | 17.7         | 23.3        |
| ND 695                        | REEDER                | 100.0      | 25.6              | 22.4           | 11.0          | 54.6              | 17.1         | 35.0        |
| PI619086                      | EXPLORER              | 100.0      | 22.1              | 21.4           | 10.8          | 54.9              | 18.6         | 51.7        |
| WB 926                        | WESTBRED 926          | 99.0       | 24.0              | 20.9           | 11.0          | 54.6              | 17.4         | 45.0        |
| PI607557                      | SCHOLAR               | 99.0       | 26.5              | 20.7           | 10.9          | 54.1              | 17.2         | 41.7        |
| AGRIPRO3                      | FREYR                 | 99.7       | 24.8              | 20.3           | 11.3          | 54.7              | 17.6         | 41.7        |
| AGRIPRO2                      | KNUDSON               | 99.3       | 24.0              | 18.6           | 11.3          | 55.5              | 18.2         | 46.7        |
| AGRIPRO1                      | NORPRO                | 100.0      | 22.9              | 17.3           | 11.0          | 52.0              | 18.5         | 21.7        |
| EXPERIMENTAL MEANS            |                       | 99.5       | 24.5              | 22.5           | 11.2          | 54.5              | 17.6         | 30.9        |
| LSD (0.05)                    |                       | 1.2        | 2.6               | 3.8            | 0.4           | 1.4               | -            | 17.3        |
| C.V.2: (S of MEAN / MEAN)*100 |                       | 0.4        | 3.6               | 5.9            | 1.2           | 0.9               | -            | 19.6        |

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight for wheat.

2/ Protein values are adjusted to 12 percent grain moisture.

3/ Sawfly rating is reported as the percentage of cut stems.

| Site Resource & Management Data: (Exp# 07-9951-SW) |              |                           |            |                              |                    |
|--|--------------|---------------------------|------------|------------------------------|--------------------|
| Field  |              | SaltHaz(MMHOS/cm) 6-24    | -          | Dry Surf Soil (in.) @ Plnt'g | 0.5                |
| Quarter  | SE           | S (ppm) 0-24              | 62         | 2" Soil Temp (°F) @ Plnt'g   | 74                 |
| Section  | 13           | Zn (ppm) 0-6              | 0.61       | 4" Soil Temp (°F) @ Plnt'g   | 68                 |
| Township   | 36N          | Fe (ppm) 0-6              | 45.9       | Fertilizer Formulation       | Gran Blend         |
| Range  | 25E          | Mn (ppm) 0-6              | 12.88      | Fertilizer Placement         | Bnd at Plntg       |
| Latitude   | N48 52.584'  | Cu (ppm) 0-6              | 0.82       | Fert. Rate (lbs/ac) N        | 70                 |
| Longitude  | W108 23.528' | CEC 0-6                   | 8.2        | Fert. Rate (lbs/ac) P2O5     | 40                 |
| Soil Series  | unk          | Soil Texture 0-6          | CL-        | Fert. Rate (lbs/ac) K2O      | 25                 |
| pH 0-6   | 5.6          | Soil Texture 6-24         | CL         | Herbicide App. Date          | 6/6                |
| Org.Matter (%) 0-6                                 | 1.1          | Soil Texture 24-36        | CL         | Herbicide Product            | Bison/turret/achve |
| N (lbs/ac) 0-6                                     | 4            | Soil Texture 36-48        | CL         | Herbicide Rate (/ac)         | 16/8/6.9oz         |
| N (lbs/ac) 6-24                                    | 45           | Init PAW (in.) 0-6"       | 0.73       | Precip (in.) Plnt'g-Harvest  | 7.09               |
| N (lbs/ac) 24-36                                   | 18           | Init PAW (in.) 6-24"      | 2.42       | Precip (>.1) Plnt'g-Harvest  | 5.83               |
| N (lbs/ac) 36-48                                   | 14           | Init PAW (in.) 24-36"     | 1.70       | Harvest Date                 | 8/20               |
| N (lbs/ac) 0-48                                    | 81           | Init PAW (in.) 36-48"     | 0.99       | Rooting Depth (in.)          | 45                 |
| P (ppm) Olsen 0-6                                  | 20           | Init PAW (in.) 0-48"      | 5.84       | Post PAW (in.) 0-6"          | 0.30               |
| K (ppm) 0-6  | 258          | Cropping System           | NT-MechFlw | Post PAW (in.) 6-24"         | 1.54               |
| Ca (ppm)   | 1013         | Previous Crop             | Durum      | Post PAW (in.) 24-36"        | 0.89               |
| Mg (ppm) 0-6                                       | 294          | Planting Date             | 5/9        | Post PAW (in.) 36-48"        | 1.05               |
| Na (MEQ/100g) 0-6                                  | 13           | Planting Depth (in.)      | 1.5        | Post PAW (in.) 0-48"         | 3.78               |
| SaltHaz (MMHOS/cm) 0-6                             | 0.12         | Moist Soil Depth @ Plnt'g | 48+        | Precip (>.1) Hvst-Post       | 0                  |

**TABLE 6. Nine-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Spring Wheat Variety Nurseries Grown Off-Station at the Leon Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, Montana. 1998-2007. (Exp# 9951-SW)**

| 2/ VARIETY or SELECTION               | No. of YEARS TESTED<br>3/          | 1/ YIELD (Bushels Per Acre) |      |      |      |      |                    |                      | TEST WEIGHT (Pounds Per Bushel) |      |      |      |      |      |                    |                        |                          |
|---------------------------------------|------------------------------------|-----------------------------|------|------|------|------|--------------------|----------------------|---------------------------------|------|------|------|------|------|--------------------|------------------------|--------------------------|
|                                       |                                    | 2003                        | 2004 | 2005 | 2006 | 2007 | AVE.               | %                    | 9-YR                            | 2003 | 2004 | 2005 | 2006 | 2007 | AVE.               | %                      | 9-YR                     |
|                                       |                                    |                             |      |      |      |      | YEARS TESTED<br>3/ | of CHECK YIELD<br>4/ | COMP. AVE. YIELD<br>5/          |      |      |      |      |      | YEARS TESTED<br>3/ | of CHECK TEST WT<br>4/ | COMP. AVE. TEST WT<br>5/ |
| PI642366 VIDA (+)                     | 4                                  |                             | 64.0 | 51.0 | 24.7 | 23.9 | 40.9               | 122.9                | <b>40.2</b>                     |      | 60.8 | 59.6 | 57.5 | 53.9 | 58.0               | 98.7                   | <b>58.6</b>              |
| PI549275 HI-LINE                      | 6                                  | 21.9                        | 55.2 |      |      |      | 43.2               | 122.8                | <b>40.2</b>                     | 58.1 | 61.3 |      |      | 59.6 | 98.9               | <b>58.8</b>            |                          |
| PI574642 McNEAL                       | 9                                  | 22.3                        | 58.4 | 43.0 | 22.0 | 23.6 | 40.0               | 122.4                | <b>40.0</b>                     | 58.0 | 61.3 | 59.6 | 56.9 | 53.0 | 58.5               | 98.3                   | <b>58.5</b>              |
| PI633974 CHOTEAU (+)(sawfly res.)     | 7                                  | 24.5                        | 55.2 | 45.4 | 24.1 | 24.0 | 35.8               | 119.6                | <b>39.1</b>                     | 57.7 | 60.3 | 59.2 | 56.5 | 54.3 | 58.2               | 98.5                   | <b>58.5</b>              |
| CI17430 NEWANA                        | 6                                  | 21.0                        | 55.7 |      |      |      | 41.8               | 118.9                | <b>38.9</b>                     | 60.4 | 61.4 |      |      | 60.2 | 100.0              | <b>59.5</b>            |                          |
| ND695 REEDER (+)                      | 8                                  | 23.6                        | 56.0 | 46.0 | 19.7 | 22.4 | 37.1               | 117.4                | <b>38.4</b>                     | 58.3 | 61.7 | 61.3 | 56.4 | 54.6 | 59.5               | 100.3                  | <b>59.6</b>              |
| PI527682 AMIDON (mod sf res.)         | 6                                  | 22.5                        | 48.3 |      |      |      | 40.8               | 115.9                | <b>37.9</b>                     | 57.9 | 60.0 |      |      | 59.4 | 98.6               | <b>58.6</b>            |                          |
| PI592761 ERNEST (+)(sawfly res.)      | 9                                  | 25.6                        | 54.5 | 39.3 | 23.4 | 22.4 | 37.7               | 115.2                | <b>37.7</b>                     | 58.7 | 60.3 | 59.5 | 57.7 | 54.5 | 59.0               | 99.3                   | <b>59.0</b>              |
| C982-324 WB RAMBO (P+)(mod sf res.)   | 6                                  | 22.7                        | 57.1 |      |      |      | 40.5               | 115.1                | <b>37.7</b>                     | 59.6 | 61.2 |      |      | 60.3 | 100.1              | <b>59.5</b>            |                          |
| PI632252 OUTLOOK (+)                  | 7                                  | 24.7                        | 54.6 | 44.5 | 20.9 | 24.3 | 34.3               | 114.8                | <b>37.6</b>                     | 57.9 | 60.8 | 59.5 | 55.8 | 53.3 | 58.0               | 98.2                   | <b>58.4</b>              |
| PI607557 SCHOLAR (+)(mod sf res.)     | 9                                  | 22.8                        | 52.9 | 41.9 | 20.6 | 20.7 | 37.2               | 113.8                | <b>37.2</b>                     | 59.5 | 61.5 | 60.1 | 57.3 | 54.1 | 59.3               | 99.8                   | <b>59.3</b>              |
| BZ992588 CONAN (P+)(sawfly tol.)      | 8                                  | 23.6                        | 53.0 | 43.7 | 21.2 | 24.4 | 35.3               | 111.9                | <b>36.6</b>                     | 60.0 | 61.6 | 60.7 | 58.6 | 56.2 | 59.8               | 100.9                  | <b>60.0</b>              |
| PI619086 EXPLORER (HW)(+)             | 8                                  | 23.3                        | 47.6 | 47.8 | 23.9 | 21.4 | 35.2               | 111.7                | <b>36.6</b>                     | 58.5 | 60.8 | 59.5 | 57.7 | 54.9 | 58.8               | 99.1                   | <b>58.9</b>              |
| BZ996472 AGAWAM (P)                   | 3                                  |                             |      | 46.4 | 23.2 | 23.1 | 30.9               | 111.2                | <b>36.4</b>                     |      |      | 61.2 | 60.5 | 57.4 | 59.7               | 103.1                  | <b>61.3</b>              |
| BZ992322 HANK (P+)                    | 6                                  | 22.2                        | 51.8 | 42.1 | 21.4 | 25.1 | 33.0               | 107.9                | <b>35.3</b>                     | 58.4 | 60.1 | 59.7 | 56.2 | 54.1 | 57.7               | 98.4                   | <b>58.5</b>              |
| WPB926 WB 926 (P)                     | 9                                  | 20.7                        | 47.0 | 43.2 | 21.4 | 20.9 | 34.7               | 106.0                | <b>34.7</b>                     | 58.7 | 60.2 | 58.8 | 56.3 | 54.6 | 58.3               | 98.1                   | <b>58.3</b>              |
| CI13596 FORTUNA (sawfly res.)         | 9                                  | 20.4                        | 49.7 | 38.9 | 20.8 | 23.7 | 32.7               | 100.0                | <b>32.7</b>                     | 58.8 | 61.2 | 60.2 | 58.3 | 55.3 | 59.4               | 100.0                  | <b>59.4</b>              |
| AGRIPRO2 KNUDSON (P+)                 | 3                                  |                             |      | 45.0 | 19.2 | 18.6 | 27.6               | 99.2                 | <b>32.5</b>                     |      |      | 60.0 | 58.0 | 55.5 | 57.8               | 99.8                   | <b>59.3</b>              |
| AGRIPRO1 NORPRO (P+)                  | 3                                  |                             |      | 44.6 | 19.4 | 17.3 | 27.1               | 97.5                 | <b>31.9</b>                     |      |      | 57.7 | 55.9 | 52.0 | 55.2               | 95.3                   | <b>56.7</b>              |
| MEANS (For Entries Listed)            |                                    | 22.8                        | 53.8 | 44.2 | 21.7 | 22.4 |                    |                      | <b>36.9</b>                     | 58.7 | 60.9 | 59.8 | 57.3 | 54.5 |                    |                        | <b>59.0</b>              |
| 6/ Growing Season Precipitation (in.) |                                    | 3.1                         | 13.7 | 9.7  | 2.5  | 7.0  | 7.2                |                      |                                 |      |      |      |      |      |                    |                        |                          |
| Soil PAW (in.) to SD @ Planting       |                                    | 7.0                         | 7.4  | 8.0  | 8.8  | 5.8  | 7.1                |                      |                                 |      |      |      |      |      |                    |                        |                          |
| Total Plant Available Water (in.)     |                                    | 10.1                        | 21.1 | 17.7 | 11.3 | 9.6  | 12.6               |                      |                                 |      |      |      |      |      |                    |                        |                          |
| Soil NO3 (lbs.) to SD at Planting     |                                    | 160                         | 160  | 84   | 64   | 81   | 98                 |                      |                                 |      |      |      |      |      |                    |                        |                          |
| SD (Sampling Depth in Inches)         |                                    | 48                          | 48   | 48   | 48   | 48   | 48                 |                      |                                 |      |      |      |      |      |                    |                        |                          |
| Fertilizer Applied                    | (# N)                              | 70                          | 70   | 70   | 70   | 70   | 70                 |                      |                                 |      |      |      |      |      |                    |                        |                          |
|                                       | (# P <sub>2</sub> O <sub>5</sub> ) | 40                          | 40   | 40   | 40   | 40   | 39                 |                      |                                 |      |      |      |      |      |                    |                        |                          |
|                                       | (# K <sub>2</sub> O)               | 25                          | 25   | 25   | 25   | 25   | 22                 |                      |                                 |      |      |      |      |      |                    |                        |                          |

Check Variety is Fortuna.

1/ See MCES Bulletin 1093 or the Plant Sciences & Plant Pathology website at <http://plantsciences.montana.edu/> for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending, HW = Hard White Wheat.

3/ Only the most recent 5 years are shown, but summary calculations include all years noted.

4/ Percent of Fortuna yield or test weight for the same data years as those in which a given entry was tested.

5/ 9-Yr Comparable Average = (x/y) \* z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Fortuna for the same years, and z = 9-Yr average yield or test weight for the check variety Fortuna.

6/ Seeding to 14 days prior to harvest maturity.

1999 Nursery not planted due to wet conditions extending throughout and beyond the normal seeding period for this location.

**TABLE 7. Dryland Fallow Spring Wheat Cultivar Evaluation Nursery Grown Off-Station at the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2007. (Exp# 07-9952-SW)**

| ID                            | CULTIVAR or SELECTION | STAND<br>% | PLNT HT<br>Inches | 1/             | MOISTURE<br>% | TEST WT<br>Lbs/Bu | 2/           | 3/          |
|-------------------------------|-----------------------|------------|-------------------|----------------|---------------|-------------------|--------------|-------------|
|                               |                       |            |                   | YIELD<br>Bu/Ac |               |                   | PROTEIN<br>% | SAWFLY<br>% |
| MT 0414                       | MT9408/MT9406//REEDER | 96.9       | 29.0              | 48.8           | 9.2           | 57.4              | 16.1         | 13.3        |
| ND 695                        | REEDER                | 97.5       | 27.1              | 46.5           | 9.1           | 57.1              | 15.9         | 8.3         |
| PI642366                      | VIDA                  | 97.5       | 28.6              | 46.4           | 9.3           | 56.4              | 15.3         | 1.0         |
| MT 0515                       | REEDER/MT9929         | 98.1       | 28.3              | 46.0           | 9.3           | 57.7              | 15.3         | 2.3         |
| MT 0415                       | MT9408/MT9406//REEDER | 97.5       | 28.3              | 45.9           | 9.0           | 57.1              | 16.2         | 10.0        |
| PI632252                      | OUTLOOK               | 96.3       | 26.7              | 45.5           | 8.7           | 54.1              | 15.7         | 8.3         |
| BZ996434                      | CORBIN                | 96.9       | 26.6              | 45.4           | 9.4           | 58.3              | 16.1         | 1.0         |
| BZ992588                      | CONAN                 | 96.3       | 26.9              | 45.3           | 9.4           | 58.4              | 15.7         | 5.0         |
| PI619086                      | EXPLORER              | 90.1       | 25.8              | 42.9           | 9.2           | 55.7              | 15.5         | 8.3         |
| BZ996472                      | AGAWAM                | 95.7       | 27.0              | 42.7           | 10.1          | 60.4              | 15.0         | 3.7         |
| AGRIPRO1                      | NORPRO                | 97.5       | 26.6              | 42.7           | 9.3           | 57.7              | 15.0         | 10.0        |
| AGRIPRO3                      | FREYR                 | 96.9       | 28.4              | 42.1           | 9.4           | 57.6              | 15.7         | 15.0        |
| BZ992322                      | HANK                  | 95.7       | 25.7              | 41.5           | 9.1           | 55.8              | 15.7         | 15.0        |
| PI633974                      | CHOTEAU               | 96.3       | 26.7              | 41.5           | 9.1           | 56.9              | 16.1         | 2.3         |
| PI607557                      | SCHOLAR               | 98.1       | 31.4              | 40.9           | 9.4           | 58.4              | 15.0         | 10.0        |
| AGRIPRO2                      | KNUDSON               | 96.9       | 27.7              | 40.6           | 9.3           | 58.1              | 16.0         | 11.7        |
| PI574642                      | MCNEAL                | 96.3       | 25.7              | 40.0           | 8.9           | 54.6              | 16.4         | 12.0        |
| PI592761                      | ERNEST                | 97.5       | 29.6              | 39.1           | 9.1           | 56.8              | 16.5         | 10.0        |
| CI 13596                      | FORTUNA               | 96.9       | 32.8              | 38.3           | 9.4           | 57.1              | 15.6         | 8.3         |
| WB 926                        | WESTBRED 926          | 87.6       | 25.4              | 38.2           | 9.1           | 56.0              | 16.1         | 13.3        |
| EXPERIMENTAL MEANS            |                       | 96.1       | 27.7              | 43.0           | 9.3           | 57.1              | 15.7         | 8.5         |
| LSD (0.05)                    |                       | 7.8        | 2.0               | 5.3            | 0.3           | 2.3               | -            | 7.2         |
| C.V.2: (S of MEAN / MEAN)*100 |                       | 2.8        | 2.5               | 4.3            | 1.0           | 1.4               | -            | 29.9        |

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight for wheat.

2/ Protein values are adjusted to 12 percent grain moisture.

3/ Sawfly rating is reported as the percentage of cut stems.

| Site Resource & Management Data: (Exp# 07-9952-SW) |              |                           |           |                              |              |
|--|--------------|---------------------------|-----------|------------------------------|--------------|
| Field  |              | SaltHaz(MMHOS/cm) 6-24    | -         | Dry Surf Soil (in.) @ Plnt'g | 0.25         |
| Quarter  | SW           | S (ppm) 0-24              | 8         | 2" Soil Temp (°F) @ Plnt'g   | 68           |
| Section  | 29           | Zn (ppm) 0-6              | 0.31      | 4" Soil Temp (°F) @ Plnt'g   | 66           |
| Township   | 36N          | Fe (ppm) 0-6              | 12.7      | Fertilizer Formulation       | Gran Blend   |
| Range  | 13E          | Mn (ppm) 0-6              | 4.85      | Fertilizer Placement         | Bnd at Plntg |
| Latitude   | N48 50.370'  | Cu (ppm) 0-6              | 0.97      | Fert. Rate (lbs/ac) N        | 70           |
| Longitude  | W110 42.165' | CEC 0-6                   | 22.1      | Fert. Rate (lbs/ac) P2O5     | 40           |
| Soil Series  | Assnbn Cplx  | Soil Texture 0-6          | CL        | Fert. Rate (lbs/ac) K2O      | 25           |
| pH 0-6   | 7.5          | Soil Texture 6-24         | CL        | Herbicide App. Date          | 6/13         |
| Org.Matter (%) 0-6                                 | 1.4          | Soil Texture 24-36        | CL        | Herbicide Product            | Bronate Adv  |
| N (lbs/ac) 0-6                                     | 10           | Soil Texture 36-48        | CL-       | Herbicide Rate (/ac)         | 20oz         |
| N (lbs/ac) 6-24                                    | -            | Init PAW (in.) 0-6"       | 0.99      | Precip (in.) Plnt'g-Harvest  | 2.66         |
| N (lbs/ac) 24-36                                   | -            | Init PAW (in.) 6-24"      | -         | Precip (>.1) Plnt'g-Harvest  | 3.88         |
| N (lbs/ac) 36-48                                   | -            | Init PAW (in.) 24-36"     | -         | Harvest Date                 | 8/15         |
| N (lbs/ac) 0-48                                    | 10           | Init PAW (in.) 36-48"     | -         | Rooting Depth (in.)          | 32           |
| P (ppm) Olsen 0-6                                  | 15           | Init PAW (in.) 0-48"      | 0.99      | Post PAW (in.) 0-6"          | 0.3          |
| K (ppm) 0-6  | 253          | Cropping System           | NT-ChmFlw | Post PAW (in.) 6-24"         | 1.5          |
| Ca (ppm)   | 3456         | Previous Crop             | WW        | Post PAW (in.) 24-36"        | 1.1          |
| Mg (ppm) 0-6                                       | 496          | Planting Date             | 5/2       | Post PAW (in.) 36-48"        | 1.9          |
| Na (ppm) 0-6                                       | 13           | Planting Depth (in.)      | 1.5       | Post PAW (in.) 0-48"         | 4.7          |
| SaltHaz (MMHOS/cm) 0-6                             | 0.24         | Moist Soil Depth @ Plnt'g | 48+       | Precip (>.1) Hvst-Post       | 0            |

**TABLE 8. Three-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Spring Wheat Variety Nurseries Grown Off-Station at the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2005-2007. (Exp# 9952-SW)**

| 2/ VARIETY or SELECTION               | No. of YEARS TESTED 3/             | 1/ YIELD (Bushels Per Acre) |      |      | TEST WEIGHT (Pounds Per Bushel) |                     |                          | 3-YR COMP. AVE. YIELD 5/ | 3-YR COMP. AVE. TEST WT 5/ |                       |      |       |             |
|---------------------------------------|------------------------------------|-----------------------------|------|------|---------------------------------|---------------------|--------------------------|--------------------------|----------------------------|-----------------------|------|-------|-------------|
|                                       |                                    | 2005                        | 2006 | 2007 | AVE. for YEARS TESTED 3/        | % of CHECK YIELD 4/ | AVE. for YEARS TESTED 3/ |                          |                            | % of CHECK TEST WT 4/ |      |       |             |
| BZ992588 CONAN (P+)(sawfly tol.)      | 3                                  | 29.4                        | 18.0 | 45.3 | 30.9                            | 120.3               | <b>30.9</b>              | 54.6                     | 54.2                       | 58.4                  | 55.8 | 101.4 | <b>55.8</b> |
| PI642366 VIDA (+)                     | 3                                  | 29.6                        | 16.2 | 46.4 | 30.8                            | 119.8               | <b>30.8</b>              | 52.2                     | 51.2                       | 56.4                  | 53.3 | 96.8  | <b>53.3</b> |
| BZ996472 AGAWAM (P)                   | 3                                  | 28.3                        | 18.1 | 42.7 | 29.7                            | 115.7               | <b>29.7</b>              | 56.0                     | 55.9                       | 60.4                  | 57.5 | 104.5 | <b>57.5</b> |
| PI632252 OUTLOOK (+)                  | 3                                  | 25.9                        | 15.3 | 45.5 | 28.9                            | 112.6               | <b>28.9</b>              | 52.0                     | 50.8                       | 54.1                  | 52.3 | 95.1  | <b>52.3</b> |
| PI633974 CHOTEAU (+)(sawfly res.)     | 3                                  | 27.9                        | 16.3 | 41.5 | 28.6                            | 111.4               | <b>28.6</b>              | 52.9                     | 52.0                       | 56.9                  | 53.9 | 98.1  | <b>53.9</b> |
| PI619086 EXPLORER (HW)(+)             | 3                                  | 24.8                        | 15.3 | 42.9 | 27.7                            | 107.7               | <b>27.7</b>              | 52.3                     | 50.5                       | 55.7                  | 52.8 | 96.1  | <b>52.8</b> |
| BZ992322 HANK (P+)                    | 3                                  | 25.2                        | 14.8 | 41.5 | 27.2                            | 105.9               | <b>27.2</b>              | 51.1                     | 51.5                       | 55.8                  | 52.8 | 96.0  | <b>52.8</b> |
| PI592761 ERNEST (+)(sawfly res.)      | 3                                  | 25.1                        | 17.2 | 39.1 | 27.1                            | 105.7               | <b>27.1</b>              | 53.0                     | 52.7                       | 56.8                  | 54.2 | 98.5  | <b>54.2</b> |
| PI574642 McNEAL                       | 3                                  | 24.3                        | 14.7 | 40.0 | 26.3                            | 102.5               | <b>26.3</b>              | 51.8                     | 50.2                       | 54.6                  | 52.2 | 94.9  | <b>52.2</b> |
| WB 926 WESTBRED 926 (P)               | 3                                  | 22.6                        | 17.7 | 38.2 | 26.1                            | 101.9               | <b>26.1</b>              | 51.4                     | 52.2                       | 56.0                  | 53.2 | 96.7  | <b>53.2</b> |
| ND 695 REEDER (+)                     | 3                                  | 20.4                        | 11.2 | 46.5 | 26.0                            | 101.5               | <b>26.0</b>              | 51.6                     | 50.6                       | 57.1                  | 53.1 | 96.5  | <b>53.1</b> |
| CI 13596 FORTUNA (sawfly res.)        | 3                                  | 26.3                        | 12.5 | 38.3 | 25.7                            | 100.0               | <b>25.7</b>              | 54.3                     | 53.6                       | 57.1                  | 55.0 | 100.0 | <b>55.0</b> |
| AGRIPRO2 KNUDSON (P+)                 | 3                                  | 21.5                        | 13.2 | 40.6 | 25.1                            | 97.8                | <b>25.1</b>              | 52.6                     | 52.6                       | 58.1                  | 54.4 | 99.0  | <b>54.4</b> |
| PI607557 SCHOLAR (+)(mod sf res.)     | 3                                  | 19.3                        | 13.0 | 40.9 | 24.4                            | 95.0                | <b>24.4</b>              | 52.5                     | 52.3                       | 58.4                  | 54.4 | 98.9  | <b>54.4</b> |
| AGRIPRO1 NORPRO (P+)                  | 3                                  | 15.0                        | 12.1 | 42.7 | 23.3                            | 90.6                | <b>23.3</b>              | 48.1                     | 49.3                       | 57.7                  | 51.7 | 93.9  | <b>51.7</b> |
| MEANS (For Entries Listed)            |                                    | 24.4                        | 15.0 | 42.1 |                                 |                     | <b>27.2</b>              | 52.4                     | 52.0                       | 56.9                  |      |       | <b>53.8</b> |
| 6/ Growing Season Precipitation (in.) |                                    | 3.96                        | 4.07 | 3.88 |                                 | 3.97                |                          |                          |                            |                       |      |       |             |
| Soil PAW (in.) to SD @ Planting       |                                    | 2.67                        | n/a  | 0.99 |                                 | 1.83                |                          |                          |                            |                       |      |       |             |
| Total Plant Available Water (in.)     |                                    | 6.63                        | n/a  | 5.69 |                                 | 6.16                |                          |                          |                            |                       |      |       |             |
| Soil NO3 (lbs.) to SD at Planting     |                                    | 60                          | n/a  | 10   |                                 | 35                  |                          |                          |                            |                       |      |       |             |
| SD (Sampling Depth in Inches)         |                                    | 48                          | n/a  | 6    |                                 | 27                  |                          |                          |                            |                       |      |       |             |
| Fertilizer Applied                    | (# N)                              | 70                          | 70   | 70   |                                 | 70                  |                          |                          |                            |                       |      |       |             |
|                                       | (# P <sub>2</sub> O <sub>5</sub> ) | 40                          | 40   | 40   |                                 | 40                  |                          |                          |                            |                       |      |       |             |
|                                       | (# K <sub>2</sub> O)               | 25                          | 25   | 25   |                                 | 25                  |                          |                          |                            |                       |      |       |             |

Check Variety is Fortuna.

1/ See MCES Bulletin 1093 or the Plant Sciences & Plant Pathology website at <http://plantsciences.montana.edu/> for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending, HW = Hard White Wheat.

3/ Only the most recent 5 years are shown, but summary calculations include all years noted.

4/ Percent of Fortuna yield or test weight for the same data years as those in which a given entry was tested.

5/ 3-Yr Comparable Average = (x/y) \* z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Fortuna for the same years, and z = 3-Yr average yield or test weight for the check variety Fortuna.

6/ Seeding to 14 days prior to harvest maturity.

**TABLE 9. Dryland Fallow Spring Wheat Cultivar Evaluation Nursery Grown Off-Station at the Flansaas-Lumsden Farm, Loring. Northern Agricultural Research Center. Havre, Montana. 2007. (Exp# 07-9955-SW)**

| ID                            | CULTIVAR or SELECTION | STAND<br>% | PLNT HT<br>Inches | 1/             | MOISTURE<br>% | TEST WT<br>Lbs/Bu | 2/           | 3/          |
|-------------------------------|-----------------------|------------|-------------------|----------------|---------------|-------------------|--------------|-------------|
|                               |                       |            |                   | YIELD<br>Bu/Ac |               |                   | PROTEIN<br>% | SAWFLY<br>% |
| PI642366                      | VIDA                  | 91.0       | 27.9              | 36.3           | 9.1           | 55.7              | 15.8         | 3.7         |
| MT 0414                       | MT9408/MT9406//REEDER | 100.0      | 29.5              | 36.0           | 8.8           | 55.2              | 17.0         | 6.7         |
| BZ996472                      | AGAWAM                | 97.9       | 27.3              | 35.4           | 9.5           | 57.4              | 15.6         | 5.3         |
| MT 0415                       | MT9408/MT9406//REEDER | 100.0      | 29.3              | 35.3           | 8.9           | 55.5              | 16.9         | 8.3         |
| MT 0515                       | REEDER/MT9929         | 97.2       | 28.1              | 34.2           | 8.9           | 55.5              | 15.8         | 3.7         |
| PI632252                      | OUTLOOK               | 98.6       | 26.5              | 33.3           | 8.5           | 53.2              | 16.1         | 10.0        |
| PI607557                      | SCHOLAR               | 93.1       | 30.5              | 32.8           | 9.0           | 56.6              | 16.5         | 6.7         |
| ND 695                        | REEDER                | 100.0      | 27.3              | 32.4           | 8.7           | 55.1              | 16.1         | 10.0        |
| BZ992322                      | HANK                  | 97.9       | 26.9              | 32.2           | 8.7           | 52.9              | 16.9         | 20.0        |
| BZ996434                      | CORBIN                | 100.0      | 27.1              | 31.8           | 8.9           | 54.8              | 16.5         | 2.3         |
| AGRIPRO2                      | KNUDSON               | 98.6       | 28.1              | 31.2           | 9.0           | 55.7              | 16.5         | 13.3        |
| PI574642                      | MCNEAL                | 99.3       | 26.4              | 30.6           | 8.7           | 53.5              | 16.7         | 16.7        |
| PI619086                      | EXPLORER              | 98.6       | 28.7              | 30.5           | 8.8           | 54.9              | 16.9         | 11.7        |
| AGRIPRO3                      | FREYR                 | 98.6       | 31.3              | 30.2           | 8.8           | 54.6              | 16.6         | 13.3        |
| WB 926                        | WESTBRED 926          | 98.6       | 27.4              | 29.9           | 8.6           | 54.1              | 17.5         | 23.3        |
| BZ992588                      | CONAN                 | 93.7       | 26.1              | 29.9           | 9.0           | 55.6              | 17.2         | 1.0         |
| PI633974                      | CHOTEAU               | 99.3       | 28.1              | 29.5           | 8.8           | 54.4              | 16.1         | 2.3         |
| AGRIPRO1                      | NORPRO                | 99.3       | 26.1              | 29.0           | 8.7           | 53.4              | 16.6         | 6.7         |
| PI592761                      | ERNEST                | 99.3       | 30.6              | 27.2           | 8.9           | 55.4              | 16.9         | 11.7        |
| CI 13596                      | FORTUNA               | 99.3       | 31.3              | 26.5           | 9.3           | 56.4              | 14.7         | 3.7         |
| EXPERIMENTAL MEANS            |                       | 98.0       | 28.2              | 31.7           | 8.9           | 55.0              | 16.4         | 9.0         |
| LSD (0.05)                    |                       | 8.0        | 2.7               | 3.6            | 0.2           | 1.2               | -            | 7.9         |
| C.V.2: (S of MEAN / MEAN)*100 |                       | 2.9        | 3.4               | 4.0            | 0.7           | 0.7               | -            | 30.6        |

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight for wheat.

2/ Protein values are adjusted to 12 percent grain moisture.

3/ Sawfly rating is reported as the percentage of cut stems.

| Site Resource & Management Data: (Exp# 07-9955-SW) |              |                           |           |                              |              |
|--|--------------|---------------------------|-----------|------------------------------|--------------|
| Field  |              | SaltHaz(MMHOS/cm) 6-24    | -         | Dry Surf Soil (in.) @ Plnt'g | 0.5          |
| Quarter  | SW           | S (ppm) 0-24              | 111       | 2" Soil Temp (°F) @ Plnt'g   | 82           |
| Section  | 24           | Zn (ppm) 0-6              | 0.9       | 4" Soil Temp (°F) @ Plnt'g   | 75           |
| Township   | 35N          | Fe (ppm) 0-6              | 38.5      | Fertilizer Formulation       | Gran Blend   |
| Range  | 29E          | Mn (ppm) 0-6              | 12.7      | Fertilizer Placement         | Bnd at Plntg |
| Latitude   | N48 46.523'  | Cu (ppm) 0-6              | 0.7       | Fert. Rate (lbs/ac) N        | 70           |
| Longitude  | W107 52.563' | CEC 0-6                   | 16        | Fert. Rate (lbs/ac) P2O5     | 40           |
| Soil Series  | unk          | Soil Texture 0-6          | CL-       | Fert. Rate (lbs/ac) K2O      | 25           |
| pH 0-6   | 6.25         | Soil Texture 6-24         | CL        | Herbicide App. Date          | -            |
| Org.Matter (%) 0-6                                 | 1.3          | Soil Texture 24-36        | CL        | Herbicide Product            | -            |
| N (lbs/ac) 0-6                                     | 33           | Soil Texture 36-48        | CL        | Herbicide Rate (/ac)         | -            |
| N (lbs/ac) 6-24                                    | 20           | Init PAW (in.) 0-6"       | 1.20      | Precip (in.) Plnt'g-Harvest  | 7.96         |
| N (lbs/ac) 24-36                                   | 36           | Init PAW (in.) 6-24"      | 3.46      | Precip (>.1) Plnt'g-Harvest  | 7.09         |
| N (lbs/ac) 36-48                                   | -            | Init PAW (in.) 24-36"     | 1.91      | Harvest Date                 | 8/17         |
| N (lbs/ac) 0-48                                    | 89           | Init PAW (in.) 36-48"     | 1.71      | Rooting Depth (in.)          | 42           |
| P (ppm) Olsen 0-6                                  | 19           | Init PAW (in.) 0-48"      | 8.27      | Post PAW (in.) 0-6"          | 0.44         |
| K (ppm) 0-6  | 265          | Cropping System           | NT-ChmFlw | Post PAW (in.) 6-24"         | 1.49         |
| Ca (ppm)   | 1160         | Previous Crop             | Barley    | Post PAW (in.) 24-36"        | 0.63         |
| Mg (ppm) 0-6                                       | 424          | Planting Date             | 5/8       | Post PAW (in.) 36-48"        | 0.89         |
| Na (ppm) 0-6                                       | 7.61         | Planting Depth (in.)      | 1.5       | Post PAW (in.) 0-48"         | 3.45         |
| SaltHaz (MMHOS/cm) 0-6                             | 0.19         | Moist Soil Depth @ Plnt'g | 48+       | Precip (>.1) Hvst-Post       | 0            |

**TABLE 10. Ten-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Spring Wheat Variety Nurseries Grown Off-Station at the Flanssaas/Lumsden Farm, Loring, Northern Agricultural Research Center. Havre, Montana. 1998-2007. (Exp# 9955-SW)**

| 2/ VARIETY or SELECTION               | No. of YEARS TESTED<br>3/          | 1/ YIELD (Bushels Per Acre) |       |      |      |       |       |       | TEST WEIGHT (Pounds Per Bushel) |      |      |      |      |      |        |       |             |
|---------------------------------------|------------------------------------|-----------------------------|-------|------|------|-------|-------|-------|---------------------------------|------|------|------|------|------|--------|-------|-------------|
|                                       |                                    | 2003                        | 2004  | 2005 | 2006 | 2007  | AVE.  | %     | 10-YR                           | 2003 | 2004 | 2005 | 2006 | 2007 | AVE.   | %     | 10-YR       |
|                                       |                                    |                             |       |      |      |       | YEARS | of    | COMP.                           |      |      |      |      |      | TESTED | CHECK | TEST WT     |
| 3/                                    | 3/                                 | 4/                          | 5/    | 3/   | 4/   | 5/    | 3/    | 4/    | 5/                              | 3/   | 4/   | 5/   | 3/   | 4/   | 5/     |       |             |
| PI642366 VIDA (+)                     | 4                                  |                             | 59.9  | 42.8 | 24.4 | 36.3  | 40.8  | 131.5 | <b>40.9</b>                     |      | 62.8 | 57.3 | 56.3 | 55.7 | 58.0   | 99.5  | <b>58.1</b> |
| BZ996472 AGAWAM (P)                   | 3                                  |                             |       | 43.2 | 23.8 | 35.4  | 34.1  | 129.2 | <b>40.2</b>                     |      |      | 60.4 | 59.6 | 57.4 | 59.1   | 103.8 | <b>60.6</b> |
| ND 695 REEDER (+)                     | 9                                  | 28.5                        | 46.4  | 38.8 | 21.3 | 32.4  | 37.4  | 117.2 | <b>36.5</b>                     | 55.0 | 62.4 | 58.2 | 56.2 | 55.1 | 58.8   | 100.2 | <b>58.5</b> |
| PI574642 McNEAL                       | 10                                 | 25.9                        | 46.9  | 34.5 | 20.2 | 30.6  | 35.7  | 114.7 | <b>35.7</b>                     | 51.4 | 61.6 | 56.0 | 55.6 | 53.5 | 56.9   | 97.5  | <b>56.9</b> |
| PI549275 HI-LINE                      | 7                                  | 25.0                        | 46.2  |      |      |       | 37.8  | 113.9 | <b>35.5</b>                     | 53.3 | 62.9 |      |      |      | 57.9   | 98.1  | <b>57.3</b> |
| CI 17430 NEWANA                       | 7                                  | 27.0                        | 43.4  |      |      |       | 37.6  | 113.3 | <b>35.3</b>                     | 54.1 | 61.7 |      |      |      | 58.4   | 99.1  | <b>57.8</b> |
| PI632252 OUTLOOK (+)                  | 7                                  | 28.0                        | 49.0  | 38.3 | 19.2 | 33.3  | 35.3  | 113.2 | <b>35.2</b>                     | 52.5 | 61.7 | 56.3 | 55.7 | 53.2 | 56.8   | 97.1  | <b>56.7</b> |
| WB 936 WB 936 (P+)                    | 7                                  | 27.0                        | 40.9  |      |      |       | 36.7  | 110.6 | <b>34.4</b>                     | 52.9 | 59.8 |      |      |      | 57.3   | 97.2  | <b>56.7</b> |
| PI607557 SCHOLAR (+)(mod sf res.)     | 10                                 | 25.1                        | 43.0  | 30.7 | 22.9 | 32.8  | 34.3  | 110.1 | <b>34.3</b>                     | 56.1 | 62.5 | 57.1 | 57.5 | 56.6 | 58.9   | 101.0 | <b>58.9</b> |
| PI633974 CHOTEAU (+)(sawfly res.)     | 7                                  | 27.3                        | 52.7  | 37.3 | 22.6 | 29.5  | 34.3  | 110.0 | <b>34.2</b>                     | 53.6 | 61.7 | 56.6 | 56.3 | 54.4 | 57.1   | 97.8  | <b>57.1</b> |
| AGRIPRO1 NORPRO (P+)                  | 3                                  |                             |       | 38.3 | 19.8 | 29.0  | 29.0  | 109.9 | <b>34.2</b>                     |      |      | 55.8 | 55.7 | 53.4 | 55.0   | 96.5  | <b>56.3</b> |
| AGRIPRO2 KNUDSON (P+)                 | 3                                  |                             |       | 36.7 | 19.2 | 31.2  | 29.0  | 109.9 | <b>34.2</b>                     |      |      | 57.8 | 57.8 | 55.7 | 57.1   | 100.3 | <b>58.5</b> |
| C982-324 WB RAMBO (P+)(mod sf res.)   | 7                                  | 24.0                        | 50.0  |      |      |       | 36.4  | 109.7 | <b>34.1</b>                     | 54.7 | 62.8 |      |      |      | 59.5   | 100.9 | <b>58.9</b> |
| BZ992588 CONAN (P+) (sawfly tol.)     | 9                                  | 26.9                        | 45.4  | 36.3 | 21.2 | 29.9  | 34.8  | 109.3 | <b>34.0</b>                     | 55.1 | 63.3 | 58.4 | 58.6 | 55.6 | 59.3   | 101.0 | <b>59.0</b> |
| PI592761 ERNEST (+) (sawfly res.)     | 10                                 | 26.7                        | 48.2  | 34.1 | 22.6 | 27.2  | 33.7  | 108.4 | <b>33.7</b>                     | 54.6 | 62.2 | 56.6 | 56.7 | 55.4 | 57.9   | 99.3  | <b>57.9</b> |
| PI619086 EXPLORER (HW)(+)             | 8                                  | 28.6                        | 40.8  | 38.7 | 20.3 | 30.5  | 33.5  | 106.2 | <b>33.1</b>                     | 54.5 | 61.0 | 57.9 | 57.2 | 54.9 | 58.1   | 98.8  | <b>57.7</b> |
| PI527682 AMIDON (mod sf res.)         | 7                                  | 22.9                        | 38.2  |      |      |       | 35.2  | 106.1 | <b>33.0</b>                     | 54.3 | 61.5 |      |      |      | 58.4   | 99.0  | <b>57.8</b> |
| WPB 926 WB 926 (P)                    | 10                                 | 26.7                        | 38.7  | 34.0 | 21.7 | 29.9  | 33.0  | 106.0 | <b>33.0</b>                     | 53.1 | 60.7 | 56.8 | 56.8 | 54.1 | 57.0   | 97.7  | <b>57.0</b> |
| BZ992322 HANK (P+)                    | 6                                  | 28.1                        | 41.5  | 37.2 | 20.2 | 32.2  | 32.6  | 105.2 | <b>32.7</b>                     | 53.1 | 60.1 | 57.1 | 56.6 | 52.9 | 56.0   | 96.7  | <b>56.4</b> |
| CI 13596 FORTUNA (sawfly res.)        | 10                                 | 30.0                        | 45.0  | 31.6 | 21.2 | 26.5  | 31.1  | 100.0 | <b>31.1</b>                     | 55.2 | 62.3 | 57.3 | 57.1 | 56.4 | 58.4   | 100.0 | <b>58.4</b> |
| MEANS (For Entries Listed)            |                                    | 26.7                        | 45.7  | 36.8 | 21.4 | 31.1  |       |       | <b>34.8</b>                     | 54.0 | 61.8 | 57.3 | 56.9 | 54.9 |        |       | <b>57.8</b> |
| 6/ Growing Season Precipitation (in.) |                                    | 5.59                        | 10.88 | n/a  | 1.66 | 8.78  | 6.42  |       |                                 |      |      |      |      |      |        |       |             |
| Soil PAW (in.) to SD @ Planting       |                                    | 8.25                        | 4.91  | 9.07 | 8.27 | 8.27  | 7.51  |       |                                 |      |      |      |      |      |        |       |             |
| Total Plant Available Water (in.)     |                                    | 13.84                       | 15.79 | 9.07 | 9.93 | 11.71 | 11.97 |       |                                 |      |      |      |      |      |        |       |             |
| Soil NO3 (lbs.) to SD at Planting     |                                    | 76                          | 60    | 54   | 81   | 89    | 81    |       |                                 |      |      |      |      |      |        |       |             |
| SD (Sampling Depth in Inches)         |                                    | 48                          | 48    | 48   | 48   | 48    | 48    |       |                                 |      |      |      |      |      |        |       |             |
| Fertilizer Applied                    | (# N)                              | 70                          | 70    | 70   | 70   | 70    | 70    |       |                                 |      |      |      |      |      |        |       |             |
|                                       | (# P <sub>2</sub> O <sub>5</sub> ) | 40                          | 40    | 40   | 40   | 40    | 40    |       |                                 |      |      |      |      |      |        |       |             |
|                                       | (# K <sub>2</sub> O)               | 25                          | 25    | 25   | 25   | 25    | 25    |       |                                 |      |      |      |      |      |        |       |             |

Check Variety is Fortuna.

1/ See MCES Bulletin 1093 or the Plant Sciences & Plant Pathology website at <http://plantsciences.montana.edu/> for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending, HW = Hard White Wheat.

3/ Only the most recent 5 years are shown, but summary calculations include all years noted.

4/ Percent of Fortuna yield or test weight for the same data years as those in which a given entry was tested.

5/ 10-Yr Comparable Average = (x/y) \* z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Fortuna for the same years, and z = 10-Yr average yield or test weight for the check variety Fortuna.

6/ Seeding to 14 days prior to harvest maturity.

**TABLE 11. Dryland Fallow Spring Wheat Cultivar Evaluation Nursery Grown Off-Station at McKeever Farm & Seed Inc., Loma. Northern Agricultural Research Center. Havre, Montana. 2007.  
(Exp# 07-9957-SW)**

| ID                            | CULTIVAR or SELECTION | STAND<br>% | PLNT HT<br>Inches | 1/             | MOISTURE<br>% | TEST WT<br>Lbs/Bu | 2/           | 3/          |
|-------------------------------|-----------------------|------------|-------------------|----------------|---------------|-------------------|--------------|-------------|
|                               |                       |            |                   | YIELD<br>Bu/Ac |               |                   | PROTEIN<br>% | SAWFLY<br>% |
| BZ992322                      | HANK                  | 100.0      | 27.5              | 33.1           | 7.6           | 50.8              | 18.7         | 0.0         |
| PI642366                      | VIDA                  | 100.0      | 27.8              | 32.2           | 7.9           | 54.1              | 18.2         | 1.0         |
| ND 695                        | REEDER                | 100.0      | 31.4              | 31.5           | 7.8           | 53.4              | 18.6         | 0.7         |
| MT 0414                       | MT9408/MT9406//REEDER | 99.3       | 29.9              | 31.4           | 7.9           | 53.5              | 19.1         | 1.0         |
| PI633974                      | CHOTEAU               | 100.0      | 26.6              | 30.3           | 8.0           | 54.4              | 18.0         | 0.3         |
| PI607557                      | SCHOLAR               | 100.0      | 33.1              | 29.4           | 7.7           | 55.3              | 19.2         | 0.7         |
| MT 0515                       | REEDER/MT9929         | 98.6       | 28.7              | 29.3           | 8.2           | 54.9              | 18.1         | 0.7         |
| AGRIPRO1                      | NORPRO                | 99.3       | 26.8              | 29.2           | 7.7           | 52.7              | 18.5         | 0.7         |
| PI574642                      | MCNEAL                | 99.3       | 29.5              | 28.6           | 7.4           | 51.6              | 18.9         | 0.3         |
| BZ996434                      | CORBIN                | 99.3       | 29.5              | 28.5           | 8.1           | 53.7              | 19.0         | 0.0         |
| AGRIPRO3                      | FREYR                 | 99.3       | 29.2              | 28.4           | 8.1           | 54.2              | 18.0         | 0.7         |
| PI619086                      | EXPLORER              | 100.0      | 28.4              | 28.2           | 7.9           | 53.3              | 18.1         | 0.7         |
| WB 926                        | WESTBRED 926          | 100.0      | 27.0              | 27.6           | 7.6           | 52.8              | 19.1         | 0.0         |
| BZ992588                      | CONAN                 | 97.9       | 26.9              | 27.5           | 8.0           | 55.4              | 18.2         | 0.0         |
| MT 0415                       | MT9408/MT9406//REEDER | 100.0      | 27.7              | 27.3           | 7.8           | 53.6              | 18.8         | 1.0         |
| PI632252                      | OUTLOOK               | 100.0      | 28.4              | 27.2           | 7.5           | 51.9              | 18.7         | 0.7         |
| BZ996472                      | AGAWAM                | 100.0      | 26.7              | 26.8           | 8.6           | 57.4              | 17.0         | 0.3         |
| PI592761                      | ERNEST                | 99.3       | 29.8              | 25.7           | 7.8           | 54.1              | 18.6         | 0.7         |
| AGRIPRO2                      | KNUDSON               | 100.0      | 27.5              | 25.4           | 8.1           | 55.6              | 18.2         | 0.3         |
| CI 13596                      | FORTUNA               | 100.0      | 31.3              | 25.1           | 8.3           | 55.5              | 17.1         | 0.3         |
| EXPERIMENTAL MEANS            |                       | 99.6       | 28.7              | 28.6           | 7.9           | 53.9              | 18.4         | 0.5         |
| LSD (0.05)                    |                       | 1.4        | 2.8               | 4.8            | 0.3           | 1.0               | -            | 0.8         |
| C.V.2: (S of MEAN / MEAN)*100 |                       | 0.5        | 3.4               | 5.8            | 1.3           | 0.6               | -            | 54.8        |

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight for wheat.

2/ Protein values are adjusted to 12 percent grain moisture.

3/ Sawfly rating is reported as the percentage of cut stems.

| Site Resource & Management Data: (Exp# 07-9957-SW) |              |                           |           |                              |              |
|--|--------------|---------------------------|-----------|------------------------------|--------------|
| Field  |              | SaltHaz(MMHOS/cm) 6-24    | -         | Dry Surf Soil (in.) @ Plnt'g | 0.25         |
| Quarter  | SE           | S (ppm) 0-24              | -         | 2" Soil Temp (°F) @ Plnt'g   | 74           |
| Section  | 20           | Zn (ppm) 0-6              | -         | 4" Soil Temp (°F) @ Plnt'g   | 65           |
| Township   | 27N          | Fe (ppm) 0-6              | -         | Fertilizer Formulation       | Gran Blend   |
| Range  | 10E          | Mn (ppm) 0-6              | -         | Fertilizer Placement         | Bnd at Plntg |
| Latitude   | N48 42.897'  | Cu (ppm) 0-6              | -         | Fert. Rate (lbs/ac) N        | 70           |
| Longitude  | W110 27.481' | CEC 0-6                   | -         | Fert. Rate (lbs/ac) P2O5     | 40           |
| Soil Series  | unk          | Soil Texture 0-6          | -         | Fert. Rate (lbs/ac) K2O      | 25           |
| pH 0-6   | -            | Soil Texture 6-24         | -         | Herbicide App. Date          | 6/13         |
| Org.Matter (%) 0-6                                 | -            | Soil Texture 24-36        | -         | Herbicide Product            | Bronate Adv  |
| N (lbs/ac) 0-6                                     | -            | Soil Texture 36-48        | -         | Herbicide Rate (/ac)         | 20oz         |
| N (lbs/ac) 6-24                                    | -            | Init PAW (in.) 0-6"       | -         | Precip (in.) Plnt'g-Harvest  | 5.37         |
| N (lbs/ac) 24-36                                   | -            | Init PAW (in.) 6-24"      | -         | Precip (>.1) Plnt'g-Harvest  | 4.90         |
| N (lbs/ac) 36-48                                   | -            | Init PAW (in.) 24-36"     | -         | Harvest Date                 | 8/16         |
| N (lbs/ac) 0-48                                    | -            | Init PAW (in.) 36-48"     | -         | Rooting Depth (in.)          | -            |
| P (ppm) Olsen 0-6                                  | -            | Init PAW (in.) 0-48"      | -         | Post PAW (in.) 0-6"          | -            |
| K (ppm) 0-6  | -            | Cropping System           | NT-ChmFlw | Post PAW (in.) 6-24"         | -            |
| Ca (ppm) 0-6                                       | -            | Previous Crop             | SW        | Post PAW (in.) 24-36"        | -            |
| Mg (ppm) 0-6                                       | -            | Planting Date             | 5/7       | Post PAW (in.) 36-48"        | -            |
| Na (MEQ/100g) 0-6                                  | -            | Planting Depth (in.)      | 1.5       | Post PAW (in.) 0-48"         | -            |
| SaltHaz (MMHOS/cm) 0-6                             | -            | Moist Soil Depth @ Plnt'g | 48+       | Precip (>.1) Hvst-Post       | -            |

**TABLE 12. Ten-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Spring Wheat Variety Nurseries Grown Off-Station at McKeever Farms, Loma, Northern Agricultural Research Center. Havre, Montana. 1998-2007. (Exp# 9957-SW)**

| 2/ VARIETY or SELECTION               | No. of YEARS TESTED<br>3/          | 1/ YIELD (Bushels Per Acre) |      |      |      |      |                       |                            | TEST WEIGHT (Pounds Per Bushel)       |      |      |      |      |      |                       |                              |   |
|---------------------------------------|------------------------------------|-----------------------------|------|------|------|------|-----------------------|----------------------------|---------------------------------------|------|------|------|------|------|-----------------------|------------------------------|---|
|                                       |                                    | 2003                        | 2004 | 2005 | 2006 | 2007 | AVE.                  | %                          | 10-YR<br>COMP.<br>AVE.<br>YIELD<br>5/ | 2003 | 2004 | 2005 | 2006 | 2007 | AVE.                  | %                            | 10-YR<br>COMP.<br>AVE.<br>TEST WT<br>5/ |
|                                       |                                    |                             |      |      |      |      | YEARS<br>TESTED<br>3/ | of<br>CHECK<br>YIELD<br>4/ |                                       |      |      |      |      |      | YEARS<br>TESTED<br>3/ | of<br>CHECK<br>TEST WT<br>4/ |   |
| PI642366 VIDA (+)                     | 4                                  |                             | 34.7 | 38.0 | 27.8 | 32.2 | 33.2                  | 124.8                      | <b>30.6</b>                           |      | 47.7 | 49.7 | 54.2 | 54.1 | 51.4                  | 96.1                         | <b>51.6</b>                             |
| BZ992322 HANK (P+)                    | 6                                  | 28.5                        | 33.1 | 41.9 | 27.4 | 33.1 | 29.7                  | 120.4                      | <b>29.5</b>                           | 50.0 | 45.0 | 48.6 | 51.1 | 50.8 | 49.0                  | 91.6                         | <b>49.2</b>                             |
| PI619086 EXPLORER (HW)(+)             | 8                                  | 26.3                        | 35.8 | 38.9 | 22.4 | 28.2 | 26.2                  | 115.3                      | <b>28.3</b>                           | 51.3 | 47.4 | 52.5 | 52.5 | 53.3 | 52.0                  | 96.5                         | <b>51.8</b>                             |
| BZ996472 AGAWAM (P)                   | 3                                  |                             |      | 39.0 | 20.5 | 26.8 | 28.8                  | 113.2                      | <b>27.7</b>                           |      |      | 53.1 | 56.2 | 57.4 | 55.5                  | 102.4                        | <b>55.0</b>                             |
| WB936 WESTBRED 936 (P+)               | 6                                  | 28.0                        | 38.0 |      |      | 27.6 | 24.7                  | 113.1                      | <b>27.7</b>                           | 50.2 | 46.1 |      |      | 52.8 | 51.3                  | 95.1                         | <b>51.1</b>                             |
| PI632252 OUTLOOK (+)                  | 7                                  | 26.2                        | 35.5 | 38.8 | 23.2 | 27.2 | 25.1                  | 112.9                      | <b>27.7</b>                           | 49.8 | 46.8 | 49.9 | 52.6 | 51.9 | 50.7                  | 94.6                         | <b>50.8</b>                             |
| AGRIPRO2 KNUDSON (P+)                 | 3                                  |                             |      | 34.7 | 25.6 | 25.4 | 28.6                  | 112.4                      | <b>27.6</b>                           |      |      | 51.6 | 56.7 | 55.6 | 54.6                  | 100.8                        | <b>54.1</b>                             |
| PI633974 CHOTEAU (+)(sawfly res.)     | 7                                  | 24.7                        | 34.7 | 36.7 | 22.5 | 30.3 | 24.4                  | 109.5                      | <b>26.8</b>                           | 52.9 | 49.3 | 50.3 | 53.0 | 54.4 | 51.8                  | 96.7                         | <b>51.9</b>                             |
| ND695 REEDER (+)                      | 8                                  | 25.2                        | 31.8 | 35.0 | 20.6 |      | 25.8                  | 109.4                      | <b>26.8</b>                           | 52.5 | 47.1 | 49.8 | 53.2 | 52.5 | 97.8                  | <b>52.5</b>                  |   |
| PI574642 McNEAL                       | 10                                 | 28.6                        | 31.7 | 34.9 | 22.8 | 28.6 | 26.8                  | 109.4                      | <b>26.8</b>                           | 50.2 | 47.1 | 49.8 | 52.8 | 51.6 | 50.8                  | 94.6                         | <b>50.8</b>                             |
| AGRIPRO1 NORPRO (P+)                  | 3                                  |                             |      | 27.4 | 26.0 | 29.2 | 27.5                  | 108.4                      | <b>26.6</b>                           |      |      | 45.3 | 51.3 | 52.7 | 49.7                  | 91.7                         | <b>49.3</b>                             |
| WPB926 WESTBRED 926 (P)               | 8                                  | 27.8                        | 34.6 | 32.9 | 19.3 |      | 25.5                  | 108.4                      | <b>26.6</b>                           | 50.5 | 46.6 | 47.0 | 51.3 | 50.2 | 94.0                  | <b>50.5</b>                  |   |
| PI607557 SCHOLAR (+)(mod sf res.)     | 10                                 | 26.7                        | 29.1 | 33.7 | 22.7 | 29.4 | 26.5                  | 108.2                      | <b>26.5</b>                           | 56.0 | 50.1 | 52.0 | 54.5 | 55.3 | 53.9                  | 100.4                        | <b>53.9</b>                             |
| BZ992588 CONAN (P+)(sawfly tol.)      | 9                                  | 24.9                        | 35.8 | 35.6 | 19.4 | 27.5 | 25.7                  | 108.1                      | <b>26.5</b>                           | 54.2 | 50.0 | 51.8 | 53.4 | 55.4 | 54.0                  | 100.3                        | <b>53.8</b>                             |
| PI549275 HI-LINE                      | 7                                  | 26.7                        | 30.9 |      |      |      | 24.5                  | 101.4                      | <b>24.9</b>                           | 49.2 | 44.5 |      |      | 49.6 | 92.7                  | <b>49.8</b>                  |   |
| PI527682 AMIDON (mod sawfly res.)     | 7                                  | 25.9                        | 24.4 |      |      |      | 24.5                  | 101.4                      | <b>24.8</b>                           | 55.0 | 51.1 |      |      | 53.3 | 99.8                  | <b>53.6</b>                  |   |
| CI13596 FORTUNA (sawfly res.)         | 10                                 | 28.0                        | 30.1 | 30.2 | 21.0 | 25.1 | 24.5                  | 100.0                      | <b>24.5</b>                           | 54.9 | 51.3 | 52.6 | 54.6 | 55.5 | 53.7                  | 100.0                        | <b>53.7</b>                             |
| PI592761 ERNEST (+)(sawfly res.)      | 10                                 | 23.7                        | 28.0 | 32.7 | 14.9 | 25.7 | 23.8                  | 97.1                       | <b>23.8</b>                           | 54.1 | 50.0 | 50.4 | 52.3 | 54.1 | 52.9                  | 98.5                         | <b>52.9</b>                             |
| C982-324 WB RAMBO (P+)(mod sf res.)   | 7                                  | 23.2                        | 27.4 |      |      |      | 22.7                  | 94.0                       | <b>23.0</b>                           | 54.6 | 47.5 |      |      | 53.1 | 99.4                  | <b>53.3</b>                  |   |
| MEANS (For Entries Listed)            |                                    | 26.3                        | 32.2 | 35.4 | 22.4 | 28.3 |                       |                            | <b>26.7</b>                           | 52.4 | 48.0 | 50.3 | 53.3 | 53.9 |                       |                              | <b>52.1</b>                             |
| 6/ Growing Season Precipitation (in.) |                                    | 3.2                         | 7.4  | n/a  | 6.0  | 6.9  | 6.4                   |                            |                                       |      |      |      |      |      |                       |                              |   |
| Soil PAW (in.) to SD @ Planting       |                                    | 8.4                         | 6.2  | 2.4  | 9.3  | n/a  | 6.6                   |                            |                                       |      |      |      |      |      |                       |                              |   |
| Total Plant Available Water (in.)     |                                    | 11.6                        | 13.5 | 2.4  | 15.3 | 5.4  | 9.6                   |                            |                                       |      |      |      |      |      |                       |                              |   |
| Soil NO3 (lbs.) to SD at Planting     |                                    | 146                         | 260  | 200  | 86   | n/a  | 173                   |                            |                                       |      |      |      |      |      |                       |                              |   |
| SD (Sampling Depth in Inches)         |                                    | 48                          | 48   | 48   | 48   | 48   | 48                    |                            |                                       |      |      |      |      |      |                       |                              |   |
| Fertilizer Applied                    | (# N)                              | 70                          | 70   | 70   | 70   | 70   | 69                    |                            |                                       |      |      |      |      |      |                       |                              |   |
|                                       | (# P <sub>2</sub> O <sub>5</sub> ) | 40                          | 40   | 40   | 40   | 40   | 40                    |                            |                                       |      |      |      |      |      |                       |                              |   |
|                                       | (# K <sub>2</sub> O)               | 25                          | 25   | 25   | 25   | 25   | 25                    |                            |                                       |      |      |      |      |      |                       |                              |   |

Check Variety is Fortuna.

1/ See MCES Bulletin 1093 or the Plant Sciences & Plant Pathology website at <http://plantsciences.montana.edu/> for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending, HW = Hard White Wheat.

3/ Research is being conducted at this location is to evaluate varieties and breeding materials in the presence of wheat stem sawfly. Sawfly pressure was weak in 1998, but was significant in 1999 and 2000. Hail damage at the location confounded studies in 1999. Heat and/or drought stress was prevalent at critical growth stages during most years since 1999. The plot combine was equipped with pick-up guards similar to those commonly used on full-scale combines for straight-cut harvest under sawfly damage conditions.

4/ Percent of Fortuna yield or test weight for the same data years as those in which a given entry was tested.

5/ 10-Yr Comparable Average = (x/y) \* z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Fortuna for the same years, and z = 10-Yr average yield or test weight for the check variety Fortuna.

6/ Seeding to 14 days prior to harvest maturity.

**TABLE 13. Dryland Fallow Spring Durum Cultivar Evaluation Nursery Grown Off-Station at the Leon Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, Montana. 2007. (Exp# 07-9851-SW)**

| ID                            | CULTIVAR or SELECTION | STAND<br>% | PLNT HT<br>Inches | 1/             |               | 2/                |              | 3/          |
|-------------------------------|-----------------------|------------|-------------------|----------------|---------------|-------------------|--------------|-------------|
|                               |                       |            |                   | YIELD<br>Bu/Ac | MOISTURE<br>% | TEST WT<br>Lbs/Bu | PROTEIN<br>% | SAWFLY<br>% |
| MT02525                       | MT02525               | 99.3       | 19.4              | 26.1           | 11.3          | 56.8              | 17.9         | 3.7         |
| GRENORA                       | GRENORA               | 99.0       | 22.1              | 25.6           | 11.2          | 55.7              | 17.4         | 33.3        |
| YU-894-75                     | ALZADA                | 98.6       | 22.0              | 25.2           | 11.0          | 56.1              | 17.8         | 6.7         |
| MT02DH82                      | MT02DH82              | 99.7       | 19.0              | 24.8           | 11.6          | 58.7              | 16.4         | 3.7         |
| MT3012                        | MT3012                | 99.7       | 20.4              | 24.3           | 11.3          | 55.0              | 18.7         | 11.7        |
| STRONGFIELD                   | STRONGFIELD           | 98.6       | 21.8              | 24.0           | 11.1          | 56.1              | 19.8         | 10.0        |
| ALKABO                        | ALKABO                | 99.7       | 20.5              | 22.5           | 11.5          | 57.5              | 17.8         | 25.0        |
| D901313                       | MOUNTRAIL             | 99.7       | 21.5              | 22.3           | 11.0          | 56.1              | 19.0         | 25.0        |
| D901442                       | LEBSOCK               | 96.9       | 25.8              | 20.2           | 11.4          | 57.7              | 18.1         | 20.0        |
| DIVIDE                        | DIVIDE                | 96.6       | 22.4              | 20.0           | 11.2          | 56.7              | 18.2         | 13.3        |
| PIERCE                        | PIERCE                | 97.9       | 22.3              | 20.0           | 11.2          | 57.6              | 18.3         | 21.7        |
| MT02DH55                      | MT02DH55              | 99.3       | 22.2              | 19.2           | 11.1          | 55.6              | 18.7         | 30.0        |
| EXPERIMENTAL MEANS            |                       | 98.7       | 21.6              | 22.8           | 11.3          | 56.6              | 18.2         | 17.0        |
| LSD (0.05)                    |                       | 2.8        | 3.5               | 4.9            | 0.3           | 0.5               | -            | 8.1         |
| C.V.2: (S of MEAN / MEAN)*100 |                       | 1.0        | 5.5               | 7.3            | 0.9           | 0.3               | -            | 16.2        |

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight for durum.

2/ Protein values are adjusted to 12 percent grain moisture.

3/ Sawfly rating is reported as the percentage of cut stems.

| Site Resource & Management Data: (Exp# 07-9851-SW) |              |                          |            |                              |                    |
|--|--------------|--------------------------|------------|------------------------------|--------------------|
| Field  |              | SaltHaz(MMHOS/cm) 6-24   | -          | Dry Surf Soil (in.) @ Plnt'g | 0.5                |
| Quarter  | SE           | S (ppm) 0-24             | 62         | 2" Soil Temp (°F) @ Plnt'g   | 81                 |
| Section  | 13           | Zn (ppm) 0-6             | 0.61       | 4" Soil Temp (°F) @ Plnt'g   | 73                 |
| Township   | 36N          | Fe (ppm) 0-6             | 45.90      | Fertilizer Formulation       | Gran Blend         |
| Range  | 25E          | Mn (ppm) 0-6             | 12.88      | Fertilizer Placement         | Bnd at Plntg       |
| Latitude   | N48 52.584'  | Cu (ppm) 0-6             | 0.82       | Fert. Rate (lbs/ac) N        | 70                 |
| Longitude  | W108 23.528' | CEC 0-6                  | 8.20       | Fert. Rate (lbs/ac) P2O5     | 40                 |
| Soil Series  | unk          | Soil Texture 0-6         | CL-        | Fert. Rate (lbs/ac) K2O      | 25                 |
| pH 0-6   | 5.6          | Soil Texture 6-24        | CL         | Herbicide App. Date          | 6/6                |
| Org.Matter (%) 0-6                                 | 1.1          | Soil Texture 24-36       | CL         | Herbicide Product            | Bison/turret/achve |
| N (lbs/ac) 0-6                                     | 4            | Soil Texture 36-48       | CL         | Herbicide Rate (/ac)         | 16/8/6.9oz         |
| N (lbs/ac) 6-24                                    | 45           | Init PAW (in.) 0-6"      | 0.73       | Precip (in.) Plnt'g-Harvest  | 7.09               |
| N (lbs/ac) 24-36                                   | 18           | Init PAW (in.) 6-24"     | 2.42       | Precip (>.1) Plnt'g-Harvest  | 5.83               |
| N (lbs/ac) 36-48                                   | 14           | Init PAW (in.) 24-36"    | 1.70       | Harvest Date                 | 8/20               |
| N (lbs/ac) 0-48                                    | 81           | Init PAW (in.) 36-48"    | 0.99       | Rooting Depth (in.)          | -                  |
| P (ppm) Olsen 0-6                                  | 20           | Init PAW (in.) 0-48"     | 5.84       | Post PAW (in.) 0-6"          | 0.3                |
| K (ppm) 0-6  | 258          | Cropping System          | NT-MechFlw | Post PAW (in.) 6-24"         | 1.5                |
| Ca (ppm)   | 1013         | Previous Crop            | Durum      | Post PAW (in.) 24-36"        | 0.9                |
| Mg (ppm) 0-6                                       | 294          | Planting Date            | 5/9        | Post PAW (in.) 36-48"        | 1.0                |
| Na (ppm) 0-6                                       | 13           | Planting Depth (in.)     | 1.5        | Post PAW (in.) 0-48"         | 3.8                |
| SaltHaz (MMHOS/cm) 0-6                             | 0.12         | Moist Soil Depth @Plnt'g | 48+        | Precip (>.1) Hvst-Post       | 0                  |

**TABLE 14. Six-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Spring Durum Variety Nurseries Grown Off-Station at the Leon Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, Montana. 2002-2007. (Exp# 9851-SW)**

| 2/ VARIETY or SELECTION               | No. of YEARS TESTED 3/             | 1/ YIELD (Bushels Per Acre) |      |      |      |      | TEST WEIGHT (Pounds Per Bushel) |                     |             |      |      | 6-YR COMP. AVE. YIELD 5/ | 6-YR COMP. AVE. TEST WT 5/ |      |      |                          |                       |
|---------------------------------------|------------------------------------|-----------------------------|------|------|------|------|---------------------------------|---------------------|-------------|------|------|--------------------------|----------------------------|------|------|--------------------------|-----------------------|
|                                       |                                    | 2003                        | 2004 | 2005 | 2006 | 2007 | AVE. for YEARS TESTED 3/        | % of CHECK YIELD 4/ | 2003        | 2004 | 2005 |                          |                            | 2006 | 2007 | AVE. for YEARS TESTED 3/ | % of CHECK TEST WT 4/ |
|                                       |                                    |                             |      |      |      |      |                                 |                     |             |      |      |                          |                            |      |      |                          |                       |
| YU894-75 ALZADA (P+)                  | 3                                  |                             |      | 42.8 | 23.7 | 25.2 | 30.6                            | 117.2               | <b>36.1</b> |      |      | 59.3                     | 57.0                       | 56.1 | 57.5 | 100.7                    | <b>59.2</b>           |
| D91080 PLAZA (+)                      | 5                                  | 20.9                        | 58.6 | 37.0 | 18.9 |      | 37.0                            | 113.6               | <b>35.0</b> | 58.8 | 62.6 | 59.0                     | 57.3                       |      | 59.9 | 101.0                    | <b>59.4</b>           |
| ACAVONLE AC AVONLEA (+)               | 5                                  | 21.2                        | 54.3 | 37.6 | 22.0 |      | 35.0                            | 107.6               | <b>33.2</b> | 59.2 | 62.7 | 59.4                     | 58.1                       |      | 60.1 | 101.4                    | <b>59.6</b>           |
| D901313 MOUNTRAIL (+)                 | 6                                  | 21.9                        | 50.3 | 37.1 | 18.9 | 22.3 | 30.8                            | 100.0               | <b>30.8</b> | 58.4 | 61.8 | 58.7                     | 56.3                       | 56.1 | 58.8 | 100.0                    | <b>58.8</b>           |
| PI574642 McNEAL (HRSW check)          | 4                                  | 22.2                        | 47.8 | 40.5 |      |      | 35.7                            | 99.3                | <b>30.6</b> | 56.6 | 61.8 | 57.9                     |                            |      | 59.0 | 98.1                     | <b>57.7</b>           |
| D89135 MAIER (+)                      | 4                                  | 21.4                        | 50.5 | 37.5 |      |      | 35.7                            | 99.3                | <b>30.6</b> | 58.7 | 61.8 | 59.2                     |                            |      | 60.2 | 100.2                    | <b>58.9</b>           |
| CANKYLE KYLE                          | 5                                  | 21.4                        | 50.2 | 35.0 | 19.2 |      | 32.0                            | 98.4                | <b>30.3</b> | 59.8 | 62.5 | 59.4                     | 58.8                       |      | 60.3 | 101.7                    | <b>59.8</b>           |
| NDMUNICH MUNICH (+)                   | 4                                  | 21.9                        | 48.4 | 35.7 |      |      | 34.5                            | 96.1                | <b>29.6</b> | 58.2 | 60.9 | 58.9                     |                            |      | 59.2 | 98.6                     | <b>58.0</b>           |
| PIERCE PIERCE                         | 4                                  |                             | 50.4 | 34.1 | 17.6 | 20.0 | 30.5                            | 94.9                | <b>29.3</b> |      | 62.7 | 60.1                     | 57.3                       | 57.6 | 59.4 | 102.0                    | <b>60.0</b>           |
| D901442 LEBSOCK (+)                   | 5                                  | 21.4                        | 48.3 | 32.4 |      | 20.2 | 31.4                            | 94.5                | <b>29.1</b> | 59.7 | 62.0 | 59.5                     |                            | 57.7 | 60.1 | 101.4                    | <b>59.6</b>           |
| D87130 BEN (+)                        | 4                                  | 22.7                        | 46.3 | 35.0 |      |      | 33.7                            | 93.9                | <b>28.9</b> | 59.9 | 62.0 | 59.7                     |                            |      | 60.6 | 100.8                    | <b>59.2</b>           |
| CI 17789 VIC                          | 4                                  | 22.6                        | 45.0 | 33.2 |      |      | 32.5                            | 90.3                | <b>27.8</b> | 59.9 | 61.9 | 59.6                     |                            |      | 60.4 | 100.6                    | <b>59.1</b>           |
| PI478289 MONROE                       | 4                                  | 21.8                        | 42.0 | 31.9 |      |      | 30.9                            | 85.8                | <b>26.5</b> | 58.9 | 60.9 | 58.9                     |                            |      | 59.6 | 99.1                     | <b>58.3</b>           |
| MEANS (For Entries Listed)            |                                    | 21.8                        | 49.3 | 36.1 | 20.0 | 21.9 |                                 |                     | <b>30.6</b> | 58.9 | 62.0 | 59.2                     | 57.5                       | 56.9 |      |                          | <b>59.0</b>           |
| 6/ Growing Season Precipitation (in.) |                                    | 3.1                         | 13.7 | 9.7  | 2.5  | 7.0  | 7.6                             |                     |             |      |      |                          |                            |      |      |                          |                       |
| Soil PAW (in.) to SD @ Planting       |                                    | 7.0                         | 7.4  | 8.0  | 8.8  | 5.8  | 7.4                             |                     |             |      |      |                          |                            |      |      |                          |                       |
| Total Plant Available Water (in.)     |                                    | 10.1                        | 21.1 | 17.7 | 11.3 | 9.6  | 14.4                            |                     |             |      |      |                          |                            |      |      |                          |                       |
| Soil NO3 (lbs.) to SD at Planting     |                                    | 160                         | 104  | 84   | 64   | 81   | 91                              |                     |             |      |      |                          |                            |      |      |                          |                       |
| SD (Sampling Depth in Inches)         |                                    | 48                          | 48   | 48   | 48   | 48   | 48                              |                     |             |      |      |                          |                            |      |      |                          |                       |
| Fertilizer Applied                    | (# N)                              | 70                          | 70   | 70   | 70   | 70   | 69                              |                     |             |      |      |                          |                            |      |      |                          |                       |
|                                       | (# P <sub>2</sub> O <sub>5</sub> ) | 40                          | 40   | 40   | 40   | 40   | 39                              |                     |             |      |      |                          |                            |      |      |                          |                       |
|                                       | (# K <sub>2</sub> O)               | 25                          | 25   | 25   | 25   | 25   | 21                              |                     |             |      |      |                          |                            |      |      |                          |                       |

Check Variety is Mountrail.

1/ See MCES Bulletin 1093 or the Plant Sciences & Plant Pathology website at <http://plantsciences.montana.edu/> for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending.

3/ Only the most recent 5 years are shown, but summary calculations include all years noted.

4/ Percent of Mountrail yield or test weight for the same data years as those in which a given entry was tested.

5/ 6-Yr Comparable Average = (x/y) \* z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Mountrail for the same years, and z = 6-Yr average yield or test weight for the check variety Mountrail.

6/ Seeding to 14 days prior to harvest maturity.

**TABLE 15. Dryland Fallow Spring Durum Cultivar Evaluation Nursery Grown Off-Station at the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2007. (Exp# 07-9852-SW)**

| ID                            | CULTIVAR or SELECTION | STAND % | PLNT HT Inches | 1/ YIELD Bu/Ac | MOISTURE % | TEST WT Lbs/Bu | 2/ PROTEIN % | 3/ SAWFLY % |
|-------------------------------|-----------------------|---------|----------------|----------------|------------|----------------|--------------|-------------|
| STRONGFIELD                   | STRONGFIELD           | 97.8    | 30.1           | 46.3           | 8.2        | 57.1           | 16.8         | 1.0         |
| MT02525                       | MT02525               | 100.0   | 24.0           | 46.3           | 8.8        | 59.4           | 15.5         | 1.0         |
| MT02DH82                      | MT02DH82              | 98.8    | 23.1           | 45.9           | 9.0        | 61.4           | 14.5         | 1.0         |
| D901313                       | MOUNTRAIL             | 96.3    | 29.0           | 45.1           | 8.2        | 56.5           | 16.7         | 5.0         |
| YU-894-75                     | ALZADA                | 97.8    | 25.4           | 44.0           | 8.3        | 58.6           | 15.4         | 2.3         |
| ALKABO                        | ALKABO                | 97.2    | 28.9           | 43.7           | 8.5        | 58.5           | 16.1         | 11.7        |
| DIVIDE                        | DIVIDE                | 97.2    | 28.6           | 42.1           | 8.4        | 58.1           | 15.8         | 4.0         |
| GRENORA                       | GRENORA               | 98.5    | 27.0           | 41.9           | 8.3        | 57.6           | 16.2         | 10.0        |
| MT02DH55                      | MT02DH55              | 96.6    | 26.6           | 41.6           | 8.0        | 56.2           | 16.7         | 6.7         |
| PIERCE                        | PIERCE                | 97.8    | 30.1           | 40.7           | 8.6        | 59.2           | 15.5         | 5.3         |
| MT3012                        | MT3012                | 98.1    | 25.1           | 40.0           | 8.5        | 57.9           | 16.5         | 5.0         |
| D901442                       | LEBSOCK               | 98.8    | 28.8           | 33.8           | 8.6        | 58.6           | 16.6         | 7.0         |
| EXPERIMENTAL MEANS            |                       | 97.9    | 27.2           | 42.6           | 8.5        | 58.3           | 16.0         | 5.0         |
| LSD (0.05)                    |                       | 2.8     | 2.4            | 6.1            | 0.3        | 1.5            | -            | 6.9         |
| C.V.2: (S of MEAN / MEAN)*100 |                       | 1.0     | 3.1            | 4.8            | 1.0        | 0.9            | -            | 46.9        |

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight for durum.

2/ Protein values are adjusted to 12 percent grain moisture.

3/ Sawfly rating is reported as the percentage of cut stems.

| Site Resource & Management Data: (Exp# 07-9852-SW) |              |                           |           |                              |              |
|--|--------------|---------------------------|-----------|------------------------------|--------------|
| Field  |              | SaltHaz(MMHOS/cm) 6-24    | -         | Dry Surf Soil (in.) @ Plnt'g | 0.25         |
| Quarter  | SW           | S (ppm) 0-24              | 8         | 2" Soil Temp (°F) @ Plnt'g   | 68           |
| Section  | 30           | Zn (ppm) 0-6              | 0.31      | 4" Soil Temp (°F) @ Plnt'g   | 64           |
| Township   | 36N          | Fe (ppm) 0-6              | 12.70     | Fertilizer Formulation       | Gran Blend   |
| Range  | 13E          | Mn (ppm) 0-6              | 4.85      | Fertilizer Placement         | Bnd at Plntg |
| Latitude   | N48 50.370'  | Cu (ppm) 0-6              | 0.97      | Fert. Rate (lbs/ac) N        | 70           |
| Longitude  | W110 42.165' | CEC 0-6                   | 22.1      | Fert. Rate (lbs/ac) P2O5     | 40           |
| Soil Series  | Assnbn Cplx  | Soil Texture 0-6          | CL        | Fert. Rate (lbs/ac) K2O      | 25           |
| pH 0-6   | 7.5          | Soil Texture 6-24         | CL        | Herbicide App. Date          | 6/13         |
| Org.Matter (%) 0-6                                 | 1.4          | Soil Texture 24-36        | CL        | Herbicide Product            | Bronate Adv  |
| N (lbs/ac) 0-6                                     | 10           | Soil Texture 36-48        | CL-       | Herbicide Rate (/ac)         | 20oz         |
| N (lbs/ac) 6-24                                    | -            | Init PAW (in.) 0-6"       | 0.99      | Precip (in.) Plnt'g-Harvest  | 3.88         |
| N (lbs/ac) 24-36                                   | -            | Init PAW (in.) 6-24"      | -         | Precip (>.1) Plnt'g-Harvest  | 2.66         |
| N (lbs/ac) 36-48                                   | -            | Init PAW (in.) 24-36"     | -         | Harvest Date                 | 8/15         |
| N (lbs/ac) 0-48                                    | 10           | Init PAW (in.) 36-48"     | -         | Rooting Depth (in.)          | 0.3          |
| P (ppm) Olsen 0-6                                  | 15           | Init PAW (in.) 0-48"      | 0.99      | Post PAW (in.) 0-6"          | 1.5          |
| K (ppm) 0-6  | 253          | Cropping System           | NT-ChmFlw | Post PAW (in.) 6-24"         | 1.1          |
| Ca (ppm)   | 3456         | Previous Crop             | WW        | Post PAW (in.) 24-36"        | 1.9          |
| Mg (ppm) 0-6                                       | 496          | Planting Date             | 5/2       | Post PAW (in.) 36-48"        | 4.7          |
| Na (ppm) 0-6                                       | 13           | Planting Depth (in.)      | 1.5       | Post PAW (in.) 0-48"         | 31           |
| SaltHaz (MMHOS/cm) 0-6                             | 0.24         | Moist Soil Depth @ Plnt'g | 48+       | Precip (>.1) Hvst-Post       | 0            |

**TABLE 16. Three-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Spring Durum Variety Nurseries Grown Off-Station at the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2005-2007. (Exp# 9852-SW)**

| 2/ VARIETY or SELECTION               | No. of YEARS TESTED<br>3/          | 1/ YIELD (Bushels Per Acre) |      |      |      |      | TEST WEIGHT (Pounds Per Bushel) |                        |                             |      |      | 3-YR COMP. AVE. TEST WT<br>5/ |      |      |      |                             |                          |
|---------------------------------------|------------------------------------|-----------------------------|------|------|------|------|---------------------------------|------------------------|-----------------------------|------|------|-------------------------------|------|------|------|-----------------------------|--------------------------|
|                                       |                                    | 2005                        | 2006 | 2007 | 2008 | 2009 | AVE. for YEARS TESTED<br>3/     | % of CHECK YIELD<br>4/ | 3-YR COMP. AVE. YIELD<br>5/ | 2005 | 2006 |                               | 2007 | 2008 | 2009 | AVE. for YEARS TESTED<br>3/ | % of CHECK TEST WT<br>4/ |
|                                       |                                    |                             |      |      |      |      |                                 |                        |                             |      |      |                               |      |      |      |                             |                          |
| YU894-75 ALZADA (P+)                  | 3                                  | 27.7                        | 18.3 | 44.0 |      |      | 30.0                            | 105.1                  | <b>30.0</b>                 | 55.1 | 52.5 | 58.6                          |      |      | 55.4 | 101.8                       | <b>55.4</b>              |
| D901313 MOUNTRAIL (+)                 | 3                                  | 24.5                        | 16.0 | 45.1 |      |      | 28.5                            | 100.0                  | <b>28.5</b>                 | 54.9 | 51.8 | 56.5                          |      |      | 54.4 | 100.0                       | <b>54.4</b>              |
| PIERCE PIERCE                         | 3                                  | 22.0                        | 12.6 | 40.7 |      |      | 25.1                            | 87.9                   | <b>25.1</b>                 | 56.3 | 52.6 | 59.2                          |      |      | 56.0 | 103.0                       | <b>56.0</b>              |
| MEANS (For Entries Listed)            |                                    | 25.0                        | 14.8 | 42.2 |      |      |                                 |                        | <b>27.8</b>                 | 55.7 | 52.6 | 58.0                          |      |      |      |                             | <b>55.3</b>              |
| 6/ Growing Season Precipitation (in.) |                                    | 3.96                        | 4.07 | 3.88 |      |      | 3.97                            |                        |                             |      |      |                               |      |      |      |                             |                          |
| Soil PAW (in.) to SD @ Planting       |                                    | 8.20                        | n/a  | 0.99 |      |      | 4.60                            |                        |                             |      |      |                               |      |      |      |                             |                          |
| Total Plant Available Water (in.)     |                                    | 12.16                       | 4.07 | 5.69 |      |      | 7.31                            |                        |                             |      |      |                               |      |      |      |                             |                          |
| Soil NO3 (lbs.) to SD at Planting     |                                    | 60                          | n/a  | 10   |      |      | 35                              |                        |                             |      |      |                               |      |      |      |                             |                          |
| SD (Sampling Depth in Inches)         |                                    | 48                          | n/a  | 6    |      |      | 27                              |                        |                             |      |      |                               |      |      |      |                             |                          |
| Fertilizer Applied                    | (# N)                              | 70                          | 70   | 70   |      |      | 70                              |                        |                             |      |      |                               |      |      |      |                             |                          |
|                                       | (# P <sub>2</sub> O <sub>5</sub> ) | 40                          | 40   | 40   |      |      | 40                              |                        |                             |      |      |                               |      |      |      |                             |                          |
|                                       | (# K <sub>2</sub> O)               | 25                          | 25   | 25   |      |      | 25                              |                        |                             |      |      |                               |      |      |      |                             |                          |

Check Variety is Mountrail.

1/ See MCES Bulletin 1093 or the Plant Sciences & Plant Pathology website at <http://plantsciences.montana.edu/> for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending.

3/ Only the most recent 5 years are shown, but summary calculations include all years noted.

4/ Percent of Mountrail yield or test weight for the same data years as those in which a given entry was tested.

5/ 3-Yr Comparable Average = (x/y) \* z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Mountrail for the same years, and z = 3-Yr average yield or test weight for the check variety Mountrail.

6/ Seeding to 14 days prior to harvest maturity.

TABLE 17. Dryland Fallow Spring Durum Cultivar Evaluation Nursery Grown Off-Station at McKeever Farm & Seed Inc., Loma. Northern Agricultural Research Center. Havre, Montana. 2007. (Exp# 07-9857-SW)

| ID                            | CULTIVAR or SELECTION | STAND % | PLNT HT Inches | 1/          |            | 2/             |           |
|-------------------------------|-----------------------|---------|----------------|-------------|------------|----------------|-----------|
|                               |                       |         |                | YIELD Bu/Ac | MOISTURE % | TEST WT Lbs/Bu | PROTEIN % |
| YU-894-75                     | ALZADA                | 99.7    | 27.4           | 33.4        | 6.7        | 54.8           | 18.0      |
| ALKABO                        | ALKABO                | 100.0   | 28.7           | 32.0        | 6.8        | 55.9           | 18.8      |
| MT02525                       | MT02525               | 100.0   | 25.2           | 31.6        | 6.9        | 56.0           | 18.7      |
| MT3012                        | MT3012                | 99.3    | 26.5           | 31.4        | 6.7        | 55.0           | 18.9      |
| D901313                       | MOUNTRAIL             | 100.0   | 28.9           | 31.0        | 6.6        | 53.8           | 19.4      |
| GRENORA                       | GRENORA               | 100.0   | 28.2           | 30.8        | 6.5        | 54.6           | 18.9      |
| MT02DH82                      | MT02DH82              | 100.0   | 25.7           | 29.6        | 7.2        | 57.8           | 16.3      |
| PIERCE                        | PIERCE                | 100.0   | 30.7           | 28.7        | 6.7        | 55.7           | 19.0      |
| STRONGFIELD                   | STRONGFIELD           | 99.0    | 29.8           | 28.7        | 6.1        | 52.2           | 20.7      |
| MT02DH55                      | MT02DH55              | 100.0   | 28.8           | 28.3        | 6.0        | 52.3           | 19.8      |
| D901442                       | LEBSOCK               | 99.7    | 28.8           | 27.3        | 7.0        | 56.6           | 17.8      |
| DIVIDE                        | DIVIDE                | 100.0   | 30.4           | 27.3        | 6.7        | 55.4           | 18.7      |
| EXPERIMENTAL MEANS            |                       | 99.8    | 28.2           | 30.0        | 6.7        | 55.0           | 18.8      |
| LSD (0.05)                    |                       | 0.9     | 2.2            | 3.6         | 0.2        | 0.9            | -         |
| C.V.2: (S of MEAN / MEAN)*100 |                       | 0.3     | 2.6            | 4.1         | 1.2        | 0.6            | -         |

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight for durum.

2/ Protein values are adjusted to 12 percent grain moisture.

| Site Resource & Management Data: (Exp# 07-9857-SW) |              |                           |           |  |                              |              |
|--|--------------|---------------------------|-----------|--|------------------------------|--------------|
| Field  |              | SaltHaz(MMHOS/cm) 6-24    | -         |  | Dry Surf Soil (in.) @ Plnt'g | 0.25         |
| Quarter  | SE           | S (ppm) 0-24              | -         |  | 2" Soil Temp (°F) @ Plnt'g   | 73           |
| Section  | 20           | Zn (ppm) 0-6              | -         |  | 4" Soil Temp (°F) @ Plnt'g   | 65           |
| Township   | 27N          | Fe (ppm) 0-6              | -         |  | Fertilizer Formulation       | Gran.Blend   |
| Range  | 10E          | Mn (ppm) 0-6              | -         |  | Fertilizer Placement         | Bnd at Plntg |
| Latitude   | N48 42.897'  | Cu (ppm) 0-6              | -         |  | Fert. Rate (lbs/ac) N        | 70           |
| Longitude  | W110 27.481' | CEC 0-6                   | -         |  | Fert. Rate (lbs/ac) P2O5     | 40           |
| Soil Series  | unk          | Soil Texture 0-6          | -         |  | Fert. Rate (lbs/ac) K2O      | 25           |
| pH 0-6   | -            | Soil Texture 6-24         | -         |  | Herbicide App. Date          | 6/13         |
| Org.Matter (%) 0-6                                 | -            | Soil Texture 24-36        | -         |  | Herbicide Product            | Bronate Adv  |
| N (lbs/ac) 0-6                                     | -            | Soil Texture 36-48        | -         |  | Herbicide Rate (/ac)         | 20oz         |
| N (lbs/ac) 6-24                                    | -            | Init PAW (in.) 0-6"       | -         |  | Precip (in.) Plnt'g-Harvest  | 5.37         |
| N (lbs/ac) 24-36                                   | -            | Init PAW (in.) 6-24"      | -         |  | Precip (>.1) Plnt'g-Harvest  | 4.90         |
| N (lbs/ac) 36-48                                   | -            | Init PAW (in.) 24-36"     | -         |  | Harvest Date                 | 8/1          |
| N (lbs/ac) 0-48                                    | -            | Init PAW (in.) 36-48"     | -         |  | Rooting Depth (in.)          | -            |
| P (ppm) Olsen 0-6                                  | -            | Init PAW (in.) 0-48"      | -         |  | Post PAW (in.) 0-6"          | -            |
| K (ppm) 0-6  | -            | Cropping System           | NT-ChmFlw |  | Post PAW (in.) 6-24"         | -            |
| Ca (ppm)   | -            | Previous Crop             | SW        |  | Post PAW (in.) 24-36"        | -            |
| Mg (ppm) 0-6                                       | -            | Planting Date             | 5/7       |  | Post PAW (in.) 36-48"        | -            |
| Na (ppm) 0-6                                       | -            | Planting Depth (in.)      | 1.5       |  | Post PAW (in.) 0-48"         | -            |
| SaltHaz (MMHOS/cm) 0-6                             | -            | Moist Soil Depth @ Plnt'g | 48+       |  | Precip (>.1) Hvst-Post       | -            |

**TABLE 18. Five-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Spring Durum Variety Nurseries Grown Off-Station at McKeever Farms, Loma, Northern Agricultural Research Center. Havre, Montana. 2003-2007. (Exp# 9857-SW)**

| 2/ VARIETY or SELECTION               | No. of YEARS TESTED 3/             | 1/ YIELD (Bushels Per Acre) |      |      |      |      | TEST WEIGHT (Pounds Per Bushel) |                     |                          |      |      | 5-YR COMP. AVE. TEST WT 5/ |      |      |      |                          |                       |
|---------------------------------------|------------------------------------|-----------------------------|------|------|------|------|---------------------------------|---------------------|--------------------------|------|------|----------------------------|------|------|------|--------------------------|-----------------------|
|                                       |                                    | 2003                        | 2004 | 2005 | 2006 | 2007 | AVE. for YEARS TESTED 3/        | % of CHECK YIELD 4/ | 5-YR COMP. AVE. YIELD 5/ | 2003 | 2004 |                            | 2005 | 2006 | 2007 | AVE. for YEARS TESTED 3/ | % of CHECK TEST WT 4/ |
| PI574642 McNEAL (HRSW check)          | 3                                  | 24.7                        | 33.5 | 42.0 |      |      | 33.4                            | 119.3               | <b>32.8</b>              | 49.7 | 48.7 | 52.1                       |      |      | 50.2 | 95.6                     | <b>50.5</b>           |
| YU894-75 ALZADA (P+)                  | 3                                  |                             |      | 41.6 | 19.3 | 33.4 | 31.4                            | 105.6               | <b>29.0</b>              |      |      | 51.9                       | 51.9 | 54.8 | 52.9 | 99.6                     | <b>52.6</b>           |
| D87130 BEN (+)                        | 3                                  | 24.9                        | 29.0 | 34.2 |      |      | 29.4                            | 105.0               | <b>28.9</b>              | 56.1 | 51.9 | 54.0                       |      |      | 54.0 | 102.9                    | <b>54.4</b>           |
| D89135 MAIER (+)                      | 3                                  | 22.7                        | 27.3 | 38.1 |      |      | 29.4                            | 104.9               | <b>28.8</b>              | 55.3 | 50.3 | 53.6                       |      |      | 53.1 | 101.2                    | <b>53.4</b>           |
| NDMUNICH MUNICH (+)                   | 3                                  | 23.5                        | 28.8 | 34.4 |      |      | 28.9                            | 103.2               | <b>28.4</b>              | 55.3 | 50.3 | 51.2                       |      |      | 52.3 | 99.7                     | <b>52.6</b>           |
| ACAVONLE AC AVONLEA (+)               | 4                                  | 22.0                        | 27.7 | 34.9 | 24.0 |      | 27.1                            | 102.0               | <b>28.0</b>              | 53.5 | 52.0 | 53.7                       | 54.2 |      | 53.4 | 101.5                    | <b>53.6</b>           |
| CI 17789 VIC                          | 3                                  | 22.7                        | 29.4 | 33.4 |      |      | 28.5                            | 101.7               | <b>28.0</b>              | 56.9 | 53.7 | 54.9                       |      |      | 55.2 | 105.2                    | <b>55.6</b>           |
| PI478289 MONROE                       | 3                                  | 25.6                        | 28.7 | 30.9 |      |      | 28.4                            | 101.4               | <b>27.9</b>              | 55.8 | 50.9 | 52.0                       |      |      | 52.9 | 100.8                    | <b>53.2</b>           |
| D901313 MOUNTRAIL (+)                 | 5                                  | 22.9                        | 25.3 | 35.7 | 22.5 | 31.0 | 27.5                            | 100.0               | <b>27.5</b>              | 54.5 | 50.2 | 52.6                       | 52.9 | 53.8 | 52.8 | 100.0                    | <b>52.8</b>           |
| D901442 LEBSOCK (+)                   | 4                                  | 21.6                        | 31.1 | 32.2 |      | 27.3 | 28.1                            | 97.6                | <b>26.8</b>              | 56.0 | 54.3 | 54.2                       |      | 56.6 | 55.3 | 104.7                    | <b>55.3</b>           |
| PIERCE PIERCE                         | 4                                  |                             | 26.6 | 30.7 | 19.4 | 28.7 | 26.4                            | 92.0                | <b>25.3</b>              |      | 52.6 | 54.3                       | 55.3 | 55.7 | 54.5 | 104.0                    | <b>54.9</b>           |
| D91080 PLAZA (+)                      | 4                                  | 22.3                        | 24.5 | 30.4 | 16.8 |      | 23.5                            | 88.2                | <b>24.3</b>              | 54.3 | 50.1 | 51.0                       | 52.2 |      | 51.9 | 98.7                     | <b>52.1</b>           |
| CANKYLE KYLE                          | 4                                  | 21.0                        | 26.0 | 26.8 | 17.7 |      | 22.9                            | 85.9                | <b>23.6</b>              | 55.1 | 53.0 | 53.4                       | 55.0 |      | 54.1 | 103.0                    | <b>54.4</b>           |
| MEANS (For Entries Listed)            |                                    | 23.1                        | 28.1 | 34.3 | 19.9 | 30.1 |                                 |                     | <b>27.6</b>              | 54.8 | 51.5 | 53.0                       | 53.6 | 55.2 |      |                          | <b>53.5</b>           |
| 6/ Growing Season Precipitation (in.) |                                    | 3.2                         | 7.4  | n/a  | 7.6  | 6.9  | 6.3                             |                     |                          |      |      |                            |      |      |      |                          |                       |
| Soil PAW (in.) to SD @ Planting       |                                    | 8.4                         | 6.2  | 8.8  | 9.3  | n/a  | 7.7                             |                     |                          |      |      |                            |      |      |      |                          |                       |
| Total Plant Available Water (in.)     |                                    | 11.6                        | 13.5 | 8.8  | 16.9 | 5.4  | 10.3                            |                     |                          |      |      |                            |      |      |      |                          |                       |
| Soil NO3 (lbs.) to SD at Planting     |                                    | 146                         | 260  | 200  | 465  | n/a  | 221                             |                     |                          |      |      |                            |      |      |      |                          |                       |
| SD (Sampling Depth in Inches)         |                                    | 48                          | 48   | 48   | 48   | 48   | 48                              |                     |                          |      |      |                            |      |      |      |                          |                       |
| Fertilizer Applied                    | (# N)                              | 70                          | 70   | 70   | 70   | 70   | 70                              |                     |                          |      |      |                            |      |      |      |                          |                       |
|                                       | (# P <sub>2</sub> O <sub>5</sub> ) | 40                          | 40   | 40   | 40   | 40   | 40                              |                     |                          |      |      |                            |      |      |      |                          |                       |
|                                       | (# K <sub>2</sub> O)               | 25                          | 25   | 25   | 25   | 25   | 25                              |                     |                          |      |      |                            |      |      |      |                          |                       |

Check Variety is Mountrail.

1/ See MCES Bulletin 1093 or the Plant Sciences & Plant Pathology website at <http://plantsciences.montana.edu/> for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending.

3/ Only the most recent 5 years are shown, but summary calculations include all years noted.

4/ Percent of Mountrail yield or test weight for the same data years as those in which a given entry was tested.

5/ 5-Yr Comparable Average = (x/y) \* z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Mountrail for the same years, and z = 5-Yr average yield or test weight for the check variety Mountrail.

6/ Seeding to 14 days prior to harvest maturity.

**TABLE 16. Dryland Fallow Spring Barley Cultivar Evaluation Nursery Grown Off-Station at the Leon Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, Montana. 2007 (Exp# 07-3651-SB)**

| ID                            | CULTIVAR or SELECTION | STAND<br>% | PLNT HT<br>Inches | 1/<br>YIELD<br>Bu/Ac | MOIST.<br>% | TEST WT<br>Lbs/Bu | PLUMP<br>% | THIN<br>% | 2/<br>PROTEIN<br>% |
|-------------------------------|-----------------------|------------|-------------------|----------------------|-------------|-------------------|------------|-----------|--------------------|
| BZ596117                      | BOULDER               | 98.3       | 20.7              | 47.8                 | 12.0        | 44.9              | 34.0       | 27.0      | 16.8               |
| BZ594-19                      | XENA                  | 98.6       | 23.3              | 45.7                 | 12.0        | 41.3              | 16.8       | 30.5      | 17.7               |
| SK 76333                      | HARRINGTON            | 96.5       | 21.2              | 44.8                 | 11.7        | 42.4              | 38.9       | 29.0      | 18.4               |
| MT960228                      | ESLICK                | 99.0       | 22.3              | 42.0                 | 11.8        | 43.1              | 20.3       | 38.1      | 17.1               |
| 2B914947                      | MERIT                 | 99.3       | 20.1              | 41.6                 | 11.9        | 39.8              | 17.0       | 50.9      | 19.2               |
| 2B965057                      | CONRAD                | 99.0       | 20.5              | 39.8                 | 12.1        | 43.7              | 32.3       | 31.2      | 17.8               |
| 6B952482                      | TRADITION             | 97.9       | 22.9              | 38.6                 | 11.5        | 42.7              | 21.3       | 43.3      | 18.9               |
| MT910189                      | MT910189              | 99.3       | 20.7              | 38.0                 | 12.1        | 43.9              | 43.6       | 22.2      | 16.1               |
| ND15477                       | DRUMMOND              | 99.3       | 23.5              | 36.1                 | 11.8        | 42.8              | 23.9       | 34.6      | 18.6               |
| 6B932978                      | LEGACY                | 98.6       | 23.6              | 35.0                 | 11.6        | 41.2              | 20.8       | 46.4      | 18.0               |
| STELLAR                       | STELLAR               | 99.7       | 20.3              | 31.2                 | 11.4        | 40.0              | 38.9       | 34.7      | 17.8               |
| TR232                         | METCALFE              | 99.3       | 20.2              | 31.1                 | 11.9        | 43.5              | 42.3       | 21.2      | 19.3               |
| MT960101                      | MT960101              | 99.3       | 16.4              | 30.7                 | 12.1        | 41.4              | 8.2        | 61.1      | 20.0               |
| MT150986                      | HAXBY                 | 98.3       | 20.3              | 17.8                 | 11.7        | 44.5              | 11.4       | 52.8      | 18.2               |
| MT970116                      | MT970116              | 99.0       | 22.3              | 11.5                 | 11.7        | 45.1              | 25.8       | 30.0      | 18.6               |
| MT981060                      | HAYS                  | 100.0      | 21.2              | 6.2                  | 10.9        | 39.0              | 8.2        | 67.6      | 20.3               |
| EXPERIMENTAL MEANS            |                       | 98.8       | 21.2              | 33.6                 | 11.8        | 42.5              | 25.2       | 38.8      | 18.3               |
| LSD (0.05)                    |                       | 3.0        | 2.5               | 6.9                  | 0.5         | 2.0               | -          | -         | 1.9                |
| C.V.2: (S of MEAN / MEAN)*100 |                       | 1.0        | 4.0               | 7.1                  | 1.4         | 1.6               | -          | -         | 3.6                |

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 48 lbs/bu as the standard test weight for barley.

2/ Protein values are reported on a 100% dry matter basis.

| Site Resource & Management Data: (Exp# 07-3651-SB) |              |                           |           |                              |                   |
|--|--------------|---------------------------|-----------|------------------------------|-------------------|
| Field  |              | SaltHaz(MMHOS/cm) 6-24    | -         | Dry Surf Soil (in.) @ Plnt'g | 0.5               |
| Quarter  | SE           | S (ppm) 0-24              | 62        | 2" Soil Temp (°F) @ Plnt'g   | 80                |
| Section  | 13           | Zn (ppm) 0-6              | 0.61      | 4" Soil Temp (°F) @ Plnt'g   | 78                |
| Township   | 36N          | Fe (ppm) 0-6              | 45.9      | Fertilizer Formulation       | Gran Blend        |
| Range  | 25E          | Mn (ppm) 0-6              | 12.88     | Fertilizer Placement         | Bnd at Plntg      |
| Latitude   | N48 52.584'  | Cu (ppm) 0-6              | 0.82      | Fert. Rate (lbs/ac) N        | 70                |
| Longitude  | W108 23.528' | CEC 0-6                   | 8.2       | Fert. Rate (lbs/ac) P2O5     | 40                |
| Soil Series  | unk          | Soil Texture 0-6          | CL-       | Fert. Rate (lbs/ac) K2O      | 25                |
| pH 0-6   | 5.6          | Soil Texture 6-24         | CL        | Herbicide App. Date          | 6/6               |
| Org.Matter (%) 0-6                                 | 1.1          | Soil Texture 24-36        | CL        | Herbicide Product            | Bisn/turret/achve |
| N (lbs/ac) 0-6                                     | 4            | Soil Texture 36-48        | CL        | Herbicide Rate (/ac)         | 16/8/6.9oz        |
| N (lbs/ac) 6-24                                    | 45           | Init PAW (in.) 0-6"       | 0.73      | Precip (in.) Plnt'g-Harvest  | 7.09              |
| N (lbs/ac) 24-36                                   | 18           | Init PAW (in.) 6-24"      | 2.42      | Precip (>.1) Plnt'g-Harvest  | 5.83              |
| N (lbs/ac) 36-48                                   | 14           | Init PAW (in.) 24-36"     | 1.70      | Harvest Date                 | 8/20              |
| N (lbs/ac) 0-48                                    | 81           | Init PAW (in.) 36-48"     | 0.99      | Rooting Depth (in.)          | 37"               |
| P (ppm) Olsen 0-6                                  | 20           | Init PAW (in.) 0-48"      | 5.84      | Post PAW (in.) 0-6"          | 0.29              |
| K (ppm) 0-6  | 258          | Cropping System           | CT-ChmFlw | Post PAW (in.) 6-24"         | 1.09              |
| Ca (ppm) 0-6                                       | 1013         | Previous Crop             | Durum     | Post PAW (in.) 24-36"        | 0.93              |
| Mg (ppm) 0-6                                       | 294          | Planting Date             | 5/9       | Post PAW (in.) 36-48"        | 1.26              |
| Na (ppm) 0-6                                       | 13           | Planting Depth (in.)      | 1.5       | Post PAW (in.) 0-48"         | 3.57              |
| SaltHaz (MMHOS/cm) 0-6                             | 0.12         | Moist Soil Depth @ Plnt'g | 48+       | Precip (>.1) Hvst-Post       | 0                 |

**TABLE 20. Nine-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Barley Variety Nurseries Grown Off-Station at the Leon Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, Montana. 1998-2007. (Exp# 3651-SB)**

| 2/ VARIETY or SELECTION               | No. of YEARS TESTED<br>3/          | 1/ YIELD (Bushels Per Acre) |      |      |      |      |                         |                        | 9-YR COMP. AVE. YIELD<br>5/ | TEST WEIGHT (Pounds Per Bushel) |      |      |      |      |                         |                          |                               |
|---------------------------------------|------------------------------------|-----------------------------|------|------|------|------|-------------------------|------------------------|-----------------------------|---------------------------------|------|------|------|------|-------------------------|--------------------------|-------------------------------|
|                                       |                                    | 2003                        | 2004 | 2005 | 2006 | 2007 | AVE. YEARS TESTED<br>3/ | % of CHECK YIELD<br>4/ |                             | 2003                            | 2004 | 2005 | 2006 | 2007 | AVE. YEARS TESTED<br>3/ | % of CHECK TEST WT<br>4/ | 9-YR COMP. AVE. TEST WT<br>5/ |
|                                       |                                    |                             |      |      |      |      |                         |                        |                             |                                 |      |      |      |      |                         |                          |                               |
| BZ594-19 WPB XENA (P+)                | 7                                  | 40.2                        |      | 66.5 | 33.7 | 12.0 | 48.6                    | 118.0                  | <b>56.0</b>                 | 46.4                            |      | 46.8 | 45.0 | 41.3 | 48.0                    | 103.1                    | <b>48.6</b>                   |
| PI568246 BARONESSE (P+)               | 7                                  | 34.3                        | 71.9 | 66.9 |      |      | 63.1                    | 115.7                  | <b>54.8</b>                 | 44.3                            | 50.0 | 45.9 |      |      | 49.1                    | 101.7                    | <b>48.0</b>                   |
| BZ596117 BOULDER (+)                  | 3                                  |                             |      | 71.2 | 33.0 | 12.0 | 38.8                    | 112.7                  | <b>53.4</b>                 |                                 |      | 49.5 | 45.8 | 44.9 | 46.8                    | 107.0                    | <b>50.5</b>                   |
| MT960228 ESLICK (+)                   | 8                                  | 34.3                        | 70.1 | 70.4 | 31.5 | 11.8 | 47.8                    | 107.9                  | <b>51.2</b>                 | 45.8                            | 50.7 | 46.9 | 45.0 | 43.1 | 48.7                    | 103.6                    | <b>48.9</b>                   |
| PI610264 VALIER (+)                   | 5                                  | 32.6                        | 70.1 |      |      |      | 53.7                    | 107.0                  | <b>50.7</b>                 | 46.1                            | 51.0 |      |      |      | 50.4                    | 103.1                    | <b>48.6</b>                   |
| PI491534 GALLATIN                     | 6                                  | 37.8                        | 63.4 |      |      |      | 54.6                    | 101.3                  | <b>48.0</b>                 | 43.9                            | 51.5 |      |      |      | 50.3                    | 102.8                    | <b>48.5</b>                   |
| SK76333 HARRINGTON                    | 9                                  | 33.8                        | 65.9 | 58.5 | 32.9 | 11.7 | 47.4                    | 100.0                  | <b>47.4</b>                 | 44.5                            | 50.1 | 44.8 | 43.9 | 42.4 | 47.2                    | 100.0                    | <b>47.2</b>                   |
| TR232 METCALFE                        | 4                                  |                             | 67.4 | 59.7 | 30.0 | 11.9 | 42.2                    | 99.9                   | <b>47.4</b>                 |                                 | 50.4 | 46.2 | 44.8 | 43.5 | 46.2                    | 102.0                    | <b>48.1</b>                   |
| ND13299 CONLON (+)                    | 4                                  | 38.8                        | 51.7 |      |      |      | 44.9                    | 98.2                   | <b>46.6</b>                 | 47.9                            | 50.5 |      |      |      | 48.1                    | 100.2                    | <b>47.3</b>                   |
| MT950186 HAXBY                        | 8                                  | 48.5                        | 69.7 | 62.8 | 11.6 | 11.7 | 43.1                    | 97.2                   | <b>46.1</b>                 | 48.5                            | 51.9 | 49.7 | 45.7 | 44.5 | 49.9                    | 106.3                    | <b>50.1</b>                   |
| 6B952482 TRADITION                    | 4                                  |                             | 58.4 | 61.9 | 30.4 | 11.5 | 40.6                    | 96.0                   | <b>45.5</b>                 |                                 | 48.8 | 47.0 | 43.5 | 42.7 | 45.5                    | 100.4                    | <b>47.3</b>                   |
| MT981060 HAYS                         | 5                                  | 11.1                        | 14.2 | 39.8 | 6.0  | 10.9 | 16.4                    | 40.5                   | <b>19.2</b>                 | 40.6                            | 46.0 | 43.9 | 39.0 | 39.0 | 41.7                    | 92.4                     | <b>43.6</b>                   |
| MEANS (For Entries Listed)            |                                    | 34.6                        | 60.3 | 62.0 | 26.2 | 11.7 |                         |                        | <b>47.2</b>                 | 45.3                            | 50.1 | 46.7 | 44.1 | 42.7 |                         |                          | <b>48.1</b>                   |
| 6/ Growing Season Precipitation (in.) |                                    | 3.1                         | 13.7 | 9.7  | 2.5  | 7.0  | 7.6                     |                        |                             |                                 |      |      |      |      |                         |                          |                               |
| Soil PAW (in.) to SD @ Planting       |                                    | 7.0                         | 7.4  | 8.0  | 8.8  | 5.8  | 6.7                     |                        |                             |                                 |      |      |      |      |                         |                          |                               |
| Total Plant Available Water (in.)     |                                    | 10.1                        | 21.1 | 17.7 | 11.3 | 9.6  | 12.7                    |                        |                             |                                 |      |      |      |      |                         |                          |                               |
| Soil NO3 (lbs.) to SD at Planting     |                                    | 160                         | 104  | 84   | 64   | 81   | 84                      |                        |                             |                                 |      |      |      |      |                         |                          |                               |
| SD (Sampling Depth in Inches)         |                                    | 48                          | 48   | 48   | 48   | 48   | 48                      |                        |                             |                                 |      |      |      |      |                         |                          |                               |
| Fertilizer Applied                    | (# N)                              | 70                          | 70   | 70   | 70   | 70   | 68                      |                        |                             |                                 |      |      |      |      |                         |                          |                               |
|                                       | (# P <sub>2</sub> O <sub>5</sub> ) | 40                          | 40   | 40   | 40   | 40   | 38                      |                        |                             |                                 |      |      |      |      |                         |                          |                               |
|                                       | (# K <sub>2</sub> O)               | 25                          | 25   | 25   | 25   | 25   | 22                      |                        |                             |                                 |      |      |      |      |                         |                          |                               |

Check Variety is Harrington.

1/ See MCES Bulletin 1094 or the Plant Sciences & Plant Pathology website at <http://plantsciences.montana.edu/> for evaluation of other important variety performance characteristics to include malting potential, disease resistance, etc. before making cultivar selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending.

3/ Only the most recent 5 years are shown, but summary calculations include all years noted.

4/ Percent of Harrington yield or test weight for the same data years as those in which a given entry was tested.

5/ 9-Yr Comparable Average = (x/y) \* z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Harrington for the same years, and z = 9-Yr average yield or test weight for the check variety Harrington.

6/ Seeding to 14 days prior to harvest maturity.

1999 nursery not planted due to wet conditions extending throughout and beyond the normal seeding period for this location.

**TABLE 21. Dryland Fallow Spring Barley Cultivar Evaluation Nursery Grown Off-Station at the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2007. (Exp# 07-3652-SB)**

| ID                            | CULTIVAR or SELECTION | STAND<br>% | PLNT HT<br>Inches | 1/<br>YIELD<br>Bu/Ac | MOIST.<br>% | TEST WT<br>Lbs/Bu | PLUMP<br>% | THIN<br>% | 2/<br>PROTEIN<br>% |
|-------------------------------|-----------------------|------------|-------------------|----------------------|-------------|-------------------|------------|-----------|--------------------|
| BZ596117                      | BOULDER               | 98.1       | 24.2              | 79.7                 | 9.2         | 49.8              | 76.7       | 7.9       | 13.9               |
| MT960228                      | ESLICK                | 99.4       | 24.6              | 73.0                 | 9.1         | 45.7              | 44.0       | 23.4      | 14.0               |
| BZ594-19                      | XENA                  | 99.1       | 26.4              | 72.0                 | 9.2         | 44.7              | 29.7       | 31.3      | 13.8               |
| MT981060                      | HAYS                  | 98.1       | 24.8              | 69.6                 | 8.7         | 41.9              | 31.8       | 35.9      | 15.3               |
| 2B965057                      | CONRAD                | 98.1       | 24.4              | 68.5                 | 9.2         | 44.8              | 66.5       | 13.1      | 14.6               |
| 6B952482                      | TRADITION             | 98.1       | 26.3              | 68.4                 | 9.1         | 46.4              | 60.4       | 16.5      | 13.6               |
| MT910189                      | MT910189              | 97.2       | 26.1              | 64.9                 | 9.3         | 48.0              | 64.4       | 14.3      | 14.2               |
| 2B914947                      | MERIT                 | 99.1       | 24.6              | 64.7                 | 9.0         | 43.0              | 58.7       | 16.3      | 14.6               |
| SK 76333                      | HARRINGTON            | 96.9       | 26.5              | 64.5                 | 9.1         | 43.6              | 51.2       | 20.0      | 15.1               |
| MT150986                      | HAXBY                 | 98.8       | 25.6              | 64.3                 | 9.3         | 48.4              | 48.8       | 25.9      | 14.3               |
| MT960101                      | MT960101              | 96.3       | 24.5              | 61.5                 | 9.1         | 44.1              | 22.6       | 41.5      | 15.0               |
| TR232                         | METCALFE              | 98.5       | 24.9              | 60.0                 | 9.2         | 46.4              | 69.9       | 10.5      | 14.6               |
| ND15477                       | DRUMMOND              | 96.9       | 26.7              | 57.4                 | 9.1         | 45.8              | 50.5       | 19.9      | 13.5               |
| MT970116                      | MT970116              | 98.4       | 31.0              | 55.8                 | 9.1         | 47.5              | 57.4       | 15.6      | 14.6               |
| 6B932978                      | LEGACY                | 98.1       | 29.0              | 55.2                 | 9.0         | 43.0              | 25.4       | 38.2      | 14.4               |
| STELLAR                       | STELLAR               | 98.1       | 27.3              | 51.6                 | 9.0         | 43.1              | 44.4       | 25.1      | 13.9               |
| EXPERIMENTAL MEANS            |                       | 98.1       | 26.1              | 64.5                 | 9.1         | 45.4              | 50.2       | 22.2      | 14.3               |
| LSD (0.05)                    |                       | 2.7        | 2.6               | 8.2                  | 0.2         | 2.0               | -          | -         | 0.9                |
| C.V.2: (S of MEAN / MEAN)*100 |                       | 1.0        | 3.4               | 4.4                  | 0.9         | 1.5               | -          | -         | 2.1                |

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 48 lbs/bu as the standard test weight for barley.

2/ Protein values are reported on a 100% dry matter basis.

| Site Resource & Management Data: (Exp# 07-3652-SB) |              |                           |           |                              |              |
|--|--------------|---------------------------|-----------|------------------------------|--------------|
| Field  |              | SaltHaz(MMHOS/cm) 6-24    | -         | Dry Surf Soil (in.) @ Plnt'g | 0.25         |
| Quarter  | SW           | S (ppm) 0-24              | 8         | 2" Soil Temp (°F) @ Plnt'g   | 68           |
| Section  | 30           | Zn (ppm) 0-6              | 0.31      | 4" Soil Temp (°F) @ Plnt'g   | 66           |
| Township   | 36N          | Fe (ppm) 0-6              | 12.7      | Fertilizer Formulation       | Gran Blend   |
| Range  | 13E          | Mn (ppm) 0-6              | 4.85      | Fertilizer Placement         | Bnd at Plntg |
| Latitude   | N48 50.370'  | Cu (ppm) 0-6              | 0.97      | Fert. Rate (lbs/ac) N        | 70           |
| Longitude  | W110 42.165' | CEC 0-6                   | 22.1      | Fert. Rate (lbs/ac) P2O5     | 40           |
| Soil Series  | unk          | Soil Texture 0-6          | CL        | Fert. Rate (lbs/ac) K2O      | 25           |
| pH 0-6   | 7.5          | Soil Texture 6-24         | CL        | Herbicide App. Date          | 6/13         |
| Org.Matter (%) 0-6                                 | 1.4          | Soil Texture 24-36        | CL        | Herbicide Product            | Bronate Ad   |
| N (lbs/ac) 0-6                                     | 10           | Soil Texture 36-48        | CL-       | Herbicide Rate (/ac)         | 20oz         |
| N (lbs/ac) 6-24                                    | -            | Init PAW (in.) 0-6"       | 0.99      | Precip (in.) Plnt'g-Harvest  | 3.88         |
| N (lbs/ac) 24-36                                   | -            | Init PAW (in.) 6-24"      | -         | Precip (>.1) Plnt'g-Harvest  | 2.66         |
| N (lbs/ac) 36-48                                   | -            | Init PAW (in.) 24-36"     | -         | Harvest Date                 | 8/16         |
| N (lbs/ac) 0-48                                    | 10           | Init PAW (in.) 36-48"     | -         | Rooting Depth (in.)          | 40"          |
| P (ppm) Olsen 0-6                                  | 15           | Init PAW (in.) 0-48"      | -         | Post PAW (in.) 0-6"          | 0.23         |
| K (ppm) 0-6  | 253          | Cropping System           | NT-ChmFlw | Post PAW (in.) 6-24"         | 1.05         |
| Ca (ppm) 0-6                                       | 3456         | Previous Crop             | WW        | Post PAW (in.) 24-36"        | 0.44         |
| Mg (ppm) 0-6                                       | 496          | Planting Date             | 5/2       | Post PAW (in.) 36-48"        | 0.52         |
| Na (ppm) 0-6                                       | 13           | Planting Depth (in.)      | 1.5       | Post PAW (in.) 0-48"         | 2.24         |
| SaltHaz (MMHOS/cm) 0-6                             | 0.24         | Moist Soil Depth @ Plnt'g | 48+       | Precip (>.1) Hvst-Post       | 0            |

**TABLE 22. Three-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Barley Variety Nurseries Grown Off-Station at the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2005-2007. (Exp# 3652-SB)**

| 2/ VARIETY or SELECTION               | No. of YEARS TESTED 3/             | 1/ YIELD (Bushels Per Acre) |      |      |                          |                     | TEST WEIGHT (Pounds Per Bushel) |      |      |      |                          |                       |                            |
|---------------------------------------|------------------------------------|-----------------------------|------|------|--------------------------|---------------------|---------------------------------|------|------|------|--------------------------|-----------------------|----------------------------|
|                                       |                                    | 2005                        | 2006 | 2007 | AVE. for YEARS TESTED 3/ | % of CHECK YIELD 4/ | 3-YR COMP. AVE. YIELD 5/        | 2005 | 2006 | 2007 | AVE. for YEARS TESTED 3/ | % of CHECK TEST WT 4/ | 3-YR COMP. AVE. TEST WT 5/ |
| BZ596117 BOULDER (+)                  | 3                                  | 63.8                        | 42.2 | 79.7 | 61.9                     | 128.2               | 61.9                            | 46.2 | 42.0 | 49.8 | 46.0                     | 105.9                 | 46.0                       |
| 6B95-2482 TRADITION                   | 3                                  | 64.9                        | 33.4 | 68.4 | 55.6                     | 115.1               | 55.6                            | 43.7 | 38.6 | 46.4 | 42.9                     | 98.7                  | 42.9                       |
| MT960228 ESLICK (+)                   | 3                                  | 56.4                        | 35.7 | 73.0 | 55.0                     | 114.0               | 55.0                            | 45.1 | 42.8 | 45.7 | 44.5                     | 102.5                 | 44.5                       |
| MT950186 HAXBY                        | 3                                  | 58.1                        | 39.5 | 64.3 | 54.0                     | 111.7               | 54.0                            | 48.3 | 44.8 | 48.4 | 47.2                     | 108.6                 | 47.2                       |
| BZ594-19 WPB XENA (P+)                | 3                                  | 51.4                        | 32.8 | 72.0 | 52.1                     | 107.8               | 52.1                            | 43.3 | 42.6 | 44.7 | 43.5                     | 100.2                 | 43.5                       |
| MT981060 HAYS                         | 3                                  | 54.7                        | 31.5 | 69.6 | 51.9                     | 107.5               | 51.9                            | 40.8 | 39.6 | 41.9 | 40.8                     | 93.8                  | 40.8                       |
| 2B965057 CONRAD                       | 3                                  | 55.1                        | 30.9 | 68.5 | 51.5                     | 106.6               | 51.5                            | 44.5 | 43.0 | 44.8 | 44.1                     | 101.5                 | 44.1                       |
| ND15477 DRUMMOND                      | 3                                  | 56.0                        | 34.2 | 57.4 | 49.2                     | 101.8               | 49.2                            | 41.3 | 37.5 | 45.8 | 41.5                     | 95.5                  | 41.5                       |
| SK76333 HARRINGTON                    | 3                                  | 54.7                        | 25.7 | 64.5 | 48.3                     | 100.0               | 48.3                            | 43.8 | 43.0 | 43.6 | 43.5                     | 100.0                 | 43.5                       |
| 2B914947 MERIT (P+)                   | 3                                  | 48.6                        | 27.0 | 64.7 | 46.8                     | 96.8                | 46.8                            | 41.9 | 40.5 | 43.0 | 41.8                     | 96.2                  | 41.8                       |
| TR232 METCALFE                        | 3                                  | 50.4                        | 27.7 | 60.0 | 46.1                     | 95.4                | 46.1                            | 44.4 | 43.6 | 46.4 | 44.8                     | 103.1                 | 44.8                       |
| 6B932978 LEGACY (P+)                  | 3                                  | 51.8                        | 29.6 | 55.2 | 45.5                     | 94.3                | 45.5                            | 39.2 | 37.0 | 43.0 | 39.8                     | 91.5                  | 39.8                       |
| MEANS (For Entries Listed)            |                                    | 55.5                        | 32.5 | 66.4 |                          |                     | 51.5                            | 43.5 | 41.3 | 45.3 |                          |                       | 43.4                       |
| 6/ Growing Season Precipitation (in.) |                                    | 4.0                         | n/a  | 3.9  | 3.9                      |                     |                                 |      |      |      |                          |                       |                            |
| Soil PAW (in.) to SD @ Planting       |                                    | 8.2                         | n/a  | 1.0  | 4.6                      |                     |                                 |      |      |      |                          |                       |                            |
| Total Plant Available Water (in.)     |                                    | 12.2                        | n/a  | 5.7  | 8.9                      |                     |                                 |      |      |      |                          |                       |                            |
| Soil NO3 (lbs.) to SD at Planting     |                                    | 60                          | n/a  | 10   | 35                       |                     |                                 |      |      |      |                          |                       |                            |
| SD (Sampling Depth in Inches)         |                                    | 48                          | n/a  | 6    | 27                       |                     |                                 |      |      |      |                          |                       |                            |
| Fertilizer Applied                    | (# N)                              | 70                          | 70   | 70   | 70                       |                     |                                 |      |      |      |                          |                       |                            |
|                                       | (# P <sub>2</sub> O <sub>5</sub> ) | 40                          | 40   | 40   | 40                       |                     |                                 |      |      |      |                          |                       |                            |
|                                       | (# K <sub>2</sub> O)               | 25                          | 25   | 25   | 25                       |                     |                                 |      |      |      |                          |                       |                            |

Check Variety is Harrington.

1/ See MCES Bulletin 1094 or the Plant Sciences & Plant Pathology website at <http://plantsciences.montana.edu/> for evaluation of other important variety performance characteristics to include malting potential, disease resistance, etc. before making cultivar selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending.

3/ Only the most recent 5 years are shown, but summary calculations include all years noted.

4/ Percent of Harrington yield or test weight for the same data years as those in which a given entry was tested.

5/ 3-Yr Comparable Average = (x/y) \* z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Harrington for the same years, and z = 3-Yr average yield or test weight for the check variety Harrington.

6/ Seeding to 14 days prior to harvest maturity.

**TABLE 23. Dryland Fallow Spring Barley Cultivar Evaluation Nursery Grown Off-Station at the Flansaas-Lumsden Farm, Loring. Northern Agricultural Research Center. Havre, Montana. 2007. (Exp# 07-3655-SB)**

| ID                            | CULTIVAR or SELECTION | STAND<br>% | PLNT HT<br>Inches | 1/             |               |                   | PLUMP<br>% | THIN<br>% | 2/           |  |
|-------------------------------|-----------------------|------------|-------------------|----------------|---------------|-------------------|------------|-----------|--------------|--|
|                               |                       |            |                   | YIELD<br>Bu/Ac | MOISTURE<br>% | TEST WT<br>Lbs/Bu |            |           | PROTEIN<br>% |  |
| MT150986                      | HAXBY                 | 98.6       | 26.3              | 60.3           | 9.4           | 45.4              | 19.9       | 33.7      | 15.1         |  |
| BZ596117                      | BOULDER               | 97.6       | 25.5              | 57.8           | 8.9           | 44.0              | 36.8       | 22.5      | 15.7         |  |
| 2B965057                      | CONRAD                | 95.5       | 24.5              | 57.4           | 9.1           | 41.3              | 41.0       | 27.9      | 16.0         |  |
| MT970116                      | MT970116              | 99.0       | 29.6              | 57.0           | 9.2           | 45.2              | 41.3       | 22.3      | 15.6         |  |
| 6B952482                      | TRADITION             | 100.0      | 29.8              | 54.8           | 9.0           | 42.0              | 27.3       | 36.6      | 14.8         |  |
| ND15477                       | DRUMMOND              | 98.6       | 30.3              | 54.2           | 9.0           | 41.3              | 22.8       | 42.6      | 15.2         |  |
| MT910189                      | MT910189              | 98.6       | 27.2              | 53.6           | 9.3           | 42.9              | 42.5       | 26.8      | 15.3         |  |
| MT981060                      | HAYS                  | 99.7       | 26.8              | 53.3           | 8.4           | 37.3              | 11.2       | 55.9      | 16.5         |  |
| TR232                         | METCALFE              | 99.0       | 26.4              | 53.2           | 9.1           | 42.2              | 35.1       | 31.0      | 16.9         |  |
| MT960228                      | ESLICK                | 99.7       | 25.6              | 52.6           | 8.9           | 42.2              | 14.2       | 47.3      | 15.8         |  |
| 2B914947                      | MERIT                 | 99.3       | 26.5              | 52.0           | 9.1           | 38.7              | 30.7       | 37.2      | 15.9         |  |
| BZ594-19                      | XENA                  | 97.2       | 25.8              | 50.6           | 8.9           | 41.1              | 9.8        | 53.9      | 15.4         |  |
| SK 76333                      | HARRINGTON            | 96.9       | 27.2              | 50.5           | 9.1           | 40.2              | 38.2       | 28.4      | 15.8         |  |
| MT960101                      | MT960101              | 99.3       | 23.2              | 48.2           | 9.2           | 40.7              | 11.7       | 58.3      | 17.1         |  |
| 6B932978                      | LEGACY                | 99.7       | 28.5              | 47.4           | 8.8           | 37.7              | 13.5       | 62.9      | 15.2         |  |
| STELLAR                       | STELLAR               | 100.0      | 27.5              | 46.7           | 8.7           | 37.6              | 22.1       | 47.6      | 15.2         |  |
| EXPERIMENTAL MEANS            |                       | 98.7       | 26.9              | 53.1           | 9.0           | 41.2              | 26.1       | 39.7      | 15.7         |  |
| LSD (0.05)                    |                       | 3.5        | 2.8               | 7.7            | 0.3           | 1.8               | -          | -         | 0.6          |  |
| C.V.2: (S of MEAN / MEAN)*100 |                       | 1.2        | 3.6               | 5.0            | 1.2           | 1.5               | -          | -         | 1.4          |  |

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 48 lbs/bu as the standard test weight for barley.

2/ Protein values are reported on a 100% dry matter basis.

| Site Resource & Management Data: (Exp# 07-3655-SB) |              |                           |           |                              |              |
|--|--------------|---------------------------|-----------|------------------------------|--------------|
| Field  |              | SaltHaz(MMHOS/cm) 6-24    | -         | Dry Surf Soil (in.) @ Plnt'g | 0.25         |
| Quarter  | SW           | S (ppm) 0-24              | 111       | 2" Soil Temp (°F) @ Plnt'g   | 82           |
| Section  | 24           | Zn (ppm) 0-6              | 0.9       | 4" Soil Temp (°F) @ Plnt'g   | 75           |
| Township   | 35N          | Fe (ppm) 0-6              | 38.5      | Fertilizer Formulation       | Gran Blend   |
| Range  | 29E          | Mn (ppm) 0-6              | 12.7      | Fertilizer Placement         | Bnd at Plntg |
| Latitude   | N48 46.523'  | Cu (ppm) 0-6              | 0.7       | Fert. Rate (lbs/ac) N        | 70           |
| Longitude  | W107 52.563' | CEC 0-6                   | 16        | Fert. Rate (lbs/ac) P2O5     | 40           |
| Soil Series  | unk          | Soil Texture 0-6          | CL-       | Fert. Rate (lbs/ac) K2O      | 25           |
| pH 0-6   | 6.25         | Soil Texture 6-24         | CL        | Herbicide App. Date          | -            |
| Org.Matter (%) 0-6                                 | 1.3          | Soil Texture 24-36        | CL        | Herbicide Product            | -            |
| N (lbs/ac) 0-6                                     | 33           | Soil Texture 36-48        | CL        | Herbicide Rate (/ac)         | -            |
| N (lbs/ac) 6-24                                    | 20           | Init PAW (in.) 0-6"       | 1.20      | Precip (in.) Plnt'g-Harvest  | 7.96         |
| N (lbs/ac) 24-36                                   | 36           | Init PAW (in.) 6-24"      | 3.46      | Precip (>.1) Plnt'g-Harvest  | 7.09         |
| N (lbs/ac) 36-48                                   | -            | Init PAW (in.) 24-36"     | 1.91      | Harvest Date                 | 8/17         |
| N (lbs/ac) 0-48                                    | 89           | Init PAW (in.) 36-48"     | 1.71      | Rooting Depth (in.)          | 33"          |
| P (ppm) Olsen 0-6                                  | 19           | Init PAW (in.) 0-48"      | 8.27      | Post PAW (in.) 0-6"          | 0.51         |
| K (ppm) 0-6  | 265          | Cropping System           | NT-ChmFlw | Post PAW (in.) 6-24"         | 1.66         |
| Ca (ppm) 0-6                                       | 1160         | Previous Crop             | Barley    | Post PAW (in.) 24-36"        | 0.81         |
| Mg (ppm) 0-6                                       | 424          | Planting Date             | 5/8       | Post PAW (in.) 36-48"        | 0.90         |
| Na (ppm) 0-6                                       | 7.61         | Planting Depth (in.)      | 1.5       | Post PAW (in.) 0-48"         | 3.87         |
| SaltHaz (MMHOS/cm) 0-6                             | 0.19         | Moist Soil Depth @ Plnt'g | 48+       | Precip (>.1) Hvst-Post       | 0            |

**TABLE 24. Ten-Year Yield and Test Weight Summary of Selected Entries from Dryland Fallow Barley Variety Nurseries Grown Off-Station at the Flansaas/Lumsden Farm, Loring, Northern Agricultural Research Center. Havre, Montana. 1998-2007. (Exp# 3655-SB)**

| 2/ VARIETY or SELECTION               | No. of YEARS TESTED<br>3/          | 1/ YIELD (Bushels Per Acre) |      |      |      |      |                         |                        | TEST WEIGHT (Pounds Per Bushel) |      |      |      |      |      |                         |                          |                                |
|---------------------------------------|------------------------------------|-----------------------------|------|------|------|------|-------------------------|------------------------|---------------------------------|------|------|------|------|------|-------------------------|--------------------------|--------------------------------|
|                                       |                                    | 2003                        | 2004 | 2005 | 2006 | 2007 | AVE. YEARS TESTED<br>3/ | % of CHECK YIELD<br>4/ | 10-YR COMP. AVE. YIELD<br>5/    | 2003 | 2004 | 2005 | 2006 | 2007 | AVE. YEARS TESTED<br>3/ | % of CHECK TEST WT<br>4/ | 10-YR COMP. AVE. TEST WT<br>5/ |
| BZ596117 BOULDER (+)                  | 3                                  |                             |      | 68.5 | 32.9 | 57.8 | 53.1                    | 119.6                  | <b>61.0</b>                     |      |      | 49.5 | 44.2 | 44.0 | 45.9                    | 105.2                    | <b>49.0</b>                    |
| PI568246 BARONESSE (P+)               | 8                                  | 51.0                        | 73.3 | 65.2 |      |      | 61.0                    | 113.7                  | <b>58.0</b>                     | 45.0 | 49.1 | 47.3 |      |      | 47.6                    | 99.9                     | <b>46.5</b>                    |
| MT950186 HAXBY                        | 9                                  | 56.2                        | 69.9 | 57.3 | 37.7 | 60.3 | 58.0                    | 110.5                  | <b>56.4</b>                     | 48.9 | 51.8 | 50.3 | 47.4 | 45.4 | 50.1                    | 107.4                    | <b>50.0</b>                    |
| BZ594-19 WPB XENA (P+)                | 8                                  | 53.1                        |      | 59.4 | 29.1 | 50.6 | 54.5                    | 107.7                  | <b>54.9</b>                     | 45.7 |      | 47.9 | 44.2 | 41.1 | 47.0                    | 101.4                    | <b>47.2</b>                    |
| MT960228 ESLICK (+)                   | 9                                  | 48.6                        | 70.5 | 61.0 | 31.2 | 52.6 | 55.3                    | 105.4                  | <b>53.8</b>                     | 46.2 | 50.1 | 48.7 | 45.8 | 42.2 | 48.0                    | 103.0                    | <b>47.9</b>                    |
| PI610264 VALIER (+)                   | 6                                  | 48.6                        | 71.5 |      |      |      | 59.3                    | 104.8                  | <b>53.5</b>                     | 47.0 | 50.8 |      |      |      | 49.9                    | 103.5                    | <b>48.2</b>                    |
| PI491534 GALLATIN                     | 7                                  | 50.9                        | 67.9 |      |      |      | 55.8                    | 103.6                  | <b>52.8</b>                     | 46.1 | 50.9 |      |      |      | 49.2                    | 102.9                    | <b>47.9</b>                    |
| TR232 METCALFE                        | 4                                  |                             | 68.1 | 60.3 | 22.6 | 53.2 | 51.1                    | 101.9                  | <b>52.0</b>                     |      | 49.9 | 46.4 | 46.4 | 42.2 | 46.2                    | 102.7                    | <b>47.8</b>                    |
| ND13299 CONLON (+)                    | 4                                  | 52.0                        | 59.6 |      |      |      | 54.9                    | 101.0                  | <b>51.5</b>                     | 45.1 | 50.5 |      |      |      | 47.7                    | 101.3                    | <b>47.1</b>                    |
| SK76333 HARRINGTON                    | 10                                 | 47.6                        | 67.2 | 52.0 | 30.6 | 50.5 | 51.0                    | 100.0                  | <b>51.0</b>                     | 44.4 | 49.1 | 46.7 | 44.1 | 40.2 | 46.6                    | 100.0                    | <b>46.6</b>                    |
| 6B952482 TRADITION                    | 4                                  |                             | 63.4 | 52.2 | 26.2 | 54.8 | 49.2                    | 98.2                   | <b>50.1</b>                     |      | 49.2 | 48.4 | 41.8 | 42.0 | 45.4                    | 100.8                    | <b>46.9</b>                    |
| MT981060 HAYS                         | 5                                  | 52.3                        | 69.1 | 34.5 | 30.4 | 53.3 | 47.9                    | 96.7                   | <b>49.3</b>                     | 45.8 | 47.6 | 45.9 | 41.8 | 37.3 | 43.7                    | 97.3                     | <b>45.3</b>                    |
| MEANS (For Entries Listed)            |                                    | 51.1                        | 68.1 | 56.7 | 30.1 | 54.1 |                         |                        | <b>53.7</b>                     | 46.0 | 49.9 | 47.9 | 44.5 | 41.8 |                         |                          | <b>47.5</b>                    |
| 6/ Growing Season Precipitation (in.) |                                    | 5.6                         | 10.9 | n/a  | 2.4  | 8.8  | 6.6                     |                        |                                 |      |      |      |      |      |                         |                          |                                |
| Soil PAW (in.) to SD @ Planting       |                                    | 8.3                         | 4.9  | 9.1  | 8.3  | 8.3  | 7.5                     |                        |                                 |      |      |      |      |      |                         |                          |                                |
| Total Plant Available Water (in.)     |                                    | 13.8                        | 15.8 | 9.1  | 10.7 | 11.7 | 12.1                    |                        |                                 |      |      |      |      |      |                         |                          |                                |
| Soil NO3 (lbs.) to SD at Planting     |                                    | 76                          | 60   | 54   | 81   | 89   | 82                      |                        |                                 |      |      |      |      |      |                         |                          |                                |
| SD (Sampling Depth in Inches)         |                                    | 48                          | 48   | 48   | 48   | 48   | 48                      |                        |                                 |      |      |      |      |      |                         |                          |                                |
| Fertilizer Applied                    | (# N)                              | 70                          | 70   | 70   | 70   | 70   | 70                      |                        |                                 |      |      |      |      |      |                         |                          |                                |
|                                       | (# P <sub>2</sub> O <sub>5</sub> ) | 40                          | 40   | 40   | 40   | 40   | 40                      |                        |                                 |      |      |      |      |      |                         |                          |                                |
|                                       | (# K <sub>2</sub> O)               | 25                          | 25   | 25   | 25   | 25   | 25                      |                        |                                 |      |      |      |      |      |                         |                          |                                |

Check Variety is Harrington.

1/ See MCES Bulletin 1094 or the Plant Sciences & Plant Pathology website at <http://plantsciences.montana.edu/> for evaluation of other important variety performance characteristics to include malting potential, disease resistance, etc. before making cultivar selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending.

3/ Only the most recent 5 years are shown, but summary calculations include all years noted.

4/ Percent of Harrington yield or test weight for the same data years as those in which a given entry was tested.

5/ 10-Yr Comparable Average = (x/y) \* z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Harrington for the same years, and z = 10-Yr average yield or test weight for the check variety Harrington.

6/ Seeding to 14 days prior to harvest maturity.

**TABLE 25. Dryland Fallow Spring Barley Cultivar Evaluation Nursery Grown Off-Station at McKeever Farm & Seed Inc., Loma. Northern Agricultural Research Center. Havre, Montana. 2007. (Exp# 07-3657-SB)**

| ID                            | CULTIVAR or SELECTION | STAND<br>% | PLNT HT<br>Inches | 1/             |               |                   | PLUMP<br>% | THIN<br>% | 2/           |  |
|-------------------------------|-----------------------|------------|-------------------|----------------|---------------|-------------------|------------|-----------|--------------|--|
|                               |                       |            |                   | YIELD<br>Bu/Ac | MOISTURE<br>% | TEST WT<br>Lbs/Bu |            |           | PROTEIN<br>% |  |
| BZ596117                      | BOULDER               | 96.2       | 26.4              | 68.6           | 7.8           | 47.8              | 31.3       | 27.8      | 16.0         |  |
| MT150986                      | HAXBY                 | 96.2       | 28.2              | 64.7           | 7.8           | 48.9              | 17.1       | 35.9      | 15.5         |  |
| BZ594-19                      | XENA                  | 100.0      | 28.5              | 58.9           | 7.6           | 43.7              | 7.1        | 58.4      | 15.2         |  |
| MT910189                      | MT910189              | 99.3       | 26.8              | 57.9           | 7.7           | 47.1              | 33.6       | 33.5      | 15.1         |  |
| MT960228                      | ESLICK                | 96.5       | 26.4              | 57.2           | 7.5           | 43.9              | 12.2       | 47.7      | 15.8         |  |
| MT981060                      | HAYS                  | 98.6       | 24.7              | 57.0           | 7.5           | 40.5              | 9.4        | 57.9      | 16.8         |  |
| 6B952482                      | TRADITION             | 100.0      | 27.8              | 56.7           | 7.2           | 43.7              | 17.3       | 48.6      | 15.3         |  |
| 2B965057                      | CONRAD                | 99.3       | 24.4              | 55.7           | 8.1           | 43.3              | 26.8       | 39.3      | 16.7         |  |
| ND15477                       | DRUMMOND              | 100.0      | 28.6              | 52.9           | 7.5           | 42.3              | 12.0       | 59.0      | 15.2         |  |
| MT970116                      | MT970116              | 99.3       | 29.8              | 51.9           | 7.8           | 46.9              | 24.2       | 32.6      | 16.5         |  |
| SK 76333                      | HARRINGTON            | 98.6       | 25.6              | 51.8           | 7.9           | 42.4              | 17.3       | 49.1      | 16.6         |  |
| 2B914947                      | MERIT                 | 100.0      | 24.1              | 50.5           | 7.4           | 40.6              | 16.2       | 48.7      | 17.3         |  |
| MT960101                      | MT960101              | 100.0      | 25.1              | 50.5           | 7.5           | 42.3              | 8.0        | 60.0      | 17.5         |  |
| TR232                         | METCALFE              | 98.3       | 27.3              | 49.9           | 7.7           | 44.9              | 21.8       | 36.6      | 17.1         |  |
| 6B932978                      | LEGACY                | 100.0      | 28.7              | 48.0           | 6.9           | 39.0              | 8.2        | 70.5      | 15.5         |  |
| STELLAR                       | STELLAR               | 97.9       | 25.3              | 45.5           | 7.5           | 39.7              | 18.6       | 55.9      | 15.4         |  |
| EXPERIMENTAL MEANS            |                       | 98.8       | 26.7              | 54.9           | 7.6           | 43.6              | 17.6       | 47.6      | 16.1         |  |
| LSD (0.05)                    |                       | 5.1        | 1.7               | 8.5            | 0.7           | 1.4               | -          | -         | 0.8          |  |
| C.V.2: (S of MEAN / MEAN)*100 |                       | 1.8        | 2.2               | 5.4            | 3.1           | 1.1               | -          | -         | 1.7          |  |

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 48 lbs/bu as the standard test weight for barley.

2/ Protein values are reported on a 100% dry matter basis.

| Site Resource & Management Data: (Exp# 07-3657-SB) |              |                           |           |                              |              |
|--|--------------|---------------------------|-----------|------------------------------|--------------|
| Field  |              | SaltHaz(MMHOS/cm) 6-24    | -         | Dry Surf Soil (in.) @ Plnt'g | 0.25         |
| Quarter  | SE           | S (ppm) 0-24              | -         | 2" Soil Temp (°F) @ Plnt'g   | 72           |
| Section  | 20           | Zn (ppm) 0-6              | -         | 4" Soil Temp (°F) @ Plnt'g   | 65           |
| Township   | 27N          | Fe (ppm) 0-6              | -         | Fertilizer Formulation       | Gran Blend   |
| Range  | 10E          | Mn (ppm) 0-6              | -         | Fertilizer Placement         | Bnd at Plntg |
| Latitude   | N48 42.897'  | Cu (ppm) 0-6              | -         | Fert. Rate (lbs/ac) N        | 70           |
| Longitude  | W110 27.481' | CEC 0-6                   | -         | Fert. Rate (lbs/ac) P2O5     | 40           |
| Soil Series  | unk          | Soil Texture 0-6          | -         | Fert. Rate (lbs/ac) K2O      | 25           |
| pH 0-6   | -            | Soil Texture 6-24         | -         | Herbicide App. Date          | 6/13         |
| Org.Matter (%) 0-6                                 | -            | Soil Texture 24-36        | -         | Herbicide Product            | Bronate Ad   |
| N (lbs/ac) 0-6                                     | -            | Soil Texture 36-48        | -         | Herbicide Rate (/ac)         | 20oz         |
| N (lbs/ac) 6-24                                    | -            | Init PAW (in.) 0-6"       | -         | Precip (in.) Plnt'g-Harvest  | 5.37         |
| N (lbs/ac) 24-36                                   | -            | Init PAW (in.) 6-24"      | -         | Precip (>.1) Plnt'g-Harvest  | 4.90         |
| N (lbs/ac) 36-48                                   | -            | Init PAW (in.) 24-36"     | -         | Harvest Date                 | 8/16         |
| N (lbs/ac) 0-48                                    | -            | Init PAW (in.) 36-48"     | -         | Rooting Depth (in.)          | -            |
| P (ppm) Olsen 0-6                                  | -            | Init PAW (in.) 0-48"      | -         | Post PAW (in.) 0-6"          | -            |
| K (ppm) 0-6  | -            | Cropping System           | NT-ChmFlw | Post PAW (in.) 6-24"         | -            |
| Ca (ppm) 0-6                                       | -            | Previous Crop             | SW        | Post PAW (in.) 24-36"        | -            |
| Mg (ppm) 0-6                                       | -            | Planting Date             | 5/7       | Post PAW (in.) 36-48"        | -            |
| Na (ppm) 0-6                                       | -            | Planting Depth (in.)      | 1.5       | Post PAW (in.) 0-48"         | -            |
| SaltHaz (MMHOS/cm) 0-6                             | -            | Moist Soil Depth @ Plnt'g | 48+       | Precip (>.1) Hvst-Post       | -            |

**TABLE 26. Nine-Year Yield and Test Weight Summary of Selected Entries from Dryland Fallow Barley Variety Nurseries Grown Off-Station at McKeever Farms, Loma. Northern Agricultural Research Center. Havre, Montana. 1999-2007. (Exp# 3657-SB)**

| 2/ VARIETY or SELECTION               | No. of YEARS TESTED<br>3/          | 1/ YIELD (Bushels Per Acre) |      |      |      |      | TEST WEIGHT (Pounds Per Bushel) |                        |                             |      |      | 9-YR COMP. AVE. TEST WT<br>5/ |      |      |      |                       |                          |
|---------------------------------------|------------------------------------|-----------------------------|------|------|------|------|---------------------------------|------------------------|-----------------------------|------|------|-------------------------------|------|------|------|-----------------------|--------------------------|
|                                       |                                    | 2003                        | 2004 | 2005 | 2006 | 2007 | AVE. for YEARS TESTED           | % of CHECK YIELD<br>4/ | 9-YR COMP. AVE. YIELD<br>5/ | 2003 | 2004 |                               | 2005 | 2006 | 2007 | AVE. for YEARS TESTED | % of CHECK TEST WT<br>4/ |
| BZ596117 BOULDER (+)                  | 3                                  |                             |      | 86.9 | 40.5 | 68.6 | 65.3                            | 135.4                  | <b>58.5</b>                 |      |      | 50.0                          | 41.4 | 47.8 | 46.4 | 110.9                 | <b>49.0</b>              |
| MT950186 HAXBY                        | 9                                  | 47.3                        | 56.3 | 80.1 | 35.7 | 64.7 | 48.9                            | 113.2                  | <b>48.9</b>                 | 50.8 | 46.6 | 50.0                          | 44.5 | 48.9 | 48.8 | 110.4                 | <b>48.8</b>              |
| 2B965057 CONRAD                       | 3                                  |                             |      | 67.2 | 36.6 | 55.7 | 53.2                            | 110.2                  | <b>47.6</b>                 |      |      | 45.3                          | 41.7 | 43.3 | 43.4 | 103.7                 | <b>45.8</b>              |
| BZ594-19 WPB XENA (P+)                | 8                                  | 39.6                        |      | 68.7 | 37.7 | 58.9 | 45.2                            | 109.5                  | <b>47.3</b>                 | 48.0 |      | 45.0                          | 41.8 | 43.7 | 46.3 | 102.9                 | <b>45.5</b>              |
| ND15477 DRUMMOND                      | 3                                  |                             |      | 71.9 | 32.9 | 52.9 | 52.6                            | 109.0                  | <b>47.1</b>                 |      |      | 44.8                          | 36.8 | 42.3 | 41.3 | 98.6                  | <b>43.6</b>              |
| PI568246 BARONESSE (P+)               | 7                                  | 42.4                        | 62.5 | 73.1 |      |      | 47.7                            | 108.6                  | <b>46.9</b>                 | 46.9 | 39.7 | 44.6                          |      |      | 45.9 | 102.1                 | <b>45.1</b>              |
| MT960228 ESLICK (+)                   | 9                                  | 42.4                        | 60.5 | 74.6 | 31.0 | 57.2 | 46.7                            | 108.2                  | <b>46.7</b>                 | 49.2 | 41.8 | 46.0                          | 41.5 | 43.9 | 46.2 | 104.6                 | <b>46.2</b>              |
| 6B952482 TRADITION                    | 4                                  |                             | 59.3 | 71.4 | 29.0 | 56.7 | 54.1                            | 106.7                  | <b>46.1</b>                 |      | 38.6 | 44.9                          | 37.4 | 43.7 | 41.2 | 100.7                 | <b>44.5</b>              |
| MT970116 MT970116 (++)                | 7                                  | 44.1                        | 62.9 | 69.1 | 30.5 | 51.9 | 44.7                            | 104.8                  | <b>45.3</b>                 | 49.4 | 44.1 | 47.7                          | 44.3 | 46.9 | 47.2 | 108.6                 | <b>48.0</b>              |
| PI491534 GALLATIN                     | 6                                  | 42.1                        | 59.4 |      |      |      | 42.1                            | 103.5                  | <b>44.7</b>                 | 47.3 | 42.8 |                               |      |      | 46.6 | 102.8                 | <b>45.4</b>              |
| MT981060 HAYS                         | 5                                  | 39.6                        | 50.8 | 62.9 | 36.0 | 57.0 | 49.2                            | 103.1                  | <b>44.5</b>                 | 45.8 | 38.4 | 43.2                          | 39.5 | 40.5 | 41.5 | 98.6                  | <b>43.5</b>              |
| SK76333 HARRINGTON                    | 9                                  | 36.0                        | 58.1 | 63.6 | 29.3 | 51.8 | 43.2                            | 100.0                  | <b>43.2</b>                 | 46.9 | 37.9 | 43.0                          | 40.2 | 42.4 | 44.2 | 100.0                 | <b>44.2</b>              |
| PI610264 VALIER (+)                   | 6                                  | 34.4                        | 62.8 |      |      |      | 39.7                            | 97.7                   | <b>42.2</b>                 | 48.5 | 40.8 |                               |      |      | 47.2 | 104.1                 | <b>46.0</b>              |
| TR232 METCALFE                        | 4                                  |                             | 50.4 | 61.5 | 26.2 | 49.9 | 47.0                            | 92.7                   | <b>40.0</b>                 |      | 39.3 | 44.4                          | 42.0 | 44.9 | 42.7 | 104.4                 | <b>46.1</b>              |
| 2B914947 MERIT (P+)                   | 3                                  |                             |      | 57.5 | 25.6 | 50.5 | 44.5                            | 92.3                   | <b>39.9</b>                 |      |      | 41.4                          | 39.3 | 40.6 | 40.4 | 96.6                  | <b>42.7</b>              |
| 6B932978 LEGACY (P+)                  | 3                                  |                             |      | 57.3 | 21.9 | 48.0 | 42.4                            | 87.9                   | <b>38.0</b>                 |      |      | 41.6                          | 36.8 | 39.0 | 39.1 | 93.4                  | <b>41.3</b>              |
| MEANS (For Entries Listed)            |                                    | 40.9                        | 58.3 | 69.0 | 31.8 | 55.7 |                                 |                        | <b>45.4</b>                 | 48.1 | 41.0 | 45.1                          | 40.6 | 43.7 |      |                       | <b>45.3</b>              |
| 6/ Growing Season Precipitation (in.) |                                    | 3.2                         | 7.4  | n/a  | 7.6  | 6.9  | 6.8                             |                        |                             |      |      |                               |      |      |      |                       |                          |
| Soil PAW (in.) to SD @ Planting       |                                    | 8.4                         | 6.2  | 4.4  | 9.3  | n/a  | 7.1                             |                        |                             |      |      |                               |      |      |      |                       |                          |
| Total Plant Available Water (in.)     |                                    | 11.6                        | 13.5 | 4.4  | 16.9 | 5.4  | 10.4                            |                        |                             |      |      |                               |      |      |      |                       |                          |
| Soil NO3 (lbs.) to SD at Planting     |                                    | 146                         | 260  | 200  | 465  | n/a  | 312                             |                        |                             |      |      |                               |      |      |      |                       |                          |
| SD (Sampling Depth in Inches)         |                                    | 48                          | 48   | 48   | 48   | 48   | 48                              |                        |                             |      |      |                               |      |      |      |                       |                          |
| Fertilizer Applied                    | (# N)                              | 70                          | 70   | 70   | 70   | 70   | 68                              |                        |                             |      |      |                               |      |      |      |                       |                          |
|                                       | (# P <sub>2</sub> O <sub>5</sub> ) | 40                          | 40   | 40   | 40   | 40   | 41                              |                        |                             |      |      |                               |      |      |      |                       |                          |
|                                       | (# K <sub>2</sub> O)               | 25                          | 25   | 25   | 25   | 25   | 25                              |                        |                             |      |      |                               |      |      |      |                       |                          |

Check Variety is Harrington.

1/ See MCES Bulletin 1094 or the Plant Sciences & Plant Pathology website at <http://plantsciences.montana.edu/> for evaluation of other important variety performance characteristics to include malting potential, disease resistance, etc. before making cultivar selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending.

3/ Only the most recent 5 years are shown, but summary calculations include all years noted.

4/ Percent of Harrington yield or test weight for the same data years as those in which a given entry was tested.

5/ 9-Yr Comparable Average = (x/y) \* z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Harrington for the same years, and z = 9-Yr average yield or test weight for the check variety Harrington.

6/ Seeding to 14 days prior to harvest maturity.