**PROJECT TITLE:** Off-station spring wheat variety evaluations in eastern Montana – 2009 (4W2756)

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**Personnel:**

| Site/County | Producer | CES Agent |
|---|---|---|
| Flaxville, Daniels | Charlie Cahill | Nicole Winkler |
| Circle, McCone | Victor Wagner | Ken Nelson |
| Poplar, Roosevelt | Mark Swank | Ann Ronning |
| Nashua, Valley | Bill Lauckner | Verlin Koenig |
| Wibaux, Wibaux | David Maus | Dave Bertelsen |
| Outlook, Sheridan | Gordon Stoner | Terry Angvick |

**OBJECTIVE:** To evaluate varieties of spring wheat under irrigated and dryland conditions at various sites in eastern Montana.

**RESULTS:** The site in Sheridan County was not harvested because of poor stand. Summaries of yields, test weights, protein contents, and heights across all sites are shown in Tables 1-4. Vida yielded most across sites (Table 1). Barlow had highest test weight across sites (Table 2). Kelby had the highest protein content across sites (Table 3). NDSW0449 was tallest across sites and Kelby was shortest across sites (Table 4).

**Circle, McCone County:** Performance and relative values of yield, test weight and protein of spring wheat varieties at Circle are shown in Tables 5-8. Vida had greatest economic return.

**Nashua, Valley County:** Performances and relative values of yield, test weight and protein of spring wheat varieties at Nashua are shown in Tables 9-12. AP604CL had greatest economic return.

**Flaxville, Daniels County:** Performance and relative values of yield, test weight and protein of spring wheat varieties at Flaxville are shown in Tables 13-16. Vida had greatest economic return.

**Wibaux, Wibaux County:** Performance and relative values of yield, test weight and protein of spring wheat varieties at Wibaux are shown in Tables 17-20. Vida had greatest economic return.

**Poplar, Roosevelt County:** Performance and relative values of yield, test weight and protein of spring wheat varieties at Poplar are shown in Tables 21-24. Faller had greatest economic return.

**SUMMARY**: Off-station yield trials are conducted at several sites in eastern Montana. All experiments reported under this project are of the replicated small plot type. These trials provide important information about performance of experimental lines and varieties from Montana State University, other state universities, and private companies. Regional spring wheat producers make decisions on varieties to grow based on data from these trials.

**FUNDING SUMMARY:** Expenditure information to be provided by OSP. No other grants support this project.

**MWBC FY2011GRANT SUBMISSION PLANS:** It is planned to submit this project for funding consideration in the next fiscal year.

Table 1. Summary of spring wheat yields in bu/acre at five off-station sites in eastern Montana, 2009.

| Variety | Circle, dryland recrop | Nashua, dryland fallow | Flaxville, dryland recrop | Wibaux, dryland fallow | Poplar, dryland fallow | average |
|---|---|---|---|---|---|---|
| Volt | 26.2 | 30.8 | 12.6 | 33.4 | 55.8 | 31.8 |
| Corbin | 23.7 | 20.7 | 16.7 | 27.4 | 52.4 | 28.2 |
| O'Neal | 29.8 | 29.8 | 18.9 | 32.8 | 58.0 | 33.9 |
| Kuntz | 28.7 | 25.7 | 15.9 | 28.1 | 56.6 | 31.0 |
| Jedd | 28.4 | 29.3 | 15.9 | 28.6 | 48.1 | 30.1 |
| Vida | **39.5** | 25.0 | **23.2** | **35.5** | 59.7 | **36.6** |
| Kelby | 24.4 | 29.5 | 14.7 | 24.9 | 55.1 | 29.7 |
| McNeal | 28.7 | 26.9 | 16.6 | 32.1 | 50.7 | 31.0 |
| Reeder | 26.9 | 30.4 | 20.2 | 34.0 | 59.3 | 34.2 |
| Choteau | 25.1 | 22.2 | 15.7 | 27.8 | 58.0 | 29.8 |
| Outlook | 22.0 | 24.5 | 19.2 | 32.5 | 53.0 | 30.3 |
| AP604CL | 26.3 | **30.9** | 14.7 | 27.1 | 58.6 | 31.5 |
| Briggs | 21.7 | 27.3 | 15.1 | 21.8 | 53.2 | 27.8 |
| Granger | 19.7 | 29.6 | 16.1 | 29.6 | 58.8 | 30.8 |
| Faller | 24.3 | 29.3 | 12.3 | 31.0 | **63.4** | 32.1 |
| NDSW0449 | 31.2 | 26.2 | 18.7 | 30.0 | 59.5 | 33.1 |
| Barlow | 26.7 | 30.8 | 15.3 | 26.8 | 57.8 | 31.5 |
| 20%Choteau+80%Reeder | 25.0 | 26.6 | 15.8 | 26.7 | 53.2 | 29.5 |
| 20%Choteau+80%Conan | 24.9 | 28.6 | 15.1 | 31.1 | 51.8 | 30.3 |
| 20%Choteau+80%Vida | 29.2 | 27.1 | 20.3 | 31.4 | 57.4 | 33.1 |
| Tioga | | 24.9 | | | | |
| site average | 26.6 | 27.4 | 16.7 | 29.6 | 56.0 | 31.3 |
| probability | <0.001 | 0.083 | 0.007 | <0.001 | <0.001 | |
| CV (S/Mean) | 15.2 | 14.1 | 17.5 | 10.3 | 6.4 | |
| CV(SE/Mean) | 8.8 | 8.1 | 10.1 | 6.0 | 3.7 | |
| LSD 0.05 | 6.7 | 6.4 | 4.8 | 5.1 | 5.9 | |

Table 2. Summary of spring wheat test weights in lb/bu at five off-station sites in eastern Montana, 2009.

| Variety | Circle, dryland recrop | Nashua, dryland fallow | Flaxville, dryland recrop | Wibaux, dryland fallow | Poplar, dryland fallow | average |
|---|---|---|---|---|---|---|
| Volt | 59.0 | 60.3 | 58.5 | 63.0 | 63.0 | 60.8 |
| Corbin | 59.0 | 59.5 | 57.8 | 61.5 | 61.3 | 59.8 |
| O'Neal | 59.8 | 61.2 | 59.3 | 62.7 | 62.7 | 61.1 |
| Kuntz | 59.3 | 59.7 | 57.7 | 61.5 | 61.8 | 60.0 |
| Jedd | 60.3 | 60.8 | 58.7 | 62.2 | 62.0 | 60.8 |
| Vida | 58.2 | 59.0 | 56.0 | 61.5 | 61.0 | 59.1 |
| Kelby | 58.7 | 59.3 | 59.3 | 61.5 | 62.5 | 60.3 |
| McNeal | 58.0 | 59.3 | 57.2 | 61.0 | 61.0 | 59.3 |
| Reeder | 59.3 | 59.8 | 58.2 | 62.2 | 62.2 | 60.3 |
| Choteau | 57.3 | 58.2 | 57.5 | 60.7 | 61.7 | 59.1 |
| Outlook | 57.8 | 58.8 | 56.5 | 61.0 | 60.8 | 59.0 |
| AP604CL | 60.0 | 59.5 | 58.0 | 62.3 | 62.7 | 60.5 |
| Briggs | 59.5 | 59.3 | 58.2 | 62.0 | 62.2 | 60.2 |
| Granger | 58.7 | 59.5 | 58.3 | 61.5 | 61.7 | 59.9 |
| Faller | 57.8 | 57.8 | 55.7 | 61.2 | 61.5 | 58.8 |
| NDSW0449 | 58.8 | 58.8 | 58.3 | 61.3 | 61.5 | 59.8 |
| Barlow | 61.3 | 61.5 | 59.7 | 63.5 | 63.0 | 61.8 |
| 20%Choteau+80%Reeder | 59.0 | 59.5 | 58.0 | 61.8 | 61.7 | 60.0 |
| 20%Choteau+80%Conan | 59.3 | 59.7 | 59.7 | 61.8 | 61.7 | 60.4 |
| 20%Choteau+80%Vida | 58.0 | 59.0 | 57.0 | 61.5 | 60.7 | 59.2 |
| Tioga | | 59.0 | | | | |
| site average | 59 | 59.5 | 58.0 | 61.8 | 61.8 | 60.0 |
| probability | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | |
| CV (S/Mean) | 0.9 | 0.5 | 1.5 | 0.6 | 0.8 | |
| CV(SE/Mean) | 0.5 | 0.3 | 0.9 | 0.3 | 0.4 | |
| LSD 0.05 | 0.9 | 0.5 | 1.4 | 0.6 | 0.8 | |

Table 3. Summary of spring wheat protein contents in percent at five dryland off-station sites in eastern Montana, 2009.

| Variety | Circle, dryland recrop | Nashua, dryland fallow | Flaxville, dryland recrop | Wibaux, dryland fallow | Poplar, dryland fallow | average |
|---|---|---|---|---|---|---|
| Volt | 13.71 | 14.25 | 14.60 | 12.40 | 11.30 | 13.25 |
| Corbin | 16.11 | 15.29 | 14.88 | 12.78 | 12.20 | 14.25 |
| O'Neal | 15.20 | 15.80 | 14.68 | 12.06 | 11.56 | 13.86 |
| Kuntz | 13.49 | 14.85 | 13.99 | 12.83 | 12.11 | 13.45 |
| Jedd | 13.45 | 15.22 | 14.70 | 12.29 | 11.66 | 13.46 |
| Vida | 13.55 | 16.68 | 15.80 | 13.20 | 12.38 | 14.32 |
| Kelby | 15.56 | 15.54 | 15.30 | 14.71 | 13.35 | 14.89 |
| McNeal | 13.59 | 15.42 | 14.51 | 12.32 | 11.29 | 13.43 |
| Reeder | 14.91 | 16.16 | 15.50 | 13.04 | 12.37 | 14.40 |
| Choteau | 14.83 | 16.09 | 15.03 | 13.11 | 12.16 | 14.24 |
| Outlook | 14.49 | 15.25 | 14.55 | 12.57 | 11.51 | 13.67 |
| AP604CL | 14.69 | 15.12 | 15.07 | 12.59 | 11.91 | 13.88 |
| Briggs | 14.40 | 15.73 | 15.41 | 12.69 | 12.70 | 14.19 |
| Granger | 13.79 | 15.29 | 14.41 | 11.96 | 11.60 | 13.41 |
| Faller | 13.32 | 15.76 | 14.74 | 12.14 | 11.27 | 13.45 |
| NDSW0449 | 13.73 | 15.50 | 14.73 | 12.35 | 11.99 | 13.66 |
| Barlow | 13.84 | 15.52 | 13.77 | 12.35 | 12.32 | 13.56 |
| 20%Choteau+80%Reeder | 14.26 | 16.32 | 14.78 | 13.01 | 12.48 | 14.17 |
| 20%Choteau+80%Conan | 14.90 | 15.38 | 14.97 | 12.61 | 13.08 | 14.19 |
| 20%Choteau+80%Vida | 14.27 | 16.26 | 14.57 | 12.58 | 12.54 | 14.04 |
| Tioga | | 15.69 | | | | |
| site average | 14.3 | 15.58 | 14.8 | 12.68 | 12.09 | 13.89 |
| probability | 0.014 | <0.001 | 0.311 | <0.001 | <0.001 | |
| CV (S/Mean) | 6.2 | 2.0 | 5.2 | 3.0 | 3.3 | |
| CV(SE/Mean) | 3.6 | 1.1 | 3.0 | 1.7 | 1.9 | |
| LSD 0.05 | 1.5 | 0.51 | ns | 0.63 | 0.67 | |

Table 4. Summary of spring wheat heights in cm at five dryland off-station sites in eastern Montana, 2009.

| Variety | Circle, dryland recrop | Nashua, dryland fallow | Flaxville, dryland recrop | Wibaux, dryland fallow | Poplar, dryland fallow | average |
|---|---|---|---|---|---|---|
| Volt | 60.0 | 50.7 | 55.3 | 64.0 | 72.7 | 60.5 |
| Corbin | 55.3 | 49.7 | 56.0 | 64.3 | 73.3 | 59.7 |
| O'Neal | 63.7 | 50.7 | 59.7 | 65.7 | 79.7 | 63.9 |
| Kuntz | 63.3 | 50.3 | 60.0 | 66.7 | 74.3 | 62.9 |
| Jedd | 54.0 | 50.3 | 47.7 | 64.0 | 69.3 | 57.1 |
| Vida | 62.3 | 49.3 | 56.0 | 67.7 | 77.3 | 62.5 |
| Kelby | 53.7 | 47.3 | 51.3 | 62.0 | 66.7 | 56.2 |
| McNeal | 67.7 | 55.3 | 61.7 | 72.3 | 76.0 | 66.6 |
| Reeder | 60.3 | 51.3 | 57.7 | 69.0 | 79.7 | 63.6 |
| Choteau | 55.0 | 48.7 | 57.7 | 63.3 | 74.0 | 59.7 |
| Outlook | 63.3 | 55.0 | 63.7 | 69.7 | 80.3 | 66.4 |
| AP604CL | 55.0 | 54.0 | 58.3 | 68.0 | 75.3 | 62.1 |
| Briggs | 61.7 | 58.3 | 56.7 | 69.3 | 76.7 | 64.5 |
| Granger | 58.3 | 57.3 | 55.3 | 75.3 | 81.7 | 65.6 |
| Faller | 62.7 | 53.0 | 59.0 | 72.3 | 79.3 | 65.3 |
| NDSW0449 | 70.3 | 54.0 | 55.7 | 72.3 | 86.0 | 67.7 |
| Barlow | 62.7 | 60.3 | 59.0 | 67.7 | 82.3 | 66.4 |
| 20%Choteau+80%Reeder | 59.3 | 54.7 | 56.3 | 64.0 | 78.3 | 62.5 |
| 20%Choteau+80%Conan | 60.3 | 50.7 | 55.7 | 66.3 | 74.3 | 61.5 |
| 20%Choteau+80%Vida | 60.7 | 55.3 | 52.3 | 68.3 | 74.7 | 62.3 |
| Tioga | | 64.3 | | | | |
| site average | 60.5 | 53.4 | 56.8 | 67.6 | 76.6 | 63.0 |
| probability | <0.001 | <0.001 | <0.001 | 0.011 | <0.001 | |
| CV (S/Mean) | 6.7 | 5.8 | 5.5 | 6.0 | 2.7 | |
| CV(SE/Mean) | 3.9 | 3.4 | 3.2 | 3.4 | 1.5 | |
| LSD 0.05 | 6.7 | 5.2 | 5.1 | 6.7 | 3.4 | |

Table 5. Performance of spring wheat grown under dryland continuous cropping conditions at Circle, MT. Planted: May 11, 2009 Harvested: September 16, 2009 Cooperator: Victor Wagner

| Variety | height, cm | sawfly damage, % | grain protein, % | test wt, lb/bu | Yield, bu/acre | $/acre[1] +/- McNeal |
|---|---|---|---|---|---|---|
| Vida | 62.3 | 1.7 | 13.55 | 58.2 | 39.5 | 58.43 |
| NDSW0449 | 70.3 | 0.7 | 13.73 | 58.8 | 31.2 | 15.71 |
| O'Neal | 63.7 | 5.0 | 15.20 | 59.8 | 29.8 | 14.89 |
| 20%Choteau+80%Vida | 60.7 | 5.3 | 14.27 | 58.0 | 29.2 | 7.96 |
| McNeal | 67.7 | 8.3 | 13.59 | 58.0 | 28.7 | 0.00 |
| Kuntz | 63.3 | 5.7 | 13.49 | 59.3 | 28.7 | 0.00 |
| Jedd | 54.0 | 1.3 | 13.45 | 60.3 | 28.4 | -1.63 |
| Reeder | 60.3 | 5.0 | 14.91 | 59.3 | 26.9 | -1.67 |
| AP604CL | 55.0 | 5.7 | 14.69 | 60.0 | 26.3 | -6.15 |
| Barlow | 62.7 | 1.7 | 13.84 | 61.3 | 26.7 | -8.95 |
| Volt | 60.0 | 10.0 | 13.71 | 59.0 | 26.2 | -11.69 |
| Choteau | 55.0 | 2.7 | 14.83 | 57.3 | 25.1 | -12.95 |
| 20%Choteau+80%Conan | 60.3 | 1.7 | 14.90 | 59.3 | 24.9 | -13.09 |
| 20%Choteau+80%Reeder | 59.3 | 2.3 | 14.26 | 59.0 | 25.0 | -15.52 |
| Kelby | 53.7 | 3.0 | 15.56 | 58.7 | 24.4 | -15.95 |
| Corbin | 55.3 | 1.7 | 16.11 | 59.0 | 23.7 | -19.94 |
| Faller | 62.7 | 4.0 | 13.32 | 57.8 | 24.3 | -25.27 |
| Outlook | 63.3 | 4.7 | 14.49 | 57.8 | 22.0 | -31.41 |
| Briggs | 61.7 | 4.7 | 14.40 | 59.5 | 21.7 | -33.10 |
| Granger | 58.3 | 10.0 | 13.79 | 58.7 | 19.7 | -47.31 |
| average | 60.5 | 4.3 | 14.30 | 59.0 | 26.6 | |
| probability | <0.001 | <0.001 | 0.014 | <0.001 | <0.001 | |
| CV (S/Mean) | 6.7 | 51.6 | 6.2 | 0.9 | 15.2 | |
| CV(SE/Mean) | 3.9 | 29.8 | 3.60 | 0.5 | 8.8 | |
| LSD 0.05 | 6.7 | 3.6 | 1.5 | 0.9 | 6.7 | |

[1] Wheat prices summarized by G. Carlson, NARC, Havre, MT, from 10-yr (1999-2008) average daily market values for PNW, supplied by the Montana Wheat and Barley Committee, and compiled by Gregg Carlson, MSU Northern Agricultural Research Center, Havre, MT.

Table 6. Relative yielding abilities of spring wheat varieties as compared to McNeal when grown under dryland conditions in McCone County in cooperation with CES.

| Cultivar | 2004 | 2005 | 2006 | 2008 | 2009 | Ave | as % of McNeal |
|---|---|---|---|---|---|---|---|
| Vida | 34.2 | 29.0 | 14.4 | 12.6 | 39.5 | 25.9 | 124.0 |
| Jedd | -- | -- | -- | 13.8 | 28.4 | 21.1 | 118.2 |
| O'Neal | -- | -- | -- | 12.2 | 29.8 | 21.0 | 117.6 |
| Reeder | 32.4 | 36.2 | 12.9 | 11.9 | 26.9 | 24.1 | 115.0 |
| NDSW0449 | -- | -- | -- | -- | 31.2 | 31.2 | 108.7 |
| Outlook | 33.0 | 35.2 | 10.9 | 11.4 | 22.0 | 22.5 | 107.6 |
| 20%Choteau/80%Vida | -- | -- | -- | -- | 29.2 | 29.2 | 101.7 |
| McNeal | 31.1 | 30.5 | 7.3 | 7.0 | 28.7 | 20.9 | 100.0 |
| Kelby | -- | -- | -- | 11.3 | 24.4 | 17.9 | 100.0 |
| Kuntz | -- | -- | -- | 7.0 | 28.7 | 17.9 | 100.0 |
| Corbin | -- | -- | -- | 11.7 | 23.7 | 17.7 | 99.2 |
| Choteau | 28.7 | 25.3 | 10.8 | 11.9 | 25.1 | 20.4 | 97.3 |
| Barlow | -- | -- | -- | -- | 26.7 | 26.7 | 93.0 |
| AP604CL | -- | -- | -- | -- | 26.3 | 26.3 | 91.6 |
| Volt | -- | -- | -- | 5.8 | 26.2 | 16.0 | 89.6 |
| 20%Choteau/80%Reeder | -- | -- | -- | -- | 25.0 | 25.0 | 87.1 |
| 20%Choteau/80%Conan | -- | -- | -- | -- | 24.9 | 24.9 | 86.8 |
| Faller | -- | -- | -- | 6.6 | 24.3 | 15.5 | 86.6 |
| Briggs | -- | -- | -- | 8.9 | 21.7 | 15.3 | 85.7 |
| Granger | -- | -- | -- | 9.7 | 19.7 | 14.7 | 82.4 |

NOTE: Average yields in this summary should not be compared to each other since they are not grown in the same years. Compare yields only to the check variety.

Table 7. Relative test weights of spring wheat varieties as compared to McNeal when grown under dryland conditions in McCone County in cooperation with CES.

| Cultivar | 2004 | 2005 | 2006 | 2008 | 2009 | Ave | as % of McNeal |
|---|---|---|---|---|---|---|---|
| Barlow | -- | -- | -- | -- | 61.3 | 61.3 | 105.7 |
| Jedd | -- | -- | -- | 60.5 | 60.3 | 60.4 | 105.0 |
| Briggs | -- | -- | -- | 60.2 | 59.5 | 59.9 | 104.1 |
| Reeder | 61.8 | 61.7 | 58.3 | 59.5 | 59.3 | 60.1 | 103.9 |
| Kuntz | -- | -- | -- | 60.0 | 59.3 | 59.7 | 103.7 |
| O'Neal | -- | -- | -- | 59.5 | 59.8 | 59.7 | 103.7 |
| AP604CL | -- | -- | -- | -- | 60.0 | 60.0 | 103.4 |
| Volt | -- | -- | -- | 59.8 | 59.0 | 59.4 | 103.3 |
| Corbin | -- | -- | -- | 59.8 | 59.0 | 59.4 | 103.3 |
| Vida | 61.3 | 61.3 | 58.0 | 59.5 | 58.2 | 59.7 | 103.1 |
| Kelby | -- | -- | -- | 59.7 | 58.7 | 59.2 | 103.0 |
| Choteau | 60.8 | 60.5 | 58.8 | 59.5 | 57.3 | 59.4 | 102.6 |
| 20%Choteau/80%Conan | -- | -- | -- | -- | 59.3 | 59.3 | 102.2 |
| Granger | -- | -- | -- | 58.7 | 58.7 | 58.7 | 102.1 |
| 20%Choteau/80%Reeder | -- | -- | -- | -- | 59.0 | 59.0 | 101.7 |
| NDSW0449 | -- | -- | -- | -- | 58.8 | 58.8 | 101.4 |
| Outlook | 59.8 | 59.5 | 56.7 | 58.2 | 57.8 | 58.4 | 100.9 |
| Faller | -- | -- | -- | 57.3 | 57.8 | 57.6 | 100.1 |
| McNeal | 59.0 | 59.7 | 55.7 | 57.0 | 58.0 | 57.9 | 100.0 |
| 20%Choteau/80%Vida | -- | -- | -- | -- | 58.0 | 58.0 | 100.0 |

NOTE: Average test weights in this summary should not be compared to each other since they are not grown in the same years. Compare test weights only to the check variety.

Table 8. Relative protein contents of spring wheat varieties as compared to McNeal when grown under dryland conditions in McCone County in cooperation with CES.

| Cultivar | 2004 | 2005 | 2006 | 2008 | 2009 | Ave | as % of McNeal |
|---|---|---|---|---|---|---|---|
| Corbin | -- | -- | -- | 14.6 | 16.1 | 15.4 | 110.8 |
| Reeder | 14.1 | 13.7 | 16.0 | 15.2 | 14.9 | 14.8 | 110.6 |
| 20%Choteau/80%Conan | -- | -- | -- | -- | 14.9 | 14.9 | 109.6 |
| AP604CL | -- | -- | -- | -- | 14.7 | 14.7 | 108.1 |
| Kelby | -- | -- | -- | 14.2 | 15.6 | 14.9 | 107.6 |
| O'Neal | -- | -- | -- | 14.4 | 15.2 | 14.8 | 106.9 |
| Choteau | 14.2 | 13.2 | 14.8 | 14.0 | 14.8 | 14.2 | 106.3 |
| Faller | -- | -- | -- | 15.9 | 13.3 | 14.6 | 105.4 |
| 20%Choteau/80%Vida | -- | -- | -- | -- | 14.3 | 14.3 | 105.1 |
| 20%Choteau/80%Reeder | -- | -- | -- | -- | 14.3 | 14.3 | 105.1 |
| Briggs | -- | -- | -- | 14.7 | 14.4 | 14.6 | 105.1 |
| Vida | 13.8 | 11.8 | 15.0 | 14.6 | 13.6 | 13.8 | 103.0 |
| Outlook | 12.9 | 12.4 | 15.2 | 13.8 | 14.5 | 13.8 | 103.0 |
| Barlow | -- | -- | -- | -- | 13.8 | 13.8 | 101.5 |
| Granger | -- | -- | -- | 14.3 | 13.8 | 14.1 | 101.4 |
| NDSW0449 | -- | -- | -- | -- | 13.7 | 13.7 | 100.7 |
| Volt | -- | -- | -- | 14.2 | 13.7 | 14.0 | 100.7 |
| McNeal | 13.0 | 11.6 | 14.5 | 14.1 | 13.6 | 13.4 | 100.0 |
| Kuntz | -- | -- | -- | 13.5 | 13.5 | 13.5 | 97.5 |
| Jedd | -- | -- | -- | 13.2 | 13.4 | 13.3 | 96.0 |

NOTE: Average protein contents in this summary should not be compared to each other since they are not grown in the same years. Compare protein contents only to the check variety.

Table 9. Performance of spring wheat grown under dryland conditions at Nashua, MT.
Planted: Apr 17, 2009 Harvested: September 9, 2009 Cooperator: Bill Lauckner

| Variety | height, inches | Grain protein | Test weight | Yield, bu/acre | $/acre[1] +/- McNeal |
|---|---|---|---|---|---|
| AP604CL | 54.0 | 15.12 | 59.5 | 30.9 | 22.84 |
| Barlow | 60.3 | 15.52 | 61.5 | 30.8 | 22.27 |
| Reeder | 51.3 | 16.16 | 59.8 | 30.4 | 19.98 |
| Volt | 50.7 | 14.25 | 60.3 | 30.8 | 18.57 |
| O'Neal | 50.7 | 15.80 | 61.2 | 29.8 | 16.56 |
| Granger | 57.3 | 15.29 | 59.5 | 29.6 | 15.42 |
| Kelby | 47.3 | 15.54 | 59.3 | 29.5 | 14.84 |
| Jedd | 50.3 | 15.22 | 60.8 | 29.3 | 13.70 |
| Faller | 53.0 | 15.76 | 57.8 | 29.3 | 13.70 |
| 20%Choteau+80%Conan | 50.7 | 15.38 | 59.7 | 28.6 | 9.71 |
| Briggs | 58.3 | 15.73 | 59.3 | 27.3 | 2.28 |
| 20%Choteau+80%Vida | 55.3 | 16.26 | 59.0 | 27.1 | 1.14 |
| McNeal | 55.3 | 15.42 | 59.3 | 26.9 | 0.00 |
| 20%Choteau+80%Reeder | 54.7 | 16.32 | 59.5 | 26.6 | -1.71 |
| NDSW0449 | 54.0 | 15.50 | 58.8 | 26.2 | -4.00 |
| Kuntz | 50.3 | 14.85 | 59.7 | 25.7 | -7.88 |
| Vida | 49.3 | 16.68 | 59.0 | 25.0 | -10.85 |
| Tioga | 64.3 | 15.69 | 59.0 | 24.9 | -11.42 |
| Outlook | 55.0 | 15.25 | 58.8 | 24.5 | -13.70 |
| Choteau | 48.7 | 16.09 | 58.2 | 22.2 | -26.84 |
| Corbin | 49.7 | 15.29 | 59.5 | 20.7 | -35.42 |
| average | 53.4 | 15.58 | 59.5 | 27.4 | |
| probability | <0.001 | <0.001 | <0.001 | 0.083 | |
| CV (S/Mean) | 5.8 | 2.0 | 0.5 | 14.1 | |
| CV(SE/Mean) | 3.4 | 1.1 | 0.3 | 8.1 | |
| LSD 0.05 | 5.2 | 0.51 | 0.5 | 6.4 | |

[1] Wheat prices summarized by G. Carlson, NARC, Havre, MT, from 10-yr (1999-2008) average daily market values for PNW, supplied by the Montana Wheat and Barley Committee, and compiled by Gregg Carlson, MSU Northern Agricultural Research Center, Havre, MT.

Table 10. Relative yielding abilities of spring wheat varieties as compared to McNeal when grown under dryland conditions in Valley County in cooperation with CES.

| Cultivar | 2004 | 2005 | 2006 | 2008 | 2009 | Ave | as % of McNeal |
|---|---|---|---|---|---|---|---|
| AP604CL | -- | -- | -- | -- | 30.9 | 30.9 | 114.9 |
| Barlow | -- | -- | -- | -- | 30.8 | 30.8 | 114.5 |
| Outlook | 61.7 | 58.0 | 32.6 | 15.1 | 24.5 | 38.4 | 109.2 |
| O'Neal | -- | -- | -- | 18.4 | 29.8 | 24.1 | 108.1 |
| Vida | 63.2 | 48.6 | 37.2 | 15.4 | 25.0 | 37.9 | 107.7 |
| Reeder | 59.2 | 50.4 | 33.3 | 16.1 | 30.4 | 37.9 | 107.7 |
| 20%Choteau+80%Conan | -- | -- | -- | -- | 28.6 | 28.6 | 106.3 |
| Volt | -- | -- | -- | 15.4 | 30.8 | 23.1 | 103.6 |
| Kelby | -- | -- | -- | 16.0 | 29.5 | 22.8 | 102.0 |
| Granger | -- | -- | -- | 15.4 | 29.6 | 22.5 | 100.9 |
| 20%Choteau+80%Vida | -- | -- | -- | -- | 27.1 | 27.1 | 100.7 |
| Jedd | -- | -- | -- | 15.4 | 29.3 | 22.4 | 100.2 |
| McNeal | 54.3 | 49.0 | 27.9 | 17.7 | 26.9 | 35.2 | 100.0 |
| 20%Choteau+80%Reeder | -- | -- | -- | -- | 26.6 | 26.6 | 98.9 |
| NDSW0449 | -- | -- | -- | -- | 26.2 | 26.2 | 97.4 |
| Briggs | -- | -- | -- | 13.7 | 27.3 | 20.5 | 91.9 |
| Choteau | 48.1 | 47.7 | 30.2 | 11.7 | 22.2 | 32.0 | 91.0 |
| Tioga | -- | -- | 26.6 | 13.0 | 24.9 | 21.5 | 89.0 |
| Faller | -- | -- | -- | 10.0 | 29.3 | 19.7 | 88.1 |
| Kuntz | -- | -- | -- | 12.1 | 25.7 | 18.9 | 84.8 |
| Corbin | -- | -- | -- | 13.3 | 20.7 | 17.0 | 76.2 |

NOTE: Average yields in this summary should not be compared to each other since they are not grown in the same years. Compare yields only to the check variety.

Table 11. Relative test weights of spring wheat varieties as compared to McNeal when grown under dryland conditions in Valley County in cooperation with CES.

| Cultivar | 2004 | 2005 | 2006 | 2008 | 2009 | Ave | as % of McNeal |
|---|---|---|---|---|---|---|---|
| Barlow | -- | -- | -- | -- | 61.5 | 61.5 | 103.7 |
| O'Neal | -- | -- | -- | 55.2 | 61.2 | 58.2 | 102.1 |
| Tioga | -- | -- | 60.0 | 55.0 | 59.0 | 58.0 | 102.1 |
| Jedd | -- | -- | -- | 54.7 | 60.8 | 57.8 | 101.3 |
| Reeder | 62.2 | 61.5 | 58.3 | 54.1 | 59.8 | 59.2 | 101.2 |
| Volt | -- | -- | -- | 55.0 | 60.3 | 57.7 | 101.1 |
| 20%Choteau+80%Conan | -- | -- | -- | -- | 59.7 | 59.7 | 100.7 |
| Choteau | 61.3 | 60.7 | 60.0 | 53.5 | 58.2 | 58.7 | 100.4 |
| AP604CL | -- | -- | -- | -- | 59.5 | 59.5 | 100.3 |
| 20%Choteau+80%Reeder | -- | -- | -- | -- | 59.5 | 59.5 | 100.3 |
| Briggs | -- | -- | -- | 55.0 | 59.3 | 57.2 | 100.3 |
| McNeal | 61.0 | 61.0 | 56.5 | 54.7 | 59.3 | 58.5 | 100.0 |
| Vida | 60.3 | 60.7 | 59.0 | 53.2 | 59.0 | 58.4 | 99.9 |
| 20%Choteau+80%Vida | -- | -- | -- | -- | 59.0 | 59.0 | 99.5 |
| Kelby | -- | -- | -- | 53.8 | 59.3 | 56.6 | 99.2 |
| NDSW0449 | -- | -- | -- | -- | 58.8 | 58.8 | 99.2 |
| Corbin | -- | -- | -- | 53.5 | 59.5 | 56.5 | 99.1 |
| Kuntz | -- | -- | -- | 53.3 | 59.7 | 56.5 | 99.1 |
| Outlook | 59.7 | 60.5 | 57.7 | 53.0 | 58.8 | 57.9 | 99.0 |
| Granger | -- | -- | -- | 53.0 | 59.5 | 56.3 | 98.7 |
| Faller | -- | -- | -- | 51.0 | 57.8 | 54.4 | 95.4 |

NOTE: Average test weights in this summary should not be compared to each other since they are not grown in the same years. Compare test weights only to the check variety.

Table 12. Relative protein contents of spring wheat varieties as compared to McNeal when grown under dryland conditions in Valley County in cooperation with CES.

| Cultivar | 2004 | 2005 | 2006 | 2008 | 2009 | Ave | as % of McNeal |
|---|---|---|---|---|---|---|---|
| Vida | 15.6 | 12.4 | 13.8 | 17.4 | 16.9 | 15.2 | 111.3 |
| Reeder | 13.4 | 12.0 | 14.8 | 17.5 | 16.2 | 14.8 | 108.0 |
| 20%Choteau+80%Vida | -- | -- | -- | -- | 16.3 | 16.3 | 105.8 |
| 20%Choteau+80%Reeder | -- | -- | -- | -- | 16.3 | 16.3 | 105.8 |
| O'Neal | -- | -- | -- | 17.4 | 15.8 | 16.6 | 104.1 |
| Corbin | -- | -- | -- | 17.6 | 15.3 | 16.5 | 103.1 |
| Briggs | -- | -- | -- | 17.2 | 15.7 | 16.5 | 103.1 |
| Choteau | 13.2 | 12.0 | 13.1 | 16.0 | 16.1 | 14.1 | 102.9 |
| Faller | -- | -- | -- | 17.0 | 15.8 | 16.4 | 102.8 |
| Kelby | -- | -- | -- | 17.2 | 15.5 | 16.4 | 102.5 |
| Tioga | -- | -- | 12.4 | 17.5 | 15.7 | 15.2 | 102.0 |
| Jedd | -- | -- | -- | 17.0 | 15.2 | 16.1 | 100.9 |
| Barlow | -- | -- | -- | -- | 15.5 | 15.5 | 100.6 |
| NDSW0449 | -- | -- | -- | -- | 15.5 | 15.5 | 100.6 |
| McNeal | 11.6 | 12.1 | 12.8 | 16.5 | 15.4 | 13.7 | 100.0 |
| Granger | -- | -- | -- | 16.6 | 15.3 | 16.0 | 100.0 |
| 20%Choteau+80%Conan | -- | -- | -- | -- | 15.4 | 15.4 | 100.0 |
| Outlook | 12.8 | 11.3 | 12.2 | 16.6 | 15.2 | 13.6 | 99.6 |
| Volt | -- | -- | -- | 17.2 | 14.2 | 15.7 | 98.4 |
| AP604CL | -- | -- | -- | -- | 15.1 | 15.1 | 98.1 |
| Kuntz | -- | -- | -- | 16.1 | 14.8 | 15.5 | 96.9 |

NOTE: Average protein contents in this summary should not be compared to each other since they are not grown in the same years. Compare protein contents only to the check variety.

Table 13. Performance of spring wheat grown under dryland conditions at Flaxville, MT.
Planted: May 19, 2009 Harvested: September 17, 2009 Cooperator: Charlie Cahill

| Variety | Height, cm | Grain protein | Test Weight | Yield Bu/acre | $/acre[1] +/- McNeal |
|---|---|---|---|---|---|
| Vida | 56.0 | 15.80 | 56.0 | 23.2 | 39.01 |
| Reeder | 57.7 | 15.50 | 58.2 | 20.2 | 21.88 |
| 20%Choteau+80%Vida | 52.3 | 14.57 | 57.0 | 20.3 | 20.83 |
| Outlook | 63.7 | 14.55 | 56.5 | 19.2 | 14.64 |
| ONeal | 59.7 | 14.68 | 59.3 | 18.9 | 13.70 |
| NDSW0449 | 55.7 | 14.73 | 58.3 | 18.7 | 12.57 |
| Corbin | 56.0 | 14.88 | 57.8 | 16.7 | 1.90 |
| McNeal | 61.7 | 14.51 | 57.2 | 16.6 | 0.00 |
| Granger | 55.3 | 14.41 | 58.3 | 16.1 | -2.82 |
| Jedd | 47.7 | 14.70 | 58.7 | 15.9 | -3.31 |
| Choteau | 57.7 | 15.03 | 57.5 | 15.7 | -3.81 |
| 20%Choteau+80%Reeder | 56.3 | 14.78 | 58.0 | 15.8 | -3.87 |
| Kuntz | 60.0 | 13.99 | 57.7 | 15.9 | -5.37 |
| Briggs | 56.7 | 15.41 | 58.2 | 15.1 | -7.24 |
| 20%Choteau+80%Conan | 55.7 | 14.97 | 59.7 | 15.1 | -7.24 |
| Kelby | 51.3 | 15.30 | 59.3 | 14.7 | -9.52 |
| AP604CL | 58.3 | 15.07 | 58.0 | 14.7 | -9.52 |
| Barlow | 59.0 | 13.77 | 59.7 | 15.3 | -9.62 |
| Volt | 55.3 | 14.60 | 58.5 | 12.6 | -22.52 |
| Faller | 59.0 | 14.74 | 55.7 | 12.3 | -23.72 |
| average | 56.8 | 14.80 | 58.0 | 16.7 | |
| probability | <0.001 | 0.311 | <0.001 | 0.007 | |
| CV (S/Mean) | 5.5 | 5.2 | 1.5 | 17.5 | |
| CV(SE/Mean) | 3.2 | 3.0 | 0.9 | 10.1 | |
| LSD 0.05 | 5.1 | 1.26 | 1.4 | 4.8 | |

[1] Wheat prices summarized by G. Carlson, NARC, Havre, MT, from 10-yr (1999-2008) average daily market values for PNW, supplied by the Montana Wheat and Barley Committee, and compiled by Gregg Carlson, MSU Northern Agricultural Research Center, Havre, MT.

Table 14. Relative yields of spring wheat varieties as compared to McNeal when grown under dryland conditions in Daniels County in cooperation with CES.

| Variety | 2008 | 2009 | average | As % of McNeal |
|---|---|---|---|---|
| 20%Choteau/80%Vida | -- | 20.3 | 20.3 | 122.3 |
| Vida | 13.1 | 23.2 | 18.2 | 119.0 |
| Reeder | 14.4 | 20.2 | 17.3 | 113.1 |
| NDSW0449 | -- | 18.7 | 18.7 | 112.7 |
| O'Neal | 15.1 | 18.9 | 17.0 | 111.0 |
| Outlook | 14.5 | 19.2 | 16.9 | 110.5 |
| Granger | 14.8 | 16.1 | 15.5 | 101.3 |
| McNeal | 14.0 | 16.6 | 15.3 | 100.0 |
| 20%Choteau/80%Reeder | -- | 15.8 | 15.8 | 95.2 |
| Jedd | 12.2 | 15.9 | 14.1 | 92.2 |
| Barlow | -- | 15.3 | 15.3 | 92.2 |
| 20%Choteau/80%Conan | -- | 15.1 | 15.1 | 91.0 |
| Kuntz | 11.9 | 15.9 | 13.9 | 90.8 |
| Corbin | 11.0 | 16.7 | 13.9 | 90.8 |
| Kelby | 12.6 | 14.7 | 13.7 | 89.5 |
| Choteau | 11.7 | 15.7 | 13.7 | 89.5 |
| AP604CL | -- | 14.7 | 14.7 | 88.6 |
| Briggs | 11.6 | 15.1 | 13.4 | 87.6 |
| Volt | 12.2 | 12.6 | 12.4 | 81.0 |
| Faller | 11.0 | 12.3 | 11.7 | 76.5 |

NOTE: Average yields in this summary should not be compared to each other since they are not always grown in the same years. Compare yields only to the check variety.

Table 15. Relative test weights of spring wheat varieties as compared to McNeal when grown under dryland conditions in Daniels County in cooperation with CES.

| Variety | 2008 | 2009 | average | As % of McNeal |
|---|---|---|---|---|
| Barlow | -- | 59.7 | 59.7 | 104.4 |
| 20%Choteau/80%Conan | -- | 59.7 | 59.7 | 104.4 |
| O'Neal | 63.2 | 59.3 | 61.3 | 103.9 |
| Volt | 62.0 | 58.5 | 60.3 | 102.2 |
| NDSW0449 | -- | 58.3 | 58.3 | 101.9 |
| Granger | 61.7 | 58.3 | 60.0 | 101.7 |
| Jedd | 61.2 | 58.7 | 60.0 | 101.7 |
| Kelby | 60.5 | 59.3 | 59.9 | 101.5 |
| Reeder | 61.3 | 58.2 | 59.8 | 101.4 |
| AP604CL | -- | 58.0 | 58.0 | 101.4 |
| 20%Choteau/80%Reeder | -- | 58.0 | 58.0 | 101.4 |
| Briggs | 61.0 | 58.2 | 59.6 | 101.0 |
| Kuntz | 60.7 | 57.7 | 59.2 | 100.3 |
| Corbin | 60.3 | 57.8 | 59.1 | 100.2 |
| McNeal | 60.7 | 57.2 | 59.0 | 100.0 |
| 20%Choteau/80%Vida | -- | 57.0 | 57.0 | 99.7 |
| Outlook | 60.5 | 56.5 | 58.5 | 99.2 |
| Faller | 61.0 | 55.7 | 58.4 | 99.0 |
| Vida | 60.5 | 56.0 | 58.3 | 98.8 |
| Choteau | 58.8 | 57.5 | 58.2 | 98.6 |

NOTE: Average yields in this summary should not be compared to each other since they are not always grown in the same years. Compare yields only to the check variety.

Table 16. Relative protein contents of spring wheat varieties as compared to McNeal when grown under dryland conditions in Daniels County in cooperation with CES.

| Variety | 2008 | 2009 | average | As % of McNeal |
|---|---|---|---|---|
| Vida | 16.7 | 15.8 | 16.3 | 110.0 |
| Reeder | 16.4 | 15.5 | 16.0 | 108.1 |
| Faller | 16.1 | 14.7 | 15.4 | 104.1 |
| AP604CL | -- | 15.1 | 15.1 | 104.1 |
| Kelby | 15.2 | 15.3 | 15.3 | 103.4 |
| 20%Choteau/80%Conan | -- | 15.0 | 15.0 | 103.4 |
| Volt | 15.8 | 14.6 | 15.2 | 102.7 |
| Outlook | 15.8 | 14.6 | 15.2 | 102.7 |
| 20%Choteau/80%Reeder | -- | 14.8 | 14.8 | 102.1 |
| Corbin | 15.3 | 14.9 | 15.1 | 102.0 |
| Briggs | 14.7 | 15.4 | 15.1 | 102.0 |
| O'Neal | 15.3 | 14.7 | 15.0 | 101.4 |
| NDSW0449 | -- | 14.7 | 14.7 | 101.4 |
| Choteau | 14.8 | 15.0 | 14.9 | 100.7 |
| 20%Choteau/80%Vida | -- | 14.6 | 14.6 | 100.7 |
| McNeal | 15.1 | 14.5 | 14.8 | 100.0 |
| Granger | 14.8 | 14.4 | 14.6 | 98.6 |
| Jedd | 13.8 | 14.7 | 14.3 | 96.6 |
| Kuntz | 14.3 | 14.0 | 14.2 | 95.9 |
| Barlow | -- | 13.8 | 13.8 | 95.2 |

NOTE: Average yields in this summary should not be compared to each other since they are not always grown in the same years. Compare yields only to the check variety.

Table 17. Performance of spring wheat grown under dryland conditions at Wibaux, MT.
Planted: May 18, 2009 Harvested: September 10, 2009 Cooperator: David Maus

| Variety | Height, cm | Grain protein | Test weight | Yield, bu/acre | $/acre[1] +/- McNeal |
|---|---|---|---|---|---|
| Vida | 67.7 | 13.20 | 61.5 | 35.5 | 26.53 |
| Reeder | 69.0 | 13.04 | 62.2 | 34.0 | 16.13 |
| Volt | 64.0 | 12.40 | 63.0 | 33.4 | 8.95 |
| Outlook | 69.7 | 12.57 | 61.0 | 32.5 | 4.31 |
| O'Neal | 65.7 | 12.06 | 62.7 | 32.8 | 1.59 |
| McNeal | 72.3 | 12.32 | 61.0 | 32.1 | 0.00 |
| 20%Choteau+80%Vida | 68.3 | 12.58 | 61.5 | 31.4 | -1.37 |
| 20%Choteau+80%Conan | 66.3 | 12.61 | 61.8 | 31.1 | -2.91 |
| Faller | 72.3 | 12.14 | 61.2 | 31.0 | -5.60 |
| NDSW0449 | 72.3 | 12.35 | 61.3 | 30.0 | -10.69 |
| Granger | 75.3 | 11.96 | 61.5 | 29.6 | -14.50 |
| Choteau | 63.3 | 13.11 | 60.7 | 27.8 | -16.61 |
| Kuntz | 66.7 | 12.83 | 61.5 | 28.1 | -16.71 |
| Jedd | 64.0 | 12.29 | 62.2 | 28.6 | -17.82 |
| Corbin | 64.3 | 12.78 | 61.5 | 27.4 | -20.36 |
| Kelby | 62.0 | 14.71 | 61.5 | 24.9 | -22.21 |
| 20%Choteau+80%Reeder | 64.0 | 13.01 | 61.8 | 26.7 | -22.41 |
| AP604CL | 68.0 | 12.59 | 62.3 | 27.1 | -23.55 |
| Barlow | 67.7 | 12.35 | 63.5 | 26.8 | -26.98 |
| Briggs | 69.3 | 12.69 | 62.0 | 21.8 | -49.59 |
| average | 67.6 | 12.68 | 61.8 | 29.6 | |
| probability | 0.011 | <0.001 | <0.001 | <0.001 | |
| CV (S/Mean) | 6.0 | 3.0 | 0.6 | 10.3 | |
| CV(SE/Mean) | 3.4 | 1.7 | 0.3 | 6.0 | |
| LSD 0.05 | 6.7 | 0.63 | 0.6 | 5.1 | |

[1] Wheat prices summarized by G. Carlson, NARC, Havre, MT, from 10-yr (1999-2008) average daily market values for PNW, supplied by the Montana Wheat and Barley Committee, and compiled by Gregg Carlson, MSU Northern Agricultural Research Center, Havre, MT.

Table 18. Relative yielding abilities of spring wheat varieties as compared to McNeal when grown under dryland conditions in Wibaux County in cooperation with CES.

| Cultivar | 2002 | 2003 | 2004 | 2005 | 2009 | Ave | as % of McNeal |
|---|---|---|---|---|---|---|---|
| Vida | -- | -- | 31.7 | 44.4 | 35.5 | 37.2 | 109.6 |
| Reeder | 30.8 | 20.6 | 32.2 | 43.2 | 34.0 | 32.2 | 109.2 |
| Volt | -- | -- | -- | -- | 33.4 | 33.4 | 104.0 |
| O'Neal | -- | -- | -- | -- | 32.8 | 32.8 | 102.2 |
| Outlook | 27.0 | 23.3 | 28.5 | 38.9 | 32.5 | 30.0 | 102.0 |
| McNeal | 25.4 | 20.0 | 28.9 | 40.8 | 32.1 | 29.4 | 100.0 |
| 20%Choteau+80%Vida | -- | -- | -- | -- | 31.4 | 31.4 | 97.8 |
| 20%Choteau+80%Conan | -- | -- | -- | -- | 31.1 | 31.1 | 96.9 |
| Faller | -- | -- | -- | -- | 31.0 | 31.0 | 96.6 |
| NDSW0449 | -- | -- | -- | -- | 30.0 | 30.0 | 93.5 |
| Granger | -- | -- | -- | -- | 29.6 | 29.6 | 92.2 |
| Choteau | 25.0 | 14.7 | 25.8 | 38.8 | 27.8 | 26.4 | 89.7 |
| Jedd | -- | -- | -- | -- | 28.6 | 28.6 | 89.1 |
| Kuntz | -- | -- | -- | -- | 28.1 | 28.1 | 87.5 |
| Corbin | -- | -- | -- | -- | 27.4 | 27.4 | 85.4 |
| AP604CL | -- | -- | -- | -- | 27.1 | 27.1 | 84.4 |
| Barlow | -- | -- | -- | -- | 26.8 | 26.8 | 83.5 |
| 20%Choteau+80%Reeder | -- | -- | -- | -- | 26.7 | 26.7 | 83.2 |
| Kelby | -- | -- | -- | -- | 24.9 | 24.9 | 77.6 |
| Briggs | -- | -- | -- | -- | 21.8 | 21.8 | 67.9 |

NOTE: Average yields in this summary should not be compared to each other since they are not grown in the same years. Compare yields only to the check variety.

Table 19. Relative test weights of spring wheat varieties as compared to McNeal when grown under dryland conditions in Wibaux County in cooperation with CES.

| Cultivar | 2002 | 2003 | 2004 | 2005 | 2009 | Ave | as % of McNeal |
|---|---|---|---|---|---|---|---|
| Barlow | -- | -- | -- | -- | 63.5 | 63.5 | 104.1 |
| Volt | -- | -- | -- | -- | 63.0 | 63.0 | 103.3 |
| O'Neal | -- | -- | -- | -- | 62.7 | 62.7 | 102.8 |
| Reeder | 57.5 | 56.3 | 59.7 | 58.5 | 62.2 | 58.8 | 102.7 |
| AP604CL | -- | -- | -- | -- | 62.3 | 62.3 | 102.1 |
| Jedd | -- | -- | -- | -- | 62.2 | 62.2 | 102.0 |
| Briggs | -- | -- | -- | -- | 62.0 | 62.0 | 101.6 |
| Choteau | 57.6 | 55.6 | 59.4 | 57.7 | 60.7 | 58.2 | 101.6 |
| 20%Choteau+80%Conan | -- | -- | -- | -- | 61.8 | 61.8 | 101.3 |
| 20%Choteau+80%Reeder | -- | -- | -- | -- | 61.8 | 61.8 | 101.3 |
| Vida | -- | -- | 58.5 | 58.0 | 61.5 | 59.3 | 101.0 |
| 20%Choteau+80%Vida | -- | -- | -- | -- | 61.5 | 61.5 | 100.8 |
| Granger | -- | -- | -- | -- | 61.5 | 61.5 | 100.8 |
| Kuntz | -- | -- | -- | -- | 61.5 | 61.5 | 100.8 |
| Corbin | -- | -- | -- | -- | 61.5 | 61.5 | 100.8 |
| Kelby | -- | -- | -- | -- | 61.5 | 61.5 | 100.8 |
| Outlook | 57.0 | 54.3 | 58.7 | 57.8 | 61.0 | 57.8 | 100.8 |
| NDSW0449 | -- | -- | -- | -- | 61.3 | 61.3 | 100.5 |
| Faller | -- | -- | -- | -- | 61.2 | 61.2 | 100.3 |
| McNeal | 57.5 | 52.7 | 58.5 | 56.8 | 61.0 | 57.3 | 100.0 |

NOTE: Average test weights in this summary should not be compared to each other since they are not grown in the same years. Compare test weights only to the check variety.

Table 20 Relative protein contents of spring wheat varieties as compared to McNeal when grown under dryland conditions in Wibaux County in cooperation with CES.

| Cultivar | 2002 | 2003 | 2004 | 2005 | 2009 | Ave | as % of McNeal |
|---|---|---|---|---|---|---|---|
| Kelby | -- | -- | -- | -- | 14.7 | 14.7 | 119.5 |
| Vida | -- | -- | 19.1 | 16.7 | 13.2 | 16.3 | 107.9 |
| 20%Choteau+80%Reeder | -- | -- | -- | -- | 13.0 | 13.0 | 105.7 |
| Reeder | 17.1 | 19.0 | 19.1 | 16.8 | 13.0 | 17.0 | 104.9 |
| Kuntz | -- | -- | -- | -- | 12.8 | 12.8 | 104.1 |
| Corbin | -- | -- | -- | -- | 12.8 | 12.8 | 104.1 |
| Briggs | -- | -- | -- | -- | 12.7 | 12.7 | 103.3 |
| 20%Choteau+80%Vida | -- | -- | -- | -- | 12.6 | 12.6 | 102.4 |
| 20%Choteau+80%Conan | -- | -- | -- | -- | 12.6 | 12.6 | 102.4 |
| AP604CL | -- | -- | -- | -- | 12.6 | 12.6 | 102.4 |
| Volt | -- | -- | -- | -- | 12.4 | 12.4 | 100.8 |
| NDSW0449 | -- | -- | -- | -- | 12.4 | 12.4 | 100.8 |
| Barlow | -- | -- | -- | -- | 12.4 | 12.4 | 100.8 |
| McNeal | 16.3 | 19.3 | 18.0 | 15.1 | 12.3 | 16.2 | 100.0 |
| Jedd | -- | -- | -- | -- | 12.3 | 12.3 | 100.0 |
| Choteau | 15.6 | 17.5 | 18.4 | 16.2 | 13.1 | 16.2 | 99.8 |
| O'Neal | -- | -- | -- | -- | 12.1 | 12.1 | 98.4 |
| Faller | -- | -- | -- | -- | 12.1 | 12.1 | 98.4 |
| Granger | -- | -- | -- | -- | 12.0 | 12.0 | 97.6 |
| Outlook | 15.8 | 18.4 | 17.4 | 14.6 | 12.6 | 15.8 | 97.3 |

NOTE: Average proteins in this summary should not be compared to each other since they are not grown in the same years. Compare protein contents only to the check variety.

Table 21. Performance of spring wheat grown under dryland conditions at Poplar, MT.
Planted: May 18, 2009 Harvested: Sep 15, 2009 Cooperator: Mark Swank

| Variety | Height, cm | Grain protein | Test weight | Yield, bu/acre | $/acre[1] +/- McNeal |
|---|---|---|---|---|---|
| Faller | 79.3 | 11.27 | 61.5 | 63.4 | 63.50 |
| Vida | 77.3 | 12.38 | 61.0 | 59.7 | 50.37 |
| Reeder | 79.7 | 12.37 | 62.2 | 59.3 | 48.34 |
| NDSW0449 | 86.0 | 11.99 | 61.5 | 59.5 | 45.78 |
| Choteau | 74.0 | 12.16 | 61.7 | 58.0 | 45.72 |
| 20%Choteau+80%Vida | 74.7 | 12.54 | 60.7 | 57.4 | 42.68 |
| Kelby | 66.7 | 13.35 | 62.5 | 55.1 | 41.28 |
| AP604CL | 75.3 | 11.91 | 62.7 | 58.6 | 41.26 |
| Barlow | 82.3 | 12.32 | 63.0 | 57.8 | 40.70 |
| Granger | 81.7 | 11.60 | 61.7 | 58.8 | 40.50 |
| ONeal | 79.7 | 11.56 | 62.7 | 58.0 | 36.50 |
| Kuntz | 74.3 | 12.11 | 61.8 | 56.6 | 31.20 |
| Volt | 72.7 | 11.30 | 63.0 | 55.8 | 25.50 |
| Briggs | 76.7 | 12.70 | 62.2 | 53.2 | 24.20 |
| 20%Choteau+80%Reeder | 78.3 | 12.48 | 61.7 | 53.2 | 21.01 |
| 20%Choteau+80%Conan | 74.3 | 13.08 | 61.7 | 51.8 | 20.00 |
| Corbin | 73.3 | 12.20 | 61.3 | 52.4 | 13.22 |
| Outlook | 80.3 | 11.51 | 60.8 | 53.0 | 11.50 |
| McNeal | 76.0 | 11.29 | 61.0 | 50.7 | 0.00 |
| Jedd | 69.3 | 11.66 | 62.0 | 48.1 | -13.00 |
| average | 76.6 | 12.09 | 61.8 | 56.0 | |
| probability | <0.001 | <0.001 | <0.001 | <0.001 | |
| CV (S/MEAN) | 2.7 | 3.3 | 0.8 | 6.4 | |
| CV (SE/MEAN) | 1.5 | 1.9 | 0.4 | 3.7 | |
| LSD (0.05) | 3.4 | 0.67 | 0.8 | 5.9 | |

[1] Wheat prices summarized by G. Carlson, NARC, Havre, MT, from 10-yr (1999-2008) average daily market values for PNW, supplied by the Montana Wheat and Barley Committee, and compiled by Gregg Carlson, MSU Northern Agricultural Research Center, Havre, MT.

Table 22. Relative yields of spring wheat varieties as compared to McNeal when grown under dryland conditions in Roosevelt County in cooperation with CES.

| Cultivar | 2003 | 2004 | 2005 | 2006 | 2009 | Ave | as % of McNeal |
|---|---|---|---|---|---|---|---|
| Faller | -- | -- | -- | -- | 63.4 | 63.4 | 125.0 |
| NDSW0449 | -- | -- | -- | -- | 59.5 | 59.5 | 117.4 |
| Granger | -- | -- | -- | -- | 58.8 | 58.8 | 116.0 |
| AP604CL | -- | -- | -- | -- | 58.6 | 58.6 | 115.6 |
| O'Neal | -- | -- | -- | -- | 58.0 | 58.0 | 114.4 |
| Barlow | -- | -- | -- | -- | 57.8 | 57.8 | 114.0 |
| 20%Choteau/80%Vida | -- | -- | -- | -- | 57.4 | 57.4 | 113.2 |
| Kuntz | -- | -- | -- | -- | 56.6 | 56.6 | 111.6 |
| Vida | -- | 48.3 | 45.2 | 30.1 | 59.7 | 45.8 | 111.6 |
| Volt | -- | -- | -- | -- | 55.8 | 55.8 | 110.1 |
| Kelby | -- | -- | -- | -- | 55.1 | 55.1 | 108.7 |
| Briggs | -- | -- | -- | -- | 53.2 | 53.2 | 104.9 |
| 20%Choteau/80%Reeder | -- | -- | -- | -- | 53.2 | 53.2 | 104.9 |
| Reeder | 56.8 | 45.0 | 44.9 | 28.2 | 59.3 | 46.8 | 104.7 |
| Corbin | -- | -- | -- | -- | 52.4 | 52.4 | 103.4 |
| Outlook | 56.5 | 47.2 | 42.9 | 29.9 | 53.0 | 45.9 | 102.6 |
| 20%Choteau/80%Conan | -- | -- | -- | -- | 51.8 | 51.8 | 102.2 |
| McNeal | 59.3 | 44.2 | 41.9 | 27.5 | 50.7 | 44.7 | 100.0 |
| Choteau | 53.7 | 38.7 | 42.7 | 22.9 | 58.0 | 43.2 | 96.6 |
| Jedd | -- | -- | -- | -- | 48.1 | 48.1 | 94.9 |

NOTE: Average yields in this summary should not be compared to each other since they are not grown in the same years. Compare yields only to the check variety.

Table 23. Relative test weights of spring wheat varieties as compared to McNeal when grown under dryland conditions in Roosevelt County in cooperation with CES.

| Cultivar | 2003 | 2004 | 2005 | 2006 | 2009 | Ave | as % of McNeal |
|---|---|---|---|---|---|---|---|
| Volt | -- | -- | -- | -- | 63.0 | 63.0 | 103.3 |
| Barlow | -- | -- | -- | -- | 63.0 | 63.0 | 103.3 |
| O'Neal | -- | -- | -- | -- | 62.7 | 62.7 | 102.8 |
| AP604CL | -- | -- | -- | -- | 62.7 | 62.7 | 102.8 |
| Kelby | -- | -- | -- | -- | 62.5 | 62.5 | 102.5 |
| Reeder | 62.2 | 62.7 | 57.7 | 51.3 | 62.2 | 59.2 | 102.1 |
| Briggs | -- | -- | -- | -- | 62.2 | 62.2 | 102.0 |
| Jedd | -- | -- | -- | -- | 62.0 | 62.0 | 101.6 |
| Kuntz | -- | -- | -- | -- | 61.8 | 61.8 | 101.3 |
| Choteau | 61.5 | 62.3 | 56.5 | 51.5 | 61.7 | 58.7 | 101.2 |
| Granger | -- | -- | -- | -- | 61.7 | 61.7 | 101.1 |
| 20%Choteau/80%Reeder | -- | -- | -- | -- | 61.7 | 61.7 | 101.1 |
| 20%Choteau/80%Conan | -- | -- | -- | -- | 61.7 | 61.7 | 101.1 |
| Vida | -- | 62.2 | 57.0 | 51.7 | 61.0 | 58.0 | 101.1 |
| Faller | -- | -- | -- | -- | 61.5 | 61.5 | 100.8 |
| NDSW0449 | -- | -- | -- | -- | 61.5 | 61.5 | 100.8 |
| Corbin | -- | -- | -- | -- | 61.3 | 61.3 | 100.5 |
| Outlook | 59.8 | 61.0 | 57.7 | 51.0 | 60.8 | 58.1 | 100.1 |
| McNeal | 60.7 | 61.2 | 56.7 | 50.5 | 61.0 | 58.0 | 100.0 |
| 20%Choteau/80%Vida | -- | -- | -- | -- | 60.7 | 60.7 | 99.5 |

NOTE: Average test weights in this summary should not be compared to each other since they are not grown in the same years. Compare test weights only to the check variety.

Table 24. Relative protein contents of spring wheat varieties as compared to McNeal when grown under dryland conditions in Roosevelt County in cooperation with CES.

| Cultivar | 2003 | 2004 | 2005 | 2006 | 2009 | Ave | as % of McNeal |
|---|---|---|---|---|---|---|---|
| Kelby | -- | -- | -- | -- | 13.4 | 13.4 | 118.6 |
| 20%Choteau/80%Conan | -- | -- | -- | -- | 13.1 | 13.1 | 115.9 |
| Briggs | -- | -- | -- | -- | 12.7 | 12.7 | 112.4 |
| 20%Choteau/80%Reeder | -- | -- | -- | -- | 12.5 | 12.5 | 110.6 |
| 20%Choteau/80%Vida | -- | -- | -- | -- | 12.5 | 12.5 | 110.6 |
| Barlow | -- | -- | -- | -- | 12.3 | 12.3 | 108.8 |
| Corbin | -- | -- | -- | -- | 12.2 | 12.2 | 108.0 |
| Reeder | 14.3 | 12.0 | 18.2 | 17.9 | 12.4 | 15.0 | 107.9 |
| Kuntz | -- | -- | -- | -- | 12.1 | 12.1 | 107.1 |
| NDSW0449 | -- | -- | -- | -- | 12.0 | 12.0 | 106.2 |
| AP604CL | -- | -- | -- | -- | 11.9 | 11.9 | 105.3 |
| Vida | -- | 11.5 | 17.5 | 17.6 | 12.4 | 14.8 | 103.9 |
| Jedd | -- | -- | -- | -- | 11.7 | 11.7 | 103.5 |
| O'Neal | -- | -- | -- | -- | 11.6 | 11.6 | 102.7 |
| Granger | -- | -- | -- | -- | 11.6 | 11.6 | 102.7 |
| Choteau | 13.3 | 11.2 | 17.4 | 16.9 | 12.2 | 14.2 | 102.5 |
| McNeal | 12.5 | 11.0 | 17.2 | 17.3 | 11.3 | 13.9 | 100.0 |
| Volt | -- | -- | -- | -- | 11.3 | 11.3 | 100.0 |
| Faller | -- | -- | -- | -- | 11.3 | 11.3 | 100.0 |
| Outlook | 12.9 | 10.4 | 17.0 | 17.1 | 11.5 | 13.8 | 99.4 |

NOTE: Average protein contents in this summary should not be compared to each other since they are not grown in the same years. Compare protein contents only to the check variety.