

Project Title: Agronomic Performance Evaluation of Advanced Spring Wheat Experimental Lines.

Project Leader: Bob Stougaard

Project Personnel: Qasim Khan, Qingwu Xue, Luther Talbert, and Susan Lanning

Objectives: To evaluate spring wheat cultivars for agronomic performance in environments and cropping systems representative of northwestern Montana.

Results:

Above average temperatures and high precipitation provided ideal conditions for spring wheat growth and development. The lack of stress delayed heading a few days compared to last year. Julian heading dates ranged from 175 to 184 and averaged around 178. At the same time, plant height was greater than the previous year. Plant height averaged 38.3 inches and ranged from 31 inches for BZ9M1044 to 47.5 inches for Thatcher. Concurrently, moderate to severe lodging occurred for most of the entries.

The wet conditions not only contributed to lodging, but also caused a resurfacing of stripe rust. Stripe rust infection averaged 41%, and ranged from a low of 3% for MT0245 to a high of 94.5% for MT0523. Nonetheless, a new pest emerged that over-shadowed the combined effects of stripe rust and lodging – the Orange Wheat Blossom Midge (OWBM). Yields were greatly reduced compared to previous years. Yields ranged from 22 bu/ac for Thatcher to 98 bu/ac for MT 0412, and averaged 65 bu/ac. Average test weight (60.4 lb/bu) was higher than last year and ranged from 56.6 to 64.2 lb/bu. Grain protein content averaged 16% and ranged from 13.9 to 18.2%.

Summary:

Spring wheat yields suffered due to the combined effects of lodging, stripe rust and the OWBM. The top yielding entries were generally resistant to stripe rust, had low or no lodging, and headed early.

Future Plans:

Continue spring wheat evaluations for the purpose of identifying cultivars best suited for District 1.

Table 1. Agronomic data from the Advanced Spring Wheat Nursery grown at the Northwestern Agricultural Research Center Kalispell, MT.

Planted: April 19, 2006

Harvested: August 29, 2006

| Entry | Cultivar | Yield | Test | Grain | Heading | Plant | Lodging | Stripe | Protein |
|-------|-------------|-------|--------|----------|---------|--------|---------|--------|---------|
| | | | weight | moisture | date | height | | rust | |
| | | bu/ac | lb/bu | % | Julian | in | ----- | % | ----- |
| 20 | MT 0412 | 96.7 | 61.9 | 11.3 | 176.0 | 36.7 | 0.0 | 86.5 | 15.0 |
| 30 | MT 0516 | 93.2 | 62.3 | 11.7 | 177.3 | 38.7 | 0.0 | 4.2 | 15.9 |
| 21 | MT 0413 | 92.9 | 61.9 | 11.9 | 177.3 | 39.8 | 13.0 | 65.2 | 15.4 |
| 31 | MT 0517 | 88.6 | 62.4 | 11.8 | 176.7 | 36.0 | 0.0 | 24.6 | 15.7 |
| 64 | Agawam | 87.0 | 62.7 | 11.6 | 175.3 | 34.9 | 0.0 | 63.0 | 14.3 |
| 19 | MT 0405 | 86.6 | 63.6 | 11.4 | 177.0 | 35.3 | 3.3 | 46.3 | 13.9 |
| 56 | WPB Germany | 85.2 | 61.6 | 11.7 | 181.0 | 34.5 | 0.0 | 4.8 | 14.4 |
| 29 | MT 0515 | 81.1 | 61.7 | 12.1 | 179.0 | 38.7 | 0.0 | 9.3 | 16.0 |
| 23 | MT 0415 | 79.6 | 60.8 | 11.9 | 178.0 | 40.2 | 27.7 | 10.6 | 17.5 |
| 41 | MT 0550 | 79.2 | 63.0 | 11.8 | 176.3 | 38.7 | 0.0 | 38.1 | 14.7 |
| 59 | Kelby | 77.9 | 61.9 | 11.7 | 177.3 | 34.6 | 0.0 | 14.7 | 15.8 |
| 24 | MT 0416 | 76.4 | 62.6 | 11.5 | 178.0 | 37.4 | 31.7 | 22.7 | 15.7 |
| 6 | Reeder | 75.1 | 60.8 | 12.0 | 177.7 | 39.1 | 29.0 | 13.6 | 16.9 |
| 37 | MT 0537 | 74.8 | 61.1 | 11.6 | 178.0 | 44.6 | 0.0 | 9.5 | 16.8 |
| 16 | MT 0260 | 74.6 | 61.2 | 12.5 | 180.0 | 41.1 | 7.3 | 27.1 | 15.4 |
| 22 | MT 0414 | 74.6 | 61.2 | 11.5 | 177.7 | 39.6 | 35.0 | 13.8 | 17.4 |
| 15 | MT 0249 | 74.5 | 61.0 | 12.1 | 178.0 | 35.3 | 2.0 | 12.4 | 16.4 |
| 34 | MT 0525 | 74.3 | 61.9 | 11.3 | 177.3 | 38.5 | 26.3 | 24.7 | 15.8 |
| 10 | Choteau | 74.2 | 61.6 | 11.4 | 178.7 | 36.6 | 0.0 | 13.2 | 16.0 |
| 8 | Hank | 74.0 | 56.6 | 13.3 | 177.7 | 37.5 | 0.0 | 72.3 | 15.5 |
| 62 | MTHW0202 | 73.8 | 62.5 | 11.5 | 174.0 | 36.2 | 0.0 | 57.1 | 15.4 |
| 51 | Glenn | 73.5 | 63.8 | 11.6 | 176.7 | 39.5 | 13.7 | 12.8 | 16.4 |
| 12 | Knudson | 72.4 | 60.9 | 11.9 | 178.7 | 37.9 | 9.7 | 17.1 | 14.7 |
| 49 | MT 0570 | 72.1 | 61.5 | 11.9 | 176.3 | 44.4 | 30.0 | 45.5 | 15.4 |
| 11 | Norpro | 70.7 | 60.5 | 12.7 | 179.3 | 35.7 | 14.3 | 43.9 | 15.0 |
| 13 | Freyr | 68.5 | 62.0 | 11.6 | 178.0 | 37.9 | 1.7 | 6.7 | 16.2 |
| 32 | MT 0519 | 68.2 | 61.6 | 11.7 | 178.0 | 41.5 | 4.0 | 7.4 | 17.0 |
| 52 | BW781 | 67.9 | 61.7 | 11.9 | 177.0 | 38.2 | 37.0 | 15.8 | 17.4 |
| 50 | MT 0575 | 67.8 | 59.4 | 11.5 | 177.3 | 38.2 | 13.7 | 73.4 | 15.5 |
| 61 | Explorer | 67.6 | 60.1 | 12.0 | 177.3 | 38.2 | 21.7 | 62.4 | 16.2 |
| 60 | 98S0127-06 | 67.5 | 60.4 | 13.4 | 178.7 | 34.1 | 9.3 | 14.2 | 15.8 |
| 38 | MT 0539 | 67.2 | 59.7 | 11.3 | 179.0 | 36.1 | 15.3 | 24.6 | 16.8 |
| 36 | MT 0535 | 67.0 | 64.2 | 11.2 | 178.3 | 39.5 | 0.3 | 82.1 | 14.6 |
| 17 | MT 0266 | 66.7 | 57.6 | 11.8 | 177.7 | 38.2 | 29.0 | 25.9 | 17.4 |
| 18 | MT 0336 | 65.8 | 60.9 | 11.3 | 178.3 | 39.1 | 0.0 | 81.1 | 15.4 |

Table 1 (Continued). Agronomic data from the Advanced Spring Wheat Nursery grown at the Northwestern Agricultural Research Center Kalispell, MT.

Planted: April 19, 2006

Harvested: August 29, 2006

| Entry | Cultivar | Yield | Test | Grain | Heading | Plant | Lodging | Stripe | Protein |
|-------------------|----------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|
| | | | weight | moisture | date | height | | rust | |
| | | bu/ac | lb/bu | % | Julian | in | ----- | % | ----- |
| 58 | BZ9M1044 | 64.5 | 60.0 | 12.8 | 177.7 | 31.0 | 0.0 | 57.6 | 15.5 |
| 9 | Outlook | 63.0 | 58.6 | 11.4 | 181.3 | 38.2 | 3.7 | 21.0 | 16.4 |
| 42 | MT 0551 | 62.4 | 60.1 | 11.3 | 179.0 | 38.5 | 3.3 | 12.9 | 16.3 |
| 40 | MT 0544 | 61.2 | 57.7 | 11.3 | 178.3 | 36.6 | 0.0 | 23.8 | 15.4 |
| 43 | MT 0553 | 61.0 | 59.6 | 12.0 | 179.3 | 36.2 | 0.0 | 27.4 | 16.1 |
| 39 | MT 0540 | 59.5 | 60.8 | 11.4 | 177.0 | 38.6 | 30.0 | 82.8 | 16.2 |
| 27 | MT 0508 | 59.5 | 60.0 | 11.5 | 179.0 | 38.7 | 3.0 | 85.5 | 15.5 |
| 53 | BZ999592 | 58.8 | 59.2 | 13.6 | 180.0 | 38.2 | 12.0 | 74.2 | 16.1 |
| 25 | MT 0421 | 58.6 | 58.6 | 11.1 | 179.7 | 36.6 | 0.0 | 79.8 | 15.9 |
| 28 | MT 0509 | 57.8 | 58.7 | 11.4 | 178.7 | 36.1 | 18.3 | 84.2 | 15.1 |
| 47 | MT 0566 | 57.7 | 57.3 | 11.9 | 178.7 | 36.9 | 18.3 | 73.7 | 16.8 |
| 35 | MT 0534 | 56.9 | 57.6 | 11.5 | 179.0 | 38.6 | 7.3 | 86.9 | 15.9 |
| 7 | Conan | 56.5 | 61.1 | 11.1 | 178.7 | 35.7 | 1.7 | 10.1 | 15.1 |
| 14 | MT 0245 | 54.5 | 60.6 | 11.9 | 179.7 | 38.2 | 40.0 | 3.1 | 16.4 |
| 46 | MT 0564 | 54.5 | 59.2 | 12.2 | 178.3 | 37.0 | 12.3 | 91.0 | 15.8 |
| 57 | BZ9M1024 | 53.2 | 62.6 | 11.5 | 178.0 | 36.5 | 40.0 | 5.8 | 15.6 |
| 44 | MT 0562 | 52.9 | 58.6 | 11.8 | 179.7 | 37.0 | 53.3 | 59.0 | 16.4 |
| 26 | MT 0502 | 52.4 | 60.1 | 11.4 | 182.7 | 40.7 | 0.0 | 87.6 | 15.9 |
| 48 | MT 0567 | 52.0 | 58.8 | 11.5 | 179.0 | 39.4 | 2.0 | 13.2 | 16.5 |
| 33 | MT 0523 | 51.5 | 58.2 | 12.1 | 178.7 | 36.9 | 42.7 | 94.5 | 14.8 |
| 3 | McNeal | 51.3 | 58.4 | 11.5 | 180.3 | 39.9 | 23.0 | 82.7 | 16.4 |
| 4 | Ernest | 50.2 | 61.4 | 10.8 | 178.7 | 44.9 | 58.0 | 29.2 | 16.3 |
| 55 | BZ902413 | 49.0 | 59.1 | 13.9 | 177.3 | 36.7 | 4.0 | 21.3 | 16.0 |
| 45 | MT 0563 | 46.5 | 58.2 | 11.1 | 179.0 | 36.0 | 13.7 | 18.9 | 16.2 |
| 54 | Corbin | 44.8 | 58.4 | 12.1 | 178.3 | 35.7 | 40.3 | 42.2 | 17.2 |
| 2 | Fortuna | 41.4 | 58.3 | 12.9 | 179.7 | 46.3 | 38.7 | 29.5 | 16.8 |
| 5 | Scholar | 37.9 | 59.8 | 12.3 | 181.0 | 42.8 | 61.7 | 64.0 | 18.2 |
| 63 | MTHW0471 | 32.4 | 59.7 | 12.0 | 181.7 | 41.6 | 55.3 | 34.9 | 17.2 |
| 1 | Thatcher | 22.3 | 57.9 | 11.5 | 183.7 | 47.5 | 50.0 | 82.2 | 17.5 |
| Mean | | 65.3 | 60.4 | 11.8 | 178.5 | 38.3 | 15.7 | 41.0 | 16.0 |
| CV (%) | | 9.6 | | | 0.4 | 3.9 | 86.5 | 26.7 | |
| LSD (0.05) | | 10.0 | | | 1.0 | 2.3 | 21.0 | 16.1 | |