

PROJECT TITLE: Hard Red and White Winter Wheat Evaluations in USDA regional and Montana Statewide Trials at Moccasin.

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OBJECTIVES:
To evaluate soft white winter wheat lines for adaptability, agronomic performance, yield, and quality in Central Montana.

RESULTS and SUMMARY:
The performance of winter wheat varieties and development lines were evaluated in USDA Northern Regional Trial(3307), Montana Agricultural Experiment Station's Intrastate (3507), Advanced Yield (1407), Preliminary A (3607), and Preliminary B (3707) trials on dryland reduced till fallow. The nurseries were established with a five row double disk drill with accurate plant openers. Fertilizer was applied as 10-10-10-5 w/seed and 60 units N as top dress urea.

A mild winter followed by above average precipitation in April and drought May through July period with above average temperatures generally favored early maturing varieties. Yield levels were near long term averages. However, test weights were much below average and protein levels were above average.

Performance results for the Northern regional are presented in Table 1, Intrastate Table 2, Advance Yield Table 3, Preliminary A in Table 4, and Preliminary B in Table 5.

FUTURE PLANS:
The Preliminary B will be dropped in 2004. the other trials will be continued .

Table 1 2003 Northern regional performance nursery for winter wheat.
Exp NRPN Central Agricultural Research Center, Moccasin, Montana.

| Plot | Entry ID | Pedigree | Head Date | Plant Height | Grain Yield | Test Weight | Protein Content | Protein Moisture | |
|------|----------|----------------|--------------------------------|--------------|-------------|-------------|-----------------|------------------|-----|
| | | | d of y | " | bu/a | lbs/bu | % | % | |
| 116 | 12 | NW99L706 | KS84HW1968*RioBlanco/HBY762A// | 165 | 34.0 | 53.1 | 55.2 | 14.2 | 8.7 |
| 136 | 34 | SD97W609 | Abilene/Karl | 166 | 32.3 | 52.0 | 57.6 | 14.4 | 9.0 |
| 110 | 29 | SD97380- | Rawhide/Siouxland | 166 | 35.0 | 51.5 | 56.8 | 15.2 | 8.9 |
| 117 | 32 | SD97250- | ND90109/NE87613 | 166 | 36.0 | 51.0 | 57.0 | 14.7 | 9.1 |
| 129 | 11 | NW97S139 | KSSB-192-3/NE89529 | 166 | 32.0 | 50.7 | 54.6 | 14.6 | 9.1 |
| 124 | 5 | G980172W | SW/IKE | 166 | 34.7 | 47.7 | 59.9 | 13.7 | 9.3 |
| 134 | 17 | NE99495 | ALLIANCE/KARL 92 | 165 | 34.3 | 47.5 | 55.8 | 13.7 | 9.1 |
| 112 | 20 | NE99464 | NE86606/RAWHIDE//ABILENE | 167 | 33.3 | 47.5 | 57.2 | 15.4 | 9.0 |
| 111 | 3 | Nuplains | Nuplains | 167 | 33.0 | 46.8 | 59.5 | 13.7 | 9.5 |
| 135 | 22 | NE00658 | NE93462 (=ARAPAHOE/NAHW-81-170 | 166 | 37.0 | 46.4 | 53.1 | 15.1 | 9.1 |
| 101 | 6 | G980723 | 94CGT-96HV (BULK SELECTION) | 166 | 32.0 | 46.0 | 58.3 | 14.0 | 8.9 |
| 131 | 13 | NW99L708 | KS84HW1968*RioBlanco/HBY762A// | 166 | 33.3 | 46.0 | 52.5 | 15.3 | 8.9 |
| 109 | 10 | NW97S139 | KSSB-192-3/NE89529 | 167 | 31.3 | 45.3 | 53.9 | 14.3 | 9.4 |
| 133 | 4 | Nekota | Nekota | 167 | 34.3 | 45.2 | 55.8 | 14.9 | 9.1 |
| 113 | 8 | NW97S412 | KS87809-10/ARAPAHOE | 168 | 31.3 | 44.9 | 53.8 | 15.3 | 9.1 |
| 114 | 28 | SD96306 | SD88185/SD88201 | 166 | 35.7 | 44.5 | 55.7 | 14.6 | 8.9 |
| 108 | 7 | G980926 | 95CGT-96WD (BULK SELECTION) | 166 | 32.0 | 44.0 | 55.8 | 14.7 | 9.3 |
| 128 | 35 | SD97W650 | Dawn/RioBlanco | 166 | 33.0 | 43.7 | 57.0 | 14.3 | 8.7 |
| 118 | 16 | NW97S218 | NW97S218 (KS85W663-1-1/KARL92) | 167 | 33.3 | 43.4 | 56.1 | 14.2 | 9.0 |
| 130 | 31 | SD98243 | KS84063-9-39-3/NE86606 | 166 | 34.3 | 43.4 | 54.9 | 14.8 | 9.1 |
| 115 | 24 | MT9426 | MT8030/Neeley | 169 | 33.0 | 43.1 | 51.4 | 14.8 | 9.5 |
| 132 | 33 | SD97059- | ND8889/NE90574 | 166 | 34.7 | 42.7 | 54.3 | 15.1 | 9.4 |
| 120 | 19 | NI01824 | INTENSIVNAJA/NE92458 (=OK83201 | 166 | 35.7 | 42.3 | 57.3 | 13.8 | 9.0 |
| 106 | 26 | SD97250 | ND90109/NE87613 | 167 | 35.0 | 42.3 | 55.7 | 15.5 | 9.0 |
| 105 | 27 | SD98102 | 2076-W12-11/KARL 92//NE89526 | 166 | 35.7 | 42.2 | 56.1 | 14.8 | 9.2 |
| 119 | 9 | NW97S142 | KSSB-192-3/NE89529 | 167 | 31.0 | 41.5 | 56.8 | 16.0 | 9.2 |
| 127 | 30 | SD97394- | Rose/SD88201 | 166 | 36.0 | 41.3 | 54.0 | 15.6 | 8.7 |
| 122 | 25 | SD97049 | ND8889/Karl | 164 | 33.0 | 40.8 | 55.1 | 14.0 | 8.6 |
| 102 | 15 | NW98S097 | WA691213-27/N86L177//AP-WI89-1 | 167 | 31.7 | 39.3 | 54.5 | 15.7 | 8.7 |
| 126 | 18 | NI01808 | KS831936-3/NE86501/3/SENTRY/ L | 168 | 32.3 | 38.8 | 46.8 | 15.8 | 9.2 |
| 104 | 23 | NE00679 | NE93462 (=ARAPAHOE/NAHW-81-170 | 166 | 33.7 | 37.9 | 51.8 | 15.2 | 9.0 |
| 123 | 14 | NW99L717 | VH09553-753/N91L019//AP-WI89-1 | 166 | 40.3 | 37.0 | 54.4 | 16.2 | 9.3 |
| 103 | 21 | NE99489 | NE90625/NE91525//KARL 92 | 165 | 34.3 | 36.9 | 52.5 | 16.3 | 8.8 |
| 107 | 36 | NEELEY | NEELEY | 169 | 37.0 | 33.9 | 52.4 | 15.9 | 9.2 |
| 125 | 1 | Kharkof | Kharkof | 166 | 42.3 | 33.1 | 57.1 | 15.6 | 8.6 |
| 121 | 2 | Roughrid | Roughrider | 166 | 39.0 | 27.1 | 54.4 | 16.8 | 9.1 |
| | | TRT MEANS | | 166 | 34.4 | 43.4 | 55.11 | | |
| | | F-RATIO TRTS | | 3.07 | 7.54 | 3.4 | 5.202 | | |
| | | P-VALUE TRTS | | 0 | 0 | 0 | 0 | | |
| | | CV (S/MEAN) % | | 0.64 | 4.59 | 12 | 2.783 | | |
| | | LSD(0.05 by t) | | 1.75 | 2.57 | 8.47 | 3.114 | | |

Seed date: Sept 20, 2002 Emerged: Oct 4, 2004
Fertil 10-1C 60 lbs N Top dress
Harvest Date: 29-Jul-03

Table 2. 2003 Intrastate winter wheat variety evaluations.
Exp 3507 Central Agricultural Research Center, Moccasin, Montana

| Entry | Cultivar/Line | Pedigree | Yield bu/ac | Test weight lb/bu | Heading date Julian | Plant height in | Protein % |
|----------------------------------|----------------------|--|------------------|-------------------------|---------------------------|-----------------------|--------------|
| * = new for 2003, # = paid entry | | | RCB | RCB | RCB | RCB | bulk |
| 1 | Neeley | Idaho, 1980 | 40.4 | 54.8 | 170.3 | 37.0 | 15.3 |
| 2 | Rampart | Montana, 1996 | 40.2 | 57.0 | 167.7 | 37.3 | 16.2 |
| 3 | Tiber | Montana, 1988 | 38.0 | 56.4 | 169.7 | 38.7 | 15.2 |
| 4 | Rocky | Agripro, 1978 | 43.5 | 56.5 | 167.0 | 41.0 | 15.9 |
| 5 | Vanguard | Montana, 1995 | 37.1 | 55.9 | 167.0 | 37.0 | 16.6 |
| 6 | Morgan | WPB/Sask, 1996 | 39.7 | 55.9 | 170.7 | 34.7 | 14.3 |
| 7 | Bighorn | WPB/Hybritech, 1985 | 41.3 | 55.4 | 167.7 | 32.0 | 15.7 |
| 8 | Quantum 542 | WPB/Hybritech, 1988 | 38.3 | 54.5 | 166.3 | 38.0 | 15.4 |
| 9 | NuWest (HWW) | Montana/Gen. Mills, 1994 | 44.2 | 57.3* | 168.0 | 37.0 | 14.0 |
| 10 | Norstar | Alberta, 1977 | 32.7 | 57.1 | 172.0 | 43.0 | 15.3 |
| 11 | Promontory | Utah, 1990 | 47.4 | 56.8 | 167.3 | 35.0 | 15.6 |
| 12 | Elkhorn | North Dakota, 1995 | 36.4 | 56.7 | 170.7 | 38.3 | 15.9 |
| 13 | BigSky | Montana, 2001 | 32.9 | 54.6 | 167.7 | 38.3 | 16.6 |
| 14 | NuSky (HWW) | Montana, 2001 | 37.6 | 55.0 | 169.3 | 34.3 | 15.2 |
| 15 | Paul | Montana, 2003 (MT8030/Neeley) | 40.2 | 51.8 | 168.3 | 33.0 | 16.0 |
| 16 | # NuFrontier (HWW) | General Mills, 2001 | 46.2 | 56.8 | 166.3 | 37.0 | 15.2 |
| 17 | # NuHorizon (HWW) | General Mills, 2001 | 48.9* | 58.9* | 165.0 | 31.7 | 14.2 |
| 18 | # Golden Spike (HWW) | Utah/Gen. Mills, 1999 | 38.9 | 52.4 | 172.0 | 34.0 | 15.5 |
| 19 | #* GM10004 (HWW) | (BZ9W97-761), experimental white line | 37.0 | 54.7 | 168.3 | 37.0 | 15.8 |
| 20 | Prowers 99 | Colorado, 1999 | 43.8 | 58.8* | 166.3 | 42.0 | 15.3 |
| 21 | Gary (HWW) | Idaho, 2001 | 41.1 | 52.1 | 168.3 | 35.7 | 14.7 |
| 22 | # CDC Falcon | Sask/WPB, 1999 | 41.9 | 54.9 | 167.3 | 32.3 | 15.8 |
| 23 | # Pryor | WPB, 2002 (BZ9W96-919) | 45.1 | 55.1 | 171.3 | 30.3 | 15.4 |
| 24 | #* BZ9W96-788 | WPB, Hatten/HRW popn./MTSF1142 | 45.2 | 56.7 | 167.0 | 33.3 | 15.6 |
| 25 | #* Jagalene | AgriPro, 2002 | 51.7* | 59.7** | 165.0 | 34.7 | 14.7 |
| 26 | #* AP 502CL (IMI) | AgriPro, 2002 (CLEARFIELD) | 44.3 | 53.3 | 165.0 | 32.0 | 15.9 |
| 27 | MT9982 | Promontory/Judith | 42.5 | 53.7 | 168.3 | 33.3 | 15.6 |
| 28 | MT9989 | Blizzard/Arapahoe | 42.8 | 53.4 | 167.7 | 36.3 | 15.1 |
| 29 | MTR9997 | PI262605/MT7863//Redwin | 42.4 | 55.6 | 167.0 | 37.3 | 15.4 |
| 30 | MT0097 | Erhardt/Judith/Kestrel | 41.4 | 54.9 | 168.3 | 34.7 | 15.9 |
| 31 | MT00159 | Promontory/Judith | 46.2 | 54.1 | 157.7 | 36.3 | 15.6 |
| 32 | MTS0031 | MTS92015//Vanguard/Norstar | 35.6 | 53.9 | 167.3 | 35.3 | 16.9 |
| 33 | Wahoo | Nebraska, 2001 | 42.5 | 53.7 | 166.0 | 34.3 | 16.0 |
| 34 | Above (IMI) | Colorado, 2001 (CLEARFIELD) | 47.9 | 54.6 | 165.0 | 34.0 | 14.9 |
| 35 | Expedition | South Dakota, 2002 (SD97457) | 46.1 | 55.6 | 165.0 | 35.0 | 15.1 |
| 36 | Jerry | North Dakota, 2001 | 42.4 | 54.7 | 169.3 | 38.3 | 16.1 |
| 37 | * Millenium | Nebraska, 2000 | 54.0** | 57.5* | 167.3 | 39.0 | 15.3 |
| 38 | * MT101158 (IMI) | Fidel/Tiber (CLEARFIELD) | 41.3 | 55.0 | 167.3 | 36.0 | 16.6 |
| 39 | * MTS0125 | MTS92137/ID454 | 39.4 | 55.5 | 169.7 | 36.7 | 15.9 |
| 40 | * MTS0131 | Neeley/CH54//MTS92137 | 40.8 | 56.6 | 167.0 | 38.7 | 16.0 |
| 41 | * MT0177 | ND8895//ND8892/KS87H6 | 45.3 | 56.8 | 166.3 | 36.7 | 14.5 |
| 42 | * MTR01108 | PI372129/Tiber//Judith/3/Tiber/4/MTSF1142/Ar | 45.2 | 55.8 | 167.3 | 34.7 | 15.5 |
| 43 | * MTW01132 | Neeley*2/PI262505 | 41.3 | 57.9* | 169.3 | 31.0 | 16.4 |
| 44 | * MTW01133 | NuWest/SD88191 | 51.9* | 57.3* | 166.0 | 32.3 | 13.6 |
| 45 | * MTW01143 | Promontory/MT91366 | 41.4 | 54.3 | 171.3 | 37.0 | 15.8 |
| 46 | * MTW01146 | Promontory/MT91366 | 38.0 | 53.6 | 171.0 | 36.0 | 15.8 |
| 47 | * MT01148 | Judith/Blizzard | 39.9 | 52.9 | 170.0 | 34.3 | 15.7 |
| 48 | Judith | Montana, 1989 | 43.3 | 53.2 | 167.0 | 36.7 | 15.7 |
| 49 | Erhardt | Montana, 1996 | 38.2 | 56.1 | 168.3 | 35.0 | 16.4 |
| Average | | | 42.1 | 55.4 | 167.8 | 35.8 | 15.5 |
| LSD (0.05) | | | 5.7 | 2.4 | 4.1 | 2.9 | |
| C.V. (%) | | | 4.8 | 1.5 | 0.9 | 2.9 | |
| P-value (Varieties) | | | <.0001 | <.0001 | <.0001 | <.0001 | |

Seed date: Sept 20, 2002 Emerged: Oct 4, 2004

Table 3. 2003 Advanced yield winter wheat development line evaluations.

Exp 1407 Central Agricultural Research Center, Moccasin, Montana

| Entry | ID | Cross ID | Pedigree | D = Quality discard | | | | |
|----------------------------|-------------------|----------------|--|---------------------|------------------|------------------|---------------|--------------|
| | | | | RCB Yield | RCB Test Wt | RCB Head | RCB Plant Ht | bulk Protein |
| | | | | bu/ac | lb/bu | date | in | % |
| 1 | Neeley | | check | 49.0** | 52.3 | 166.3 | 35.3 | 17.6 |
| 2 | Rampart | | check | 37.2 | 51.7 | 169.0 | 38.0 | 16.6 |
| 3 | Morgan | | check | 45.3* | 56.0 | 167.0 | 35.7 | 14.6 |
| 4 | NuWest | | check | 40.6 | 54.6 | 170.3 | 38.0 | 16.4 |
| 5 | Judith | | check | 33.2 | 54.2 | 168.3 | 37.0 | 15.7 |
| 6 | MTS0202 | 95X348B17-7-11 | Rampart/3/KS93C27/MT9415//MT9222 | 43.5* | 54.4 | 168.7 | 33.7 | 17.1 |
| 7 | D MTS0210 | 94X172E46 | MT8039-9279//MT91192/Fortuna | 43.3* | 54.1 | 168.0 | 35.7 | 15.3 |
| 8 | MTS0214 | 93X512cE74-3 | Erhardt/3/MT88005/MTSF2542//Redwin | 45.8* | 54.3 | 171.3 | 34.3 | 17.2 |
| 9 | MTS0215 | 93X512cE76-2 | Erhardt/3/MT88005/MTSF2542//Redwin | 45.3* | 54.5 | 168.0 | 36.3 | 18.1 |
| 10 | MTS0217 | 91X42E145-4 | MT85200/MT88001//MTSF2708 | 42.5* | 56.4 | 167.0 | 34.7 | 15.4 |
| 11 | MTS0222 | 93X780E90-4 | Rampart*2/Judith | 43.1* | 57.8 | 167.7 | 36.3 | 15.0 |
| 12 | MTS0223 | COLOT-E13-1 | Vanguard Colored Outcross | 39.2 | 52.3 | 168.0 | 36.7 | 16.4 |
| 13 | MTS0234 | 93X474E18-4 | PI294994/2*Neeley//Vanguard | 38.7 | 52.9 | 167.0 | 32.7 | 15.1 |
| 14 | 9426-ot90 | Paul sib. | MT8030/Neeley | 46.8* | 55.2 | 167.0 | 34.3 | 16.5 |
| 15 | D MT0236 | 95X356B21-6-18 | MTSF2238-64/3/AMN4LV// KS93C27/MT941 | 44.7* | 55.9 | 169.0 | 35.0 | 16.1 |
| 16 | D MTV0237 | 95X356B8-9-28 | MTSF2238-64/3/AMN4LV// KS93C27/MT941 | 39.5 | 53.5 | 168.0 | 34.0 | 15.2 |
| 17 | MT0245 | 95X362A6-C25-4 | Erhardt/3/KS93C27/Judith//Norstar*5/CMC2 | 46.5* | 55.8 | 167.3 | 37.0 | 16.6 |
| 18 | MTW0250 | 94X66E149 | MT91051*2/Nuwest | 40.8 | 52.6 | 168.0 | 36.3 | 14.9 |
| 19 | D MTW0251 | 94X66E200 | MT91051*2/Nuwest | 39.5 | 54.8 | 170.0 | 37.0 | 17.2 |
| 20 | MT0268 | 94X265E125 | 8039-9279/Karl 92//Kestrel | 43.0* | 55.5 | 168.0 | 33.3 | 15.6 |
| 21 | D MTW0269 | 94X269E53 | NuWest*2/934IWSSN-15 | 41.5 | 60.5** | 171.3 | 34.0 | 15.1 |
| 22 | MTW0271 | 94X269E265 | NuWest*2/934IWSSN-15 | 39.8 | 56.6 | 169.0 | 36.7 | 14.8 |
| 23 | D MT0277 | 94X238E81 | MT9417/Ogallala | 47.1* | 53.4 | 168.3 | 33.3 | 15.2 |
| 24 | D MT0278 | 94X238E123 | MT9417/Ogallala | 41.0 | 55.4 | 170.7 | 37.7 | 15.2 |
| 25 | MT0281 | 94X132E109 | MT8039-9279/Karl 92 | 33.2 | 56.6 | 169.0 | 35.7 | 15.3 |
| 26 | D MT0292 | 93X346cE45-2 | MT8713//Arapahoe/Kestrel | 39.4 | 56.6 | 167.0 | 35.3 | 14.7 |
| 27 | MT0299 | 93186cE61-2 | ND8895//ND8892/KS87H6 | 39.4 | 51.5 | 170.0 | 34.3 | 14.5 |
| 28 | MT02100 | 93186cE96-3 | ND8895//ND8892/KS87H6 | 39.2 | 54.3 | 170.0 | 39.3 | 16.3 |
| 29 | MTW02111 | 94X126E66 | Karl 92/UT190 | 39.4 | 55.8 | 168.7 | 37.3 | 14.6 |
| 30 | MT02112 | 94X126E158 | Karl 92/UT190 | 45.8* | 51.2 | 168.0 | 33.7 | 16.8 |
| 31 | MT02113 | 94X126E169 | Karl 92/UT190 | 38.4 | 55.9 | 168.3 | 37.7 | 14.1 |
| 32 | MTW02115 | 93X231cE36-3 | MT91366//Judith/Blizzard | 41.8* | 51.9 | 167.3 | 38.0 | 16.3 |
| 33 | MT02116 | 93X234cE20-5 | Neeley/Blizzard//Neeley/MT8713 | 43.3* | 56.0 | 168.0 | 36.0 | 16.0 |
| 34 | D MTR02128 | 93X47E28-3 | PI372129/Tiber//Judith/3/Tiber/4/MTSF1142/ | 37.4 | 55.9 | 170.3 | 35.0 | 15.6 |
| 35 | MTR02129 | 93X51E45-5 | PI372129/Tiber//Judith/3/Tiber/4/S86-736 | 36.2 | 56.0 | 168.3 | 35.7 | 17.1 |
| 36 | MT02136 | 96X64cC12 | NE92522/MT9418 | 36.3 | 53.1 | 170.7 | 35.7 | 16.4 |
| Average | | | | 38.5 | 54.5 | 168.6 | 35.7 | 15.9 |
| LSD (0.05) | | | | 7.5 | 1.9 | 1.1 | 3.2 | |
| C.V. (%) | | | | 11.2 | 2.2 | 0.4 | 5.6 | |
| P-value (Varieties) | | | | 0.0050 | <.0001 | <.0001 | 0.0086 | |

Seed date: **Sept 20, 2002** Emerged: **Oct 4, 2004**Fertiliz 10- 60 lbs N **Top dress**Harvest Date: **29-Jul-03**

Table 4 2003 Winter wheat preliminary A 360703.
Exp 3607 Central Agricultural Research Center, Moccasin, Montana.

| Entry | ID | Cross ID | Pedigree | Yield bu/ac | Test weight lb/bu | Stand % LAT | Heading date Julian LAT | Plant height in LAT | Protein % bulk |
|-------|----------------------------|--------------|-------------------------------------|----------------|-------------------------|-------------------|----------------------------------|------------------------------|----------------------|
| | D = Quality Discard | | | | | | | | |
| # | | | | LAT | LAT | LAT | LAT | LAT | bulk |
| | | | | | | 22-Apr | | | |
| 1 | MT0365 | 95X338E17 | L'Govskaya 167/Rampart | 45.0 | 57.0 | 80.1 | 168.6 | 38.0 | 15.9 |
| 2 | MT0366 | 95X9E4 | GA8608-D15-5/3*3039-9279 | 45.6 | 54.3 | 83.3 | 166.7 | 36.4 | 17.0 |
| 3 | MT0367 | 94X211E80-4 | Kestrel//NuWest/93IWSSN-37 | 35.2 | 55.4 | 83.7 | 168.7 | 40.1 | 16.5 |
| 4 | MT0368 | 94X265E125-1 | 8039-9279/Karl 92//Kestrel | 40.4 | 55.3 | 80.3 | 169.6 | 38.5 | 16.3 |
| 5 | MTW0369 | 94X269E34-1 | NuWest*2/93IWSSN-15 | 45.7 | 55.9 | 92.9 | 169.6 | 36.5 | 15.1 |
| 6 | MTW0370 | 94X269E67-5 | NuWest*2/93IWSSN-15 | 44.5 | 54.9 | 90.4 | 168.1 | 37.3 | 13.5 |
| 7 | MTW0371 | 94X269E214-1 | NuWest*2/93IWSSN-15 | 41.5 | 53.8 | 83.3 | 168.5 | 35.1 | 15.5 |
| 8 | MT0372 | 94X238E81-5 | MT9417/Ogallala | 38.6 | 55.1 | 88.8 | 167.1 | 34.7 | 14.8 |
| 9 | MT0373 | 93X222E27-3 | MT91192/Kestrel | 39.0 | 54.5 | 91.5 | 172.1 | 34.1 | 15.3 |
| 10 | D MT0374 | 93X222E158-4 | MT91192/Kestrel | 47.6 | 57.4 | 88.4 | 168.2 | 36.0 | 14.2 |
| 11 | MT0375 | 94X64E1-6 | McGuire/Yuma | 46.2 | 59.0 | 82.0 | 164.8 | 37.4 | 15.5 |
| 12 | MT0376 | 94X64E65-2 | McGuire/Yuma | 43.7 | 57.3 | 82.8 | 164.8 | 40.7 | 15.3 |
| 13 | MT0377 | 94X64E92-3 | McGuire/Yuma | 48.0 | 58.0 | 82.4 | 164.9 | 41.9 | 15.6 |
| 14 | MT0378 | 96X74C12-5 | N93L068/NuSky | 48.9 | 57.9 | 84.9 | 170.0 | 33.4 | 15.1 |
| 15 | D MT0379 | 96X74C15-10 | N93L068/NuSky | 49.9 | 56.2 | 80.1 | 169.2 | 36.4 | 15.1 |
| 16 | D MT0380 | 96X74C16-2 | N93L068/NuSky | 47.4 | 56.8 | 85.1 | 169.5 | 35.1 | 14.7 |
| 17 | MT0381 | 94X126E40-1 | Karl 92/UT190 | 48.4 | 55.7 | 83.0 | 169.6 | 41.1 | 16.7 |
| 18 | MTW0382 | 94X126E66-5 | Karl 92/UT190 | 41.2 | 54.3 | 83.0 | 172.0 | 32.8 | 15.2 |
| 19 | MT0383 | 94X126E108-6 | Karl 92/UT190 | 47.9 | 56.7 | 80.0 | 168.6 | 35.6 | 15.2 |
| 20 | MT0384 | 94X126E119-4 | Karl 92/UT190 | 50.1 | 55.4 | 80.8 | 169.4 | 37.1 | 16.6 |
| 21 | D MT0385 | 94X126E203-6 | Karl 92/UT190 | 47.2 | 56.7 | 87.5 | 169.9 | 40.2 | 17.1 |
| 22 | MT0386 | 96X188cC22-5 | 89X12E30//Judith/WI88-275 | 44.6 | 58.2 | 80.5 | 167.8 | 34.8 | 15.5 |
| 23 | MT0387 | 96X193C5-5 | 89X9D105-6/McGuire//Alliance | 39.1 | 53.7 | 64.5 | 168.1 | 34.6 | |
| 24 | MT0388 | 96X411cC4-7 | McNeal/Longear//MT9440 | 46.4 | 59.5 | 82.4 | 169.8 | 35.1 | 15.4 |
| 25 | MT0389 | 96X411cC6-9 | McNeal/Longear//MT9440 | 39.1 | 57.3 | 77.0 | 169.6 | 36.3 | 16.1 |
| 26 | MT0390 | 96X411cC9-3 | McNeal/Longear//MT9440 | 39.0 | 59.1 | 80.4 | 170.0 | 32.9 | 15.2 |
| 27 | MT0391 | 96X415cC6-5 | Judith//McNeal/NWAU34-9 | 45.8 | 55.2 | 83.7 | 167.5 | 36.9 | 17.0 |
| 28 | MT0392 | 94X65E3-4 | MT91192//McGuire/Judith | 45.2 | 57.4 | 78.7 | 168.0 | 40.3 | 15.8 |
| 29 | MTW0393 | 94X66E369-3 | MT91051*2/NuWest | 44.4 | 58.6 | 82.8 | 170.4 | 35.1 | 16.4 |
| 30 | MT0394 | 95X165cE5 | MT8039-9279/N92L186 | 43.7 | 53.9 | 88.2 | 168.4 | 36.2 | 16.9 |
| 31 | MT0395 | 95X167cE16 | Erhardt/N92L244 | 48.5 | 56.3 | 80.0 | 167.3 | 36.2 | 15.2 |
| 32 | MT0396 | 95X167cE42 | Erhardt/N92L244 | 46.0 | 51.4 | 79.7 | 169.9 | 34.6 | 15.4 |
| 33 | MT0397 | 95X167cE46 | Erhardt/N92L244 | 43.9 | 55.5 | 77.0 | 167.9 | 33.9 | 15.6 |
| 34 | D MT0398 | 95X167cE99 | Erhardt/N92L244 | 48.3 | 56.8 | 79.3 | 168.8 | 35.9 | 15.6 |
| 35 | MT0399 | 95X183cE38 | MT9440/N92L228 | 49.1 | 54.4 | 80.7 | 167.7 | 37.9 | 15.7 |
| 36 | D MT03100 | 95X200cE9 | McGuire/Akron | 42.7 | 51.5 | 85.3 | 167.1 | 36.3 | 15.5 |
| 37 | MT03101 | 95X200cE14 | McGuire/Akron | 48.0 | 56.9 | 82.9 | 167.5 | 35.4 | 15.8 |
| 38 | D MT03102 | 95X200cE30 | McGuire/Akron | 43.7 | 56.4 | 83.2 | 168.4 | 32.4 | 15.7 |
| 39 | MT03103 | 95X200cE110 | McGuire/Akron | 46.0 | 53.9 | 87.6 | 167.3 | 35.5 | 15.3 |
| 40 | MT03104 | 95X285E15 | MT9524//KS93WGRC27/Judith | 45.2 | 58.7 | 80.3 | 167.0 | 39.1 | 16.0 |
| 41 | MTW03105 | 95X285E19 | MT9524//KS93WGRC27/Judith | 44.4 | 55.7 | 81.7 | 167.5 | 38.4 | 15.9 |
| 42 | MT03106 | 95X285E22 | MT9524//KS93WGRC27/Judith | 46.8 | 56.4 | 83.6 | 168.7 | 38.3 | 14.8 |
| 43 | D MT03107 | 95X285E23 | MT9524//KS93WGRC27/Judith | 41.0 | 52.9 | 82.8 | 168.9 | 36.0 | 15.1 |
| 44 | MT03108 | 95X285E37 | MT9524//KS93WGRC27/Judith | 44.5 | 52.3 | 80.3 | 166.9 | 36.2 | 16.1 |
| 45 | MT03109 | 95X285E45 | MT9524//KS93WGRC27/Judith | 40.7 | 55.7 | 82.4 | 167.6 | 36.1 | 16.0 |
| 46 | MT03110 | 95X285E65 | MT9524//KS93WGRC27/Judith | 46.7 | 55.3 | 82.5 | 165.1 | 40.2 | 16.2 |
| 47 | MT03111 | 95X285E68 | MT9524//KS93WGRC27/Judith | 45.9 | 55.7 | 92.2 | 166.3 | 35.8 | 15.0 |
| 48 | MTW03112 | 95X285E78 | MT9524//KS93WGRC27/Judith | 46.7 | 57.7 | 82.9 | 167.5 | 38.0 | 15.2 |
| 49 | MTW03113 | 95X285E82 | MT9524//KS93WGRC27/Judith | 41.2 | 57.4 | 82.2 | 165.4 | 36.6 | 16.0 |
| 50 | MT03114 | 95X339E37 | Moskovskaya Nezkostibilnaya/McGuire | 40.6 | 54.1 | 84.6 | 168.5 | 39.5 | 16.7 |
| 51 | MT03115 | 95X205cE59 | Judith/OK90649 | 40.5 | 51.2 | 82.9 | 170.1 | 35.8 | 16.4 |

(continued)

Table 4 2003 Winter wheat preliminary A 360703. (continued)

| Entry | ID | Cross ID | Pedigree | Yield bu/ac | Test weight | Stand % | Heading date | Plant height | Protein % |
|---------------------|------------------|-------------|--|----------------|------------------|---------------|------------------|------------------|--------------|
| 52 | MTR03116 | 95X289cE102 | Halt/4/McGuire/3/PI222679/2*MT8713//PI2626 | 37.8 | 54.4 | 96.5 | 168.4 | 38.6 | 15.6 |
| 53 | MTR03117 | 95X296E48 | Erhardt/Halt | 43.9 | 55.2 | 84.9 | 167.7 | 34.1 | 17.1 |
| 54 | MTW03118 | 95X298E31 | MT9435/Halt | 47.2 | 57.7 | 83.0 | 167.1 | 32.9 | 14.8 |
| 55 | MT03119 | 97X258/A*1 | MTS9719/McGuire | 47.0 | 59.2 | 80.7 | 166.9 | 36.8 | 15.4 |
| 56 | MT03120 | 94X237E12 | KS92PO1363-134/MT9409 | 48.4 | 51.8 | 84.6 | 167.5 | 34.6 | 14.9 |
| 57 | D MT03121 | 95X56E92 | Mironovskaya 28/2*MT91192 | 44.4 | 55.0 | 84.6 | 169.9 | 32.1 | 15.4 |
| 58 | MT03122 | 95X63E82 | MT91192/Kestrel//BigSky | 40.3 | 55.6 | 82.4 | 169.3 | 39.4 | 16.6 |
| 59 | MT03123 | 95X63E88 | MT91192/Kestrel//BigSky | 47.8 | 54.2 | 90.3 | 169.7 | 37.7 | 16.1 |
| 60 | Judith | | check | 43.8 | 52.7 | 83.6 | 167.6 | 36.3 | 15.1 |
| 61 | Neeley | | check | 45.1 | 55.4 | 78.9 | 170.8 | 37.4 | 15.1 |
| 62 | Morgan | | check | 40.9 | 56.0 | 83.5 | 171.1 | 34.8 | 14.8 |
| 63 | NuWest | | check | 38.1 | 53.6 | 83.2 | 169.3 | 37.3 | 15.8 |
| 64 | Rampart | | check | 42.8 | 57.8 | 80.0 | 168.6 | 37.7 | 15.9 |
| Average | | | | 44.3 | 55.7 | 83.2 | 168.4 | 36.5 | 15.7 |
| LSD (0.05) | | | | ns | 2.4 | 8.4 | 1.4 | 3.0 | |
| C.V. (%) | | | | 8.5 | 6.1 | 4.8 | 0.4 | 3.9 | |
| P-value (Varieties) | | | | 0.0589 | <.0001 | 0.0009 | <.0001 | <.0001 | |

Seeded: Sept 25, 2002 Emerged: Oct 6, 2002

Fertil 10-10-10-5 w/seed 60 lbs N Top dress

Harv 5-Aug-03

Table 5 2003 Winter wheat preliminary B 370703.

Exp 3707 Central Agricultural Research Center, Moccasin, Montana.

| Entry | ID | Cross ID | Pedigree | Yield bu/ac | Test weight lb/bu | Heading date Julian | Plant height in | Protein % |
|-------|---------------------|-------------|---------------------------------------|----------------|-------------------------|---------------------------|-----------------------|--------------|
| # | | | | LAT | RCB | LAT | RCB | bulk |
| | D = Quality Discard | | | | | | | |
| 1 | MT03124 | 95X64E102 | MT91192/Kestrel//MT9446 | 34.8 | 53.8 | 171.0 | 33.4 | 17.3 |
| 2 | MT03125 | 95X66E59 | MT9417/Ike//S86-736 | 37.5 | 57.4 | 164.9 | 35.5 | 14.6 |
| 3 | MT03126 | 95X68E47 | MT9446//MT9417/Ike | 48.3 | 55.0 | 167.4 | 38.1 | 14.1 |
| 4 | MT03127 | 95X70cE59 | MT9206//MT9417/Ogallala | 45.6 | 56.8 | 170.8 | 34.4 | 14.5 |
| 5 | MT03128 | 95X80E36 | 9SIWxSSN-15(SWM801489)/UT190//McGuire | 41.6 | 54.1 | 168.3 | 43.6 | 16.2 |
| 6 | MT03129 | 95X80E83 | 9SIWxSSN-15(SWM801489)/UT190//McGuire | 41.8 | 53.8 | 167.4 | 42.5 | 17.0 |
| 7 | MTW03130 | 95X82cE58 | Judith//KL91-103/Newana | 33.7 | 54.0 | 170.8 | 36.4 | 14.7 |
| 8 | MT03131 | 95X59E84 | Zarya/2*McGuire | 37.2 | 52.7 | 168.9 | 43.4 | 17.1 |
| 9 | MT03132 | 95X115E53 | MT7840/SMN82271/Erhardt | 35.7 | 53.5 | 167.1 | 33.8 | 13.5 |
| 10 | MT03133 | 95X116E16 | Judith/WI88-275 | 40.2 | 53.6 | 168.0 | 36.6 | 15.5 |
| 11 | MT03134 | 95X116E20 | Judith/WI88-275 | 46.3 | 54.2 | 165.8 | 35.6 | 15.4 |
| 12 | MTW03135 | 95X118E19 | MT8949/MT9440 | 43.2 | 54.7 | 168.5 | 35.1 | 15.4 |
| 13 | MT03136 | 95X118E68 | MT8949/MT9440 | 38.4 | 53.9 | 169.6 | 34.5 | 15.8 |
| 14 | MTW03137 | 95X119E36 | MT9435/MT8949 | 39.4 | 55.4 | 170.1 | 34.0 | 14.6 |
| 15 | MTW03138 | 95X119E77 | MT9435/MT8949 | 34.7 | 54.8 | 170.1 | 36.1 | 15.5 |
| 16 | MTW03139 | 95X119E147 | MT9435/MT8949 | 35.4 | 54.2 | 170.3 | 35.0 | 15.0 |
| 17 | MT03140 | 95X121E29 | MT9440/McGuire | 37.6 | 54.4 | 168.5 | 37.1 | 14.4 |
| 18 | MT03141 | 95X121E64 | MT9440/McGuire | 32.1 | 53.4 | 171.2 | 37.8 | 16.3 |
| 19 | MT03142 | 95X121E100 | MT9440/McGuire | 36.4 | 56.6 | 165.8 | 37.6 | 15.9 |
| 20 | MT03143 | 95X122E12 | MT9526/MT9206 | 34.9 | 58.4 | 168.5 | 36.6 | 16.9 |
| 21 | MT03144 | 95X122E63 | MT9526/MT9206 | 33.3 | 54.8 | 172.5 | 37.3 | 16.1 |
| 22 | MT03145 | 95X122E98 | MT9526/MT9206 | 34.1 | 56.2 | 170.3 | 32.6 | 14.9 |
| 23 | MT03146 | 95X123E84 | MT9554/Erhardt | 31.3 | 54.2 | 170.0 | 32.7 | 16.3 |
| 24 | MT03147 | 95X129E64 | S86-736/McGuire | 40.0 | 57.1 | 169.0 | 35.8 | 16.2 |
| 25 | MT03148 | 95X130E40 | S86-736/MT9222 | 37.5 | 53.0 | 168.2 | 38.0 | 15.0 |
| 26 | D MT03149 | 95X132E7 | BigSky/S86-736 | 35.0 | 55.1 | 169.1 | 34.0 | 15.6 |
| 27 | D MT03150 | 95X132E53 | BigSky/S86-736 | 38.5 | 55.7 | 169.2 | 33.7 | 14.7 |
| 28 | D MT03151 | 95X132E95 | BigSky/S86-736 | 37.1 | 56.1 | 170.0 | 34.3 | 15.3 |
| 29 | D MT03152 | 95X133E74 | MT9418/S86-736 | 34.0 | 56.0 | 171.4 | 31.9 | 16.4 |
| 30 | D MT03153 | 95X156E8 | MT8949/Elkhorn | 35.8 | 55.3 | 167.6 | 34.0 | 15.4 |
| 31 | MT03154 | 95X156E61 | MT8949/Elkhorn | 43.2 | 53.6 | 168.3 | 36.5 | 15.2 |
| 32 | MT03155 | 95X156E89 | MT8949/Elkhorn | 35.8 | 54.6 | 168.9 | 37.3 | 15.0 |
| 33 | MT03156 | 95X157E123 | MT8949/ND8974 | 39.0 | 54.2 | 169.7 | 41.6 | 16.7 |
| 34 | MT03157 | 95X159cE9 | MT8039-9279/'2137' | 40.9 | 52.3 | 170.2 | 33.9 | 15.7 |
| 35 | MT03158 | 95X159cE27 | MT8039-9279/'2137' | 41.6 | 52.7 | 169.1 | 35.0 | 15.5 |
| 36 | D MT03159 | 95X159cE33 | MT8039-9279/'2137' | 34.4 | 55.5 | 170.4 | 34.6 | 15.3 |
| 37 | D MT03160 | 95X159cE34 | MT8039-9279/'2137' | 44.1 | 56.8 | 169.5 | 33.5 | 15.0 |
| 38 | D MT03161 | 95X159cE45 | MT8039-9279/'2137' | 44.0 | 53.0 | 168.1 | 34.6 | 13.4 |
| 39 | MT03162 | 95X162E23 | MT9526/KS92H19-6 | 37.6 | 54.5 | 166.7 | 33.6 | 16.2 |
| 40 | MT03163 | 95X162E31 | MT9526/KS92H19-6 | 39.5 | 54.1 | 169.2 | 37.2 | 15.6 |
| 41 | D MT03164 | 95X211E2 | SDM211HW/MT9439 | 39.3 | 55.4 | 170.3 | 34.6 | 15.4 |
| 42 | MT03165 | 95X211E42 | SDM211HW/MT9439 | 37.6 | 53.7 | 169.8 | 32.9 | 15.5 |
| 43 | MT03166 | 95X211E45 | SDM211HW/MT9439 | 39.7 | 56.3 | 169.3 | 33.7 | 14.6 |
| 44 | MT03167 | 95X211E77 | SDM211HW/MT9439 | 36.6 | 54.6 | 169.8 | 32.4 | 16.0 |
| 45 | MT03168 | 95X211E93 | SDM211HW/MT9439 | 38.7 | 55.6 | 169.7 | 35.4 | 17.8 |
| 46 | MTW03169 | 95X212cE100 | MT8949/SDM211HW | 34.0 | 56.1 | 168.0 | 38.1 | 15.0 |
| 47 | MTW03170 | 95X222cE59 | WA7679/MT8949 | 39.9 | 55.5 | 169.6 | 37.5 | 15.4 |
| 48 | MT03171 | 95X228E48 | MTW3051/McGuire | 34.2 | 57.4 | 169.8 | 32.9 | 15.5 |
| 49 | D MT03172 | 95X229E51 | MTW3023/MT9418 | 38.2 | 56.4 | 170.0 | 36.4 | 13.1 |
| 50 | MT03173 | 95X274E43 | KS93WGRC27/2*Judith | 42.2 | 55.7 | 167.3 | 35.6 | 15.0 |
| 51 | MT03174 | 95X274E62 | KS93WGRC27/2*Judith | 37.9 | 55.8 | 166.6 | 34.7 | 15.3 |

Table 5 continued next page

Table 5 2003 Winter wheat preliminary B 370703.

| Entry | ID | Cross ID | Pedigree | Yield bu/ac | Test weight | Heading date | Plant height | Protein % |
|----------------------------|------------------|------------|---------------------|----------------|----------------|------------------|------------------|--------------|
| 52 | MT03175 | 95X274E67 | KS93WGRC27/2*Judith | 38.9 | 55.1 | 168.5 | 38.5 | 16.2 |
| 53 | MT03176 | 95X274E73 | KS93WGRC27/2*Judith | 40.1 | 55.3 | 166.8 | 35.2 | 15.5 |
| 54 | MT03177 | 95X274E105 | KS93WGRC27/2*Judith | 37.0 | 55.4 | 169.0 | 37.9 | 16.6 |
| 55 | MT03178 | 95X274E123 | KS93WGRC27/2*Judith | 38.9 | 55.0 | 168.1 | 34.9 | 15.9 |
| 56 | MT03179 | 95X205cE3 | Judith/OK90649 | 40.2 | 55.6 | 167.8 | 32.8 | 13.5 |
| 57 | D MT03180 | 95X205cE4 | Judith/OK90649 | 38.4 | 53.8 | 167.1 | 36.9 | 15.2 |
| 58 | D MT03181 | 95X205cE34 | Judith/OK90649 | 34.1 | 56.4 | 169.5 | 33.4 | 15.8 |
| 59 | D MT03182 | 95X205cE40 | Judith/OK90649 | 39.4 | 54.4 | 166.8 | 35.8 | 14.1 |
| 60 | Judith | | check | 38.5 | 55.8 | 167.9 | 35.3 | 15.7 |
| 61 | Neeley | | check | 39.9 | 55.2 | 171.1 | 37.6 | 15.5 |
| 62 | Morgan | | check | 33.2 | 56.0 | 170.3 | 32.8 | 14.9 |
| 63 | NuWest | | check | 41.2 | 55.3 | 169.5 | 37.3 | 13.9 |
| 64 | Rampart | | check | 33.6 | 54.8 | 169.2 | 35.6 | 16.0 |
| Average | | | | 38.2 | 55.0 | 168.9 | 35.7 | 15.4 |
| LSD (0.05) | | | | ns | 4.0 | 1.7 | 3.8 | |
| C.V. (%) | | | | 9.8 | 3.6 | 0.5 | 5.3 | |
| P-value (Varieties) | | | | 0.0776 | 0.7860 | <.0001 | <.0001 | |

Seeded: Sept 25, 2002 Emerged: Oct 6, 2002

Fertil 10-10-10-5 w/seed 60 lbs N Top dress

Harv 5-Aug-03