

**PROJECT TITLE:** Statewide Spring Wheat Variety Performance – 2013 (4W4145)

**PRINCIPAL INVESTIGATION:**

L. Talbert, Spring Wheat breeder, Bozeman

**Personnel:**

S. Lanning, Department of Plant Sciences, Bozeman

Hwa-Young Heo, Department of Plant Sciences, Bozeman

D.M. Wichman, CARC, Moccasin

J.L.A. Eckhoff, EARC, Sidney

P. Lamb, NARC, Havre

R.N. Stougaard, NWARC Kalispell

K. Kephart, SARC, Huntley

J. Miller, WTARC, Conrad

**OBJECTIVE:** To evaluate new and existing varieties and experimental lines of spring wheat under various growing conditions and environments in Montana.

**RESULTS:** The 2013 Advanced Spring Wheat yield trial was grown at one irrigated and seven rain-fed sites across Montana. The irrigated site was at Sidney. Rain-fed sites were at Havre, Sidney, Moccasin, Huntley, Conrad, Bozeman and Kalispell. Replicated multiple-row plots were established at all locations using standard research techniques. The nurseries at Sidney were severely damaged by hail and were not harvested. Summaries of yield, test weight, protein content, heading date, and plant height are shown in Tables 1, 2, 3, 4, and 5, respectively. A summary of averaged data across sites is shown in Table 6.

Highest yielding varieties at individual sites were MT1273 at **Havre**, MT1172 at **Moccasin**, MT1273 at **Huntley**, MT1203 at **Conrad**, MT1273 at **Bozeman**, and Buckpronto at **Kalispell**. Highest yielding line on a statewide basis was MT1273 (Table 1).

The entry with the highest test weight on a statewide basis was WB Mayville (Table 2). The entry with the highest protein on a statewide basis was WB Mayville (Table 3). Earliest heading entry on a statewide basis was MT1203, while latest was WB Mayville (Table 4). Shortest entry was Jedd while tallest was Thatcher (Table 5). An overall summary for the advanced spring wheat nursery grown across Montana is shown in Table 6.

**SUMMARY:** The statewide spring wheat trial is conducted under dryland and irrigated conditions each year. 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, other states, and private companies. Regional spring wheat producers make decisions on what varieties to grow based on data from these trials.

**FUNDING SUMMARY:** The Statewide Spring Wheat Performance Trials are not a component of the Research Center's umbrella project. This information is presented here for the convenience of the MWBC and the growers who generate MWBC check-off dollars.

**FUTURE PLANS:** These trials will continue in 2014.

Table 1. 2013 yield (bu/ac) summary for the advanced spring wheat nursery grown across Montana.

ID	Havre rain fed	Moccasin rain fed	Huntley rain fed	Conrad rain fed	Bozeman rain fed	Kalispell rain fed	average	rank
THATCHER	44.9	33.9	34.2	66.5	35.8	68.5	47.3	64
FORTUNA	49.3	39.2	43.0	74.5	48.6	88.3	57.1	61
MCNEAL	53.0	43.2	49.9	83.3	46.3	107.6	63.9	31
REEDER	62.7	41.1	45.0	77.1	49.5	102.6	63.0	39
CHOTEAU	53.9	43.4	48.7	74.4	45.8	106.7	62.2	46
VIDA	67.2	52.4	51.4	79.6	46.8	109.6	67.8	6
DUCLAIR	61.7	48.9	49.9	74.4	51.2	112.8	66.5	14
CONAN	55.5	45.7	45.6	67.1	43.0	108.7	60.9	55
CORBIN	59.3	44.4	51.3	73.8	42.5	99.6	61.8	50
VOLT	53.8	45.4	44.0	78.0	53.6	123.1	66.3	16
ONEAL	64.2	51.3	49.8	63.8	49.7	97.6	62.8	40
JEDD	52.5	48.2	46.6	64.4	41.7	94.6	58.0	59
WB GUNNISON	56.5	47.0	49.1	66.3	47.9	107.1	62.3	44
MOTT	62.6	38.8	46.0	70.1	41.5	95.9	59.2	58
SY TYRA	64.2	43.1	49.6	67.2	49.1	109.9	63.9	32
BRENNAN	56.3	47.3	40.1	86.6	58.1	90.1	63.1	37
WB9879CL	58.8	46.3	45.9	73.7	45.3	111.1	63.5	34
MT 1002	64.9	43.0	48.4	74.6	50.3	110.0	65.2	24
MT 1007	62.9	44.2	50.3	77.5	54.9	102.4	65.4	23
MT 1053	62.9	47.6	51.6	81.0	57.3	108.2	68.1	4
MT 1103	67.9	48.4	48.5	70.1	59.1	116.6	68.4	3
MT 1118	61.2	46.7	49.2	77.8	50.0	101.8	64.4	27
MT 1133	62.7	44.1	46.9	62.9	51.0	118.5	64.3	28
MT 1142	68.0	44.5	48.1	74.5	54.2	116.6	67.7	7
MT 1172	62.6	53.0	49.5	83.7	50.7	105.5	67.5	10
MT 1173	69.4	43.7	50.3	87.0	52.1	93.8	66.0	18
MTHW1150	67.9	48.5	50.2	75.7	45.1	128.8	69.4	2
CAP 34-1	58.5	45.2	47.9	73.6	44.5	119.6	64.9	25
CAP197-3	61.1	45.4	53.0	80.6	51.0	116.7	68.0	5
CAP219-3	64.0	42.3	53.9	69.8	51.9	116.2	66.4	15
CAP400-1	55.6	38.6	42.3	72.3	52.3	111.6	62.1	47
MT 1203	53.6	50.4	51.7	87.1	52.4	100.4	65.9	19
MT 1205	56.6	48.0	52.0	70.7	54.1	93.6	62.5	41
MT 1206	65.1	40.9	49.1	71.2	55.3	112.6	65.7	20
MT 1211	61.3	46.5	45.0	69.5	47.4	105.0	62.5	42
MT 1213	59.4	37.6	52.8	69.6	46.2	105.6	61.9	49

(continued)

Table 1 (continued). 2013 yield (bu/ac) summary for the advanced spring wheat nursery grown across Montana.

ID	Havre rain fed	Moccasin rain fed	Huntley rain fed	Conrad rain fed	Bozeman rain fed	Kalispell rain fed	average	rank
MT 1216	55.9	42.9	46.2	61.3	42.0	99.5	58.0	60
MT 1219	63.4	43.7	50.0	73.3	54.6	116.6	66.9	12
MT 1222	54.3	48.9	50.2	77.0	46.1	101.8	63.1	38
MT 1224	61.8	48.5	53.4	77.5	53.5	98.4	65.5	22
MT 1225	64.3	48.8	49.6	74.5	59.2	105.9	67.0	11
MT 1227	66.8	41.3	48.5	67.1	46.9	112.5	63.8	33
MT 1228	66.7	39.7	45.4	80.0	56.3	95.7	64.0	30
MT 1230	56.6	44.1	45.7	59.0	52.4	114.0	62.0	48
MT 1231	56.2	46.1	49.4	84.1	49.1	120.7	67.6	8
MT 1233	52.8	45.8	43.9	69.0	48.8	106.3	61.1	52
MT 1234	60.0	42.4	46.2	65.9	49.6	109.8	62.3	45
MT 1235	57.0	48.2	39.8	70.1	44.0	107.0	61.0	53
MT 1236	62.1	39.6	42.4	66.0	56.7	121.4	64.7	26
MT 1264	61.2	44.2	48.8	86.6	44.0	108.9	65.6	21
MT 1252	61.5	49.1	47.9	73.8	53.8	99.0	64.2	29
MT 1255	60.7	49.9	45.2	76.8	51.1	121.6	67.5	9
MT 1273	<u>70.2</u>	43.1	<u>54.9</u>	82.7	<u>61.7</u>	110.5	<u>70.5</u>	1
MT 1276	64.9	47.4	51.9	82.5	50.3	99.2	66.0	17
SY605 CL	51.1	41.4	47.8	84.4	47.4	93.7	61.0	54
SY SOREN	56.7	42.5	45.8	83.8	52.8	93.2	62.4	43
SY ROWYN	59.6	40.6	42.1	74.9	50.0	98.3	60.9	56
VANTAGE	58.7	48.9	39.6	77.1	45.0	110.8	63.4	35
WB ROCKLAND	46.3	37.1	30.7	79.0	46.3	92.0	55.2	63
WB MAYVILLE	55.4	46.6	41.5	73.6	39.4	111.6	61.3	51
BUCKPRONTO	55.5	48.4	49.6	69.1	49.1	<u>129.3</u>	66.8	13
LCS BREAKAWAY	47.4	38.5	45.7	68.0	39.7	101.9	56.9	62
LCS POWERPLAY	60.9	46.8	46.4	79.8	53.0	92.6	63.2	36
LNR0551	45.6	46.9	39.4	70.1	46.6	109.5	59.7	57
site mean	59.3	44.8	47.2	74.3	49.4	106.2	63.6	
CV (S/mean)	7.7	12.0	6.9	13.6	14.6	5.2	9.2	
F-value	4.95***	1.62*	5.85***	1.35NS	1.56*	11.32***	2.51***	
LSD (.05)	7.4	8.7	5.2	16.4	11.6	8.9	6.7	

The nurseries at EARC Sidney were severely damaged by hail and are not included in this summary.

Table 2. 2013 test weight (lb/bu) summary for the advanced spring wheat nursery grown across Montana.

ID	Havre rain fed	Moccasin rain fed	Huntley rain fed	Conrad rain fed	Bozeman rain fed	Kalispell rain fed	average	rank
THATCHER	61.5	57.9	58.6	60.1	53.6	59.9	58.6	61
FORTUNA	61.9	61.0	59.4	62.1	59.2	61.8	60.9	14
MCNEAL	61.8	59.0	60.2	60.4	56.3	61.4	59.8	40
REEDER	62.8	59.9	61.0	60.9	57.3	62.3	60.7	20
CHOTEAU	61.5	59.7	60.6	57.8	57.9	61.1	59.8	41
VIDA	62.4	58.9	60.5	58.9	57.3	59.9	59.6	44
DUCLAIR	61.2	57.5	60.2	58.5	56.3	61.1	59.1	54
CONAN	62.1	59.7	60.2	59.7	56.8	59.5	59.7	43
CORBIN	62.7	58.3	59.9	60.3	58.8	59.7	59.9	37
VOLT	63.8	61.8	60.7	62.8	58.1	63.8	61.8	3
ONEAL	62.8	60.4	61.4	60.1	56.0	59.4	60.0	34
JEDD	63.0	60.3	61.2	60.5	58.3	62.2	60.9	15
WB GUNNISON	62.6	60.0	61.2	62.0	58.5	61.1	60.9	13
MOTT	62.8	60.7	59.9	60.9	58.6	62.9	61.0	12
SY TYRA	63.9	59.5	61.8	61.9	58.0	61.4	61.1	8
BRENNAN	63.3	61.6	62.0	63.2	59.8	63.0	62.1	2
WB9879CL	61.7	60.3	60.6	59.9	58.7	61.6	60.5	25
MT 1002	61.2	57.8	60.1	57.8	55.2	61.4	58.9	58
MT 1007	63.5	61.8	61.7	60.9	60.4	62.0	61.7	4
MT 1053	62.4	59.3	59.8	60.3	58.3	61.1	60.2	31
MT 1103	62.5	60.3	60.9	59.6	58.3	62.3	60.6	22
MT 1118	61.0	57.3	57.6	55.9	55.1	60.8	58.0	63
MT 1133	62.5	58.4	60.2	56.9	57.9	61.8	59.6	46
MT 1142	62.0	59.0	60.5	59.2	58.5	62.5	60.3	30
MT 1172	61.5	58.0	59.3	59.9	57.0	60.5	59.4	50
MT 1173	61.7	57.3	59.2	58.3	56.3	60.4	58.9	59
MTHW1150	63.7	61.3	62.0	59.7	56.6	61.7	60.8	17
CAP 34-1	62.8	59.3	61.5	60.8	59.5	62.3	61.0	10
CAP197-3	61.7	56.9	59.2	59.3	57.1	61.0	59.2	53
CAP219-3	63.1	59.4	61.0	60.0	59.8	63.1	61.1	9
CAP400-1	60.8	59.3	59.7	59.9	56.3	61.8	59.6	45
MT 1203	61.3	59.4	60.4	59.4	57.2	60.5	59.7	42
MT 1205	62.2	60.6	60.2	59.9	59.5	62.3	60.8	19
MT 1206	62.2	58.6	59.9	59.9	58.4	61.7	60.1	33
MT 1211	61.9	58.5	58.6	58.5	57.6	61.7	59.5	47
MT 1213	61.9	57.9	60.0	58.2	57.1	60.8	59.3	51

(continued)

Table 2 (continued). 2013 test weight (lb/bu) summary for the advanced spring wheat nursery grown across Montana.

ID	Havre rain fed	Moccasin rain fed	Huntley rain fed	Conrad rain fed	Bozeman rain fed	Kalispell rain fed	average	rank
MT 1216	61.1	58.6	59.5	56.3	56.6	61.3	58.9	57
MT 1219	62.4	58.8	59.5	58.5	58.9	61.3	59.9	39
MT 1222	60.3	58.2	59.6	59.4	56.8	60.6	59.1	55
MT 1224	61.1	58.0	59.1	59.6	56.9	59.2	59.0	56
MT 1225	61.6	58.9	58.2	59.5	57.1	60.9	59.4	49
MT 1227	60.0	55.7	57.3	55.8	54.0	59.7	57.1	64
MT 1228	61.8	57.7	58.8	59.9	57.5	61.0	59.4	48
MT 1230	60.9	58.3	59.9	54.8	58.1	60.9	58.8	60
MT 1231	60.9	58.4	60.4	61.0	57.5	61.9	60.0	35
MT 1233	61.9	58.8	60.0	59.3	58.5	62.2	60.1	32
MT 1234	62.3	60.2	61.1	59.1	58.4	61.4	60.4	26
MT 1235	62.6	61.5	61.3	59.4	58.9	62.5	61.0	11
MT 1236	60.5	55.9	58.4	56.8	55.9	61.2	58.1	62
MT 1264	61.9	59.5	60.2	61.3	58.5	61.6	60.5	24
MT 1252	62.8	60.8	60.7	60.2	58.5	60.6	60.6	23
MT 1255	61.6	58.0	60.0	58.8	56.3	60.9	59.3	52
MT 1273	63.0	59.8	60.7	61.4	58.5	61.3	60.8	18
MT 1276	62.6	59.4	59.4	61.1	58.9	60.6	60.3	28
SY605 CL	62.9	60.0	62.0	62.5	59.7	62.5	61.6	5
SY SOREN	63.0	58.9	60.5	62.3	56.4	62.9	60.7	21
SY ROWYN	62.2	59.8	60.3	61.1	59.7	62.2	60.9	16
VANTAGE	62.6	58.8	59.6	60.4	58.6	62.4	60.4	27
WB ROCKLAND	61.6	59.0	58.7	61.0	58.0	61.7	60.0	36
WB MAYVILLE	63.9	62.7	62.6	63.5	59.0	64.1	62.6	1
BUCKPRONTO	62.3	59.3	59.4	60.3	57.1	61.2	59.9	38
LCS BREAKAWAY	63.4	60.1	61.3	61.8	59.0	62.2	61.3	7
LCS POWERPLAY	63.2	57.0	60.2	60.8	58.8	61.9	60.3	29
LNR0551	62.8	62.2	61.0	62.1	58.2	62.5	61.5	6
site mean	62.2	59.2	60.2	59.9	57.8	61.5	60.1	
CV (S/mean)	0.7	0.9	1.0	2.5			1.5	
F-value	14.53***	14.98***	8.97***	4.08***			8.30***	
LSD (.05)	0.7	1.1	1.0	2.4	1 rep	1 rep	1.0	

The nurseries at EARC Sidney were severely damaged by hail and are not included in this summary.

Table 3. 2013 grain protein content (percent) summary for the advanced spring wheat nursery grown across Montana.

ID	Havre rain fed	Moccasin rain fed	Huntley rain fed	Conrad rain fed	Bozeman rain fed	Kalispell rain fed	average	rank
THATCHER	14.7	16.4	11.2	13.2	16.7	16.0	14.7	7
FORTUNA	15.5	15.0	10.9	13.6	15.7	15.5	14.4	21
MCNEAL	14.8	15.6	10.1	13.0	15.7	16.2	14.2	26
REEDER	15.3	15.5	10.3	13.7	16.0	15.5	14.4	19
CHOTEAU	15.1	14.9	10.8	13.2	15.7	15.4	14.2	28
VIDA	14.0	14.0	9.2	12.7	15.4	15.3	13.4	55
DUCLAIR	14.1	15.2	9.8	13.6	16.0	14.6	13.9	37
CONAN	15.0	15.8	11.4	14.0	16.3	14.4	14.5	13
CORBIN	13.8	15.7	10.1	13.7	15.5	14.9	13.9	35
VOLT	14.0	14.6	10.6	12.2	16.5	14.6	13.7	52
ONEAL	14.5	15.2	9.8	13.9	14.8	14.6	13.8	43
JEDD	13.4	14.4	9.9	13.3	15.6	13.5	13.3	57
WB GUNNISON	14.0	14.8	10.6	13.3	15.3	14.8	13.8	44
MOTT	14.8	15.8	11.8	13.5	15.9	15.2	14.5	12
SY TYRA	13.4	14.2	9.5	12.4	14.9	13.8	13.0	64
BRENNAN	15.2	15.0	11.6	13.9	15.6	15.0	14.4	17
WB9879CL	14.8	14.8	10.3	13.8	15.5	15.1	14.0	33
MT 1002	14.2	14.4	10.6	13.0	15.9	15.2	13.9	36
MT 1007	14.2	14.7	9.8	13.6	15.0	15.5	13.8	46
MT 1053	13.5	14.5	10.2	12.9	14.5	14.9	13.4	56
MT 1103	14.3	14.4	10.6	13.1	15.7	14.9	13.8	42
MT 1118	13.9	14.7	10.9	14.6	16.1	15.4	14.3	25
MT 1133	14.7	15.2	10.2	13.5	16.0	15.1	14.1	31
MT 1142	14.9	15.1	10.4	14.2	15.8	16.0	14.4	16
MT 1172	14.3	14.2	9.4	13.2	15.0	15.9	13.7	53
MT 1173	14.4	14.7	10.1	12.8	15.3	15.5	13.8	45
MTHW1150	14.3	14.5	10.1	13.0	16.4	14.4	13.8	48
CAP 34-1	14.2	14.8	10.1	13.6	15.4	14.3	13.8	50
CAP197-3	13.7	14.6	10.0	12.5	14.7	13.9	13.2	62
CAP219-3	14.0	14.4	9.6	13.1	14.6	14.3	13.3	60
CAP400-1	15.7	16.7	11.3	14.6	16.7	16.7	15.3	2
MT 1203	15.7	15.3	11.3	13.9	16.0	15.8	14.7	8
MT 1205	14.9	14.4	10.9	13.8	15.8	14.9	14.1	30
MT 1206	15.0	15.8	11.4	13.4	15.6	14.7	14.3	23
MT 1211	14.6	14.8	9.8	13.9	15.9	15.1	14.0	34
MT 1213	14.4	15.5	10.4	14.2	16.1	15.6	14.4	20

(continued)

Table 3 (continued). 2013 protein content (percent) summary for the advanced spring wheat nursery grown across Montana.

ID	Havre rain fed	Moccasin rain fed	Huntley rain fed	Conrad rain fed	Bozeman rain fed	Kalispell rain fed	average	rank
MT 1216	15.0	14.7	10.3	14.7	16.3	15.6	14.4	14
MT 1219	14.2	15.1	10.2	13.4	15.1	15.1	13.8	40
MT 1222	15.2	15.6	10.8	14.4	16.3	16.0	14.7	6
MT 1224	14.3	15.0	9.5	13.6	15.4	14.8	13.8	47
MT 1225	14.9	14.7	10.7	13.7	15.6	15.2	14.1	29
MT 1227	14.6	15.3	10.6	14.0	16.5	16.2	14.5	11
MT 1228	14.4	14.9	9.8	13.2	16.0	14.8	13.8	41
MT 1230	15.1	14.6	10.8	14.6	15.1	16.1	14.4	18
MT 1231	15.1	15.3	10.2	13.7	16.3	15.5	14.3	22
MT 1233	15.5	15.1	11.3	14.0	16.1	15.9	14.6	9
MT 1234	15.2	15.0	11.5	14.3	16.3	15.4	14.6	10
MT 1235	14.6	14.6	10.8	14.3	16.1	15.3	14.3	24
MT 1236	15.3	15.9	11.1	14.1	16.2	16.0	14.8	4
MT 1264	14.5	14.8	10.5	12.8	15.2	15.3	13.9	39
MT 1252	13.3	14.8	9.9	12.8	15.8	13.3	13.3	61
MT 1255	13.7	15.5	9.6	13.0	16.3	14.4	13.8	51
MT 1273	13.6	14.7	10.1	12.2	14.5	14.0	13.2	63
MT 1276	14.3	14.2	10.0	13.0	14.8	15.4	13.6	54
SY605 CL	15.4	15.8	10.0	14.2	16.2	<u>16.8</u>	14.7	5
SY SOREN	14.8	15.6	10.7	13.6	16.2	15.7	14.4	15
SY ROWYN	14.2	14.1	10.1	12.6	14.6	14.5	13.3	59
VANTAGE	14.3	14.7	10.2	13.8	15.1	15.1	13.9	38
WB ROCKLAND	<u>16.8</u>	15.8	<u>12.0</u>	13.8	16.2	16.3	15.2	3
WB MAYVILLE	15.3	<u>17.3</u>	11.9	<u>14.8</u>	<u>17.2</u>	16.2	<u>15.4</u>	1
BUCKPRONTO	13.7	15.2	11.0	13.6	16.4	14.5	14.1	32
LCS BREAKAWAY	15.2	14.3	11.1	13.7	15.1	15.8	14.2	27
LCS POWERPLAY	14.5	14.8	10.0	12.8	15.6	14.8	13.8	49
LNR0551	14.8	14.7	10.6	12.5	14.7	12.8	13.3	58
site mean	14.6	15.0	10.5	13.5	15.7	15.1	14.1	
CV (S/mean)	2.7						3.3	
F-value	8.19***						7.36***	
LSD (.05)	0.6	1 rep	1 rep	1 rep	1 rep	1 rep	0.5	

The nurseries at EARC Sidney were severely damaged by hail and are not included in this summary.

Table 4. 2013 heading date (days from January 1) summary for the advanced spring wheat nursery grown across Montana. 178= June 27

ID	Havre rain fed	Moccasin rain fed	Huntley rain fed	Conrad rain fed	Bozeman rain fed	Kalispell rain fed	Sidney rain fed	Sidney irrigated	average	rank
THATCHER	180.3	184.0	168.7	182.7	188	181.3	183.3	190.7	182.4	63
FORTUNA	178.0	183.0	167.0	182.0	185	176.7	181.7	186.0	179.9	29
MCNEAL	179.7	182.7	170.0	182.0	184	178.7	183.0	187.3	180.9	52
REEDER	179.0	182.7	168.7	182.0	184	175.3	181.7	187.0	180.0	32
CHOTEAU	179.0	181.7	170.7	182.0	184	177.0	181.7	185.7	180.2	37
VIDA	179.3	183.7	170.7	182.7	185	176.3	182.0	188.0	181.0	53
DUCLAIR	178.7	181.0	168.7	180.0	182	173.0	180.3	185.3	178.6	11
CONAN	178.7	181.3	168.0	180.7	183	174.3	181.3	186.0	179.2	18
CORBIN	176.7	181.0	168.0	182.0	182	175.0	179.7	186.0	178.8	14
VOLT	179.0	183.7	170.0	181.0	187	177.7	184.3	190.7	181.7	60
ONEAL	179.7	183.0	170.0	181.7	185	178.7	182.0	186.7	180.8	49
JEDD	177.0	180.7	170.7	182.0	182	174.0	179.0	184.7	178.8	13
WB GUNNISON	176.3	181.0	168.0	181.0	183	173.0	179.7	186.3	178.5	9
MOTT	180.0	184.0	168.7	181.0	186	178.7	182.0	188.3	181.1	55
SY TYRA	178.3	184.3	170.0	182.0	185	175.3	181.0	186.0	180.2	38
BRENNAN	176.0	180.7	168.7	182.7	182	173.0	180.0	185.0	178.5	8
WB9879CL	180.0	182.7	171.3	182.3	184	175.7	181.7	187.0	180.6	45
MT 1002	180.3	184.3	170.7	183.0	185	177.0	182.7	187.7	181.3	57
MT 1007	179.3	182.3	170.0	182.0	184	174.3	181.7	186.0	180.0	30
MT 1053	180.0	183.3	168.7	182.3	185	175.3	182.3	187.3	180.5	42
MT 1103	180.7	185.0	170.0	182.0	186	177.7	182.3	188.7	181.5	58
MT 1118	178.0	182.0	169.3	182.0	184	174.3	180.3	185.7	179.5	24
MT 1133	179.3	182.0	170.0	181.0	184	175.7	181.7	186.7	180.0	33
MT 1142	179.7	182.3	169.3	183.0	183	175.7	180.3	186.0	179.9	28
MT 1172	179.3	184.0	170.0	181.0	185	176.3	182.3	187.3	180.7	48
MT 1173	180.7	184.0	170.7	182.0	187	177.7	183.7	189.0	181.8	61
MTHW1150	180.0	183.7	170.7	181.0	186	178.0	182.7	188.0	181.3	56
CAP 34-1	178.7	182.3	169.3	181.0	183	175.3	181.0	186.0	179.6	25
CAP197-3	179.0	182.3	170.7	182.0	184	177.0	182.3	187.0	180.5	43
CAP219-3	176.3	181.7	168.0	182.0	182	172.0	180.0	185.0	178.4	6
CAP400-1	179.7	183.0	170.0	182.3	186	178.7	182.7	186.0	181.0	54
MT 1203	176.3	180.3	168.0	180.0	181	170.7	179.0	184.7	177.5	1
MT 1205	176.0	181.0	168.0	181.0	182	171.3	179.3	184.7	177.9	2
MT 1206	179.7	182.3	169.3	181.7	184	177.0	182.0	186.0	180.3	39
MT 1211	176.7	181.3	168.0	182.0	183	172.7	180.0	184.7	178.5	10
MT 1213	178.3	183.7	170.0	182.7	184	176.0	181.0	186.0	180.2	36

(continued)

Table 4 (continued). 2013 heading date (days from January 1) summary for the advanced spring wheat nursery grown across Montana. 178= June 27

ID	Havre rain fed	Moccasin rain fed	Huntley rain fed	Conrad rain fed	Bozeman rain fed	Kalispell rain fed	Sidney rain fed	Sidney irrigated	average	rank
MT 1216	179.7	182.0	170.0	181.0	185	176.3	181.0	186.0	180.1	34
MT 1219	179.0	182.0	169.3	180.0	183	176.7	181.0	185.7	179.6	26
MT 1222	177.0	180.3	168.7	181.0	182	171.7	180.3	185.0	178.2	4
MT 1224	179.3	182.0	170.0	182.3	183	176.0	182.0	185.7	180.0	31
MT 1225	179.3	182.3	170.0	182.0	184	176.0	181.0	186.7	180.2	35
MT 1227	181.0	184.0	172.0	182.3	186	178.0	183.7	188.0	181.9	62
MT 1228	179.7	182.3	170.7	182.0	184	177.0	182.0	187.3	180.6	47
MT 1230	180.3	182.7	170.0	181.0	185	177.7	181.0	187.0	180.6	44
MT 1231	177.3	182.7	168.7	182.0	184	174.7	180.7	185.3	179.4	23
MT 1233	177.7	182.0	168.7	181.0	183	175.0	180.0	185.0	179.0	16
MT 1234	179.7	182.3	170.7	180.0	184	178.0	181.7	187.0	180.4	41
MT 1235	180.0	184.0	170.7	182.0	184	176.7	181.3	186.3	180.6	46
MT 1236	179.0	182.0	169.3	181.0	184	175.0	182.0	185.7	179.8	27
MT 1264	176.7	181.0	167.0	183.0	183	174.0	179.7	185.0	178.7	12
MT 1252	180.3	184.3	170.7	182.3	186	179.7	181.7	188.3	181.7	59
MT 1255	177.0	181.0	169.3	182.0	182	172.3	177.7	184.7	178.3	5
MT 1273	179.7	183.3	170.0	182.3	185	178.0	181.7	186.7	180.8	50
MT 1276	178.0	181.7	168.0	183.0	182	173.7	179.7	185.3	178.9	15
SY605 CL	175.0	181.3	168.0	182.0	182	172.0	179.0	184.7	178.0	3
SY SOREN	177.3	182.3	168.7	182.0	184	175.3	180.0	184.7	179.3	21
SY ROWYN	177.3	181.0	169.3	181.7	183	175.3	180.0	184.7	179.0	17
VANTAGE	178.0	183.0	168.7	182.0	184	175.3	179.0	184.0	179.3	20
WB ROCKLAND	180.0	181.3	168.0	181.7	186	173.0	184.0	189.3	180.4	40
WB MAYVILLE	180.3	184.0	171.3	182.3	187	180.7	183.7	190.0	182.4	64
BUCKPRONTO	177.7	182.3	168.7	181.0	183	175.0	181.0	185.0	179.2	19
LCS BREAKAWAY	176.3	182.0	168.0	181.0	183	174.0	178.7	184.7	178.5	7
LCS POWERPLAY	178.3	181.3	168.0	182.0	183	175.0	181.0	186.0	179.3	22
LNR0551	179.3	184.0	168.7	181.0	186	178.0	183.3	187.0	180.9	51
site mean	178.7	182.4	169.3	181.7	184	175.7	183.3	186.4	178.7	
CV (S/mean)	0.5	0.5	0.7	0.8		0.6	1.5	1.4	0.6	
F-value	6.97***	5.44***	2.52***	0.79NS		16.38***			7.66***	
LSD (.05)	1.5	1.4	2.0	2.4	1 rep	1.6	1.3	1.2	1.1	

Table 5. 2013 plant height (inches) summary for the advanced spring wheat nursery grown across Montana.

ID	Havre rain fed	Huntley rain fed	Bozeman rain fed	Kalispell rain fed	Sidney rain fed	Sidney irrigated	average	rank
THATCHER	35.2	41.4	41.0	45.0	37.0	40.8	40.1	1
FORTUNA	32.7	38.0	39.9	42.4	35.2	39.8	38.0	2
MCNEAL	27.4	31.5	31.5	39.8	29.8	31.4	31.9	14
REEDER	27.6	31.0	32.2	39.1	28.7	32.7	31.9	15
CHOTEAU	26.3	31.7	29.5	36.5	26.6	29.9	30.1	40
VIDA	28.0	31.8	31.5	38.2	28.9	31.9	31.7	16
DUCLAIR	27.2	31.6	30.9	35.7	30.8	32.0	31.4	17
CONAN	26.8	30.0	28.9	35.6	26.8	28.5	29.4	52
CORBIN	27.8	30.2	29.9	36.1	28.3	30.1	30.4	32
VOLT	25.8	28.0	30.3	34.7	28.9	30.3	29.7	45
ONEAL	28.0	34.3	30.0	36.6	29.0	29.7	31.3	20
JEDD	22.4	25.7	24.5	32.1	23.2	25.1	25.5	64
WB GUNNISON	27.5	30.3	28.1	36.3	26.1	29.1	29.6	48
MOTT	29.3	33.4	31.4	41.3	27.0	33.9	32.7	4
SY TYRA	24.9	28.8	25.0	33.5	28.7	26.4	27.9	62
BRENNAN	25.2	30.2	27.7	34.9	24.8	27.6	28.4	59
WB9879CL	24.8	29.3	28.8	36.2	26.2	29.9	29.2	54
MT 1002	25.1	31.9	30.3	37.4	28.3	31.5	30.8	28
MT 1007	26.5	29.9	28.8	35.3	27.8	29.5	29.6	46
MT 1053	26.1	30.5	30.6	35.4	26.6	30.3	29.9	43
MT 1103	25.5	31.6	29.7	37.3	25.3	30.3	30.0	42
MT 1118	26.0	29.7	28.3	35.7	25.9	28.7	29.1	56
MT 1133	26.3	30.6	29.6	35.7	26.9	28.5	29.6	47
MT 1142	27.1	32.5	31.3	39.9	31.1	31.8	32.3	9
MT 1172	25.7	31.0	29.9	37.4	27.8	31.4	30.5	30
MT 1173	28.7	35.0	32.7	37.9	29.3	32.7	32.7	5
MTHW1150	28.4	32.1	30.9	40.3	31.2	32.4	32.6	6
CAP 34-1	26.3	30.0	28.8	35.3	27.0	30.1	29.6	50
CAP197-3	29.3	35.2	32.8	36.2	28.2	33.5	32.5	8
CAP219-3	26.9	31.6	30.2	40.1	28.7	30.6	31.4	18
CAP400-1	26.4	30.5	30.8	38.1	31.5	30.3	31.3	21
MT 1203	27.1	30.3	29.4	37.5	28.5	28.9	30.3	34
MT 1205	26.2	31.2	29.8	35.1	28.3	30.7	30.2	36
MT 1206	26.9	32.5	30.6	35.9	29.3	32.0	31.2	24
MT 1211	28.1	31.2	30.2	37.0	28.0	30.2	30.8	27
MT 1213	29.5	35.7	32.0	39.5	29.8	35.7	33.7	3

(continued)

Table 5 (continued). 2013 plant height (inches) summary for the advanced spring wheat nursery grown across Montana.

ID	Havre rain fed	Huntley rain fed	Bozeman rain fed	Kalispell rain fed	Sidney rain fed	Sidney irrigated	average	rank
MT 1216	27.3	32.5	31.8	39.0	28.9	32.4	32.0	11
MT 1219	25.1	30.3	27.8	33.7	28.7	29.3	29.2	55
MT 1222	25.5	30.2	29.8	34.4	29.9	30.6	30.1	41
MT 1224	27.4	32.7	31.6	37.7	30.3	32.5	32.0	10
MT 1225	26.8	33.2	32.3	36.2	24.4	31.0	30.6	29
MT 1227	27.5	32.8	30.6	37.3	27.7	31.6	31.2	22
MT 1228	27.4	31.5	29.7	36.2	25.7	30.4	30.2	37
MT 1230	25.8	32.3	29.9	38.3	28.0	32.0	31.0	26
MT 1231	26.7	30.2	29.7	36.1	27.2	31.8	30.3	35
MT 1233	25.6	30.7	28.6	35.3	27.6	29.8	29.6	51
MT 1234	28.4	32.7	32.2	38.3	28.7	31.1	31.9	13
MT 1235	26.5	30.4	32.0	38.3	29.3	30.3	31.1	25
MT 1236	26.2	30.1	29.9	34.4	26.1	28.7	29.2	53
MT 1264	28.0	31.8	30.4	36.7	29.0	32.0	31.3	19
MT 1252	26.3	32.2	31.0	38.3	25.9	29.0	30.4	31
MT 1255	24.9	29.9	27.6	35.3	25.2	27.4	28.4	61
MT 1273	27.8	32.6	31.5	38.9	30.6	30.4	32.0	12
MT 1276	27.2	31.0	29.7	36.7	26.4	31.1	30.4	33
SY605 CL	27.6	34.8	31.1	38.9	31.5	31.4	32.5	7
SY SOREN	24.4	29.5	27.0	36.6	26.2	26.6	28.4	60
SY ROWYN	26.5	28.4	27.9	36.0	26.1	27.2	28.7	57
VANTAGE	25.1	28.0	28.7	36.3	26.8	27.0	28.7	58
WB ROCKLAND	22.8	24.4	24.8	31.9	24.7	26.0	25.8	63
WB MAYVILLE	26.5	32.9	29.6	39.1	31.0	28.3	31.2	23
BUCKPRONTO	26.3	30.0	27.7	37.7	27.6	29.8	29.8	44
LCS BREAKAWAY	25.8	30.6	27.8	37.9	29.9	28.9	30.2	38
LCS POWERPLAY	26.9	29.3	29.4	37.0	27.6	30.7	30.2	39
LNR0551	24.6	30.9	30.3	35.9	28.0	27.8	29.6	49
site mean	26.8	31.3	30.1	37.0	28.2	30.5	31.3	
CV (S/mean)	4.9	3.9	3.6	6.7	8.5	4.6	3.3	
F-value	6.31***	12.85***	16.63***	2.47***			17.76***	
LSD (.05)	2.1	2.0	1.8	4.0	9.9	5.8	1.4	

Table 6. 2013 over-all summary for the advanced spring wheat nursery grown across Montana.

Line or variety	Grain yield (bu/ac)		Test weight (lb/bu)		Heading date (178= June 27)		Plant height (in)		Grain protein (%)	
	average	rank	average	rank	average	rank	average	rank	average	rank
THATCHER	47.3	64	58.6	61	180.8	63	40.7	1	14.7	7
FORTUNA	57.1	61	60.9	14	178.6	29	38.3	2	14.4	21
MCNEAL	63.9	31	59.8	40	179.5	49	32.6	13	14.2	26
REEDER	63.0	39	60.7	20	178.6	30	32.5	14	14.4	19
CHOTEAU	62.2	46	59.8	41	179.1	38	31.0	35	14.2	28
VIDA	67.8	6	59.6	44	179.6	51	32.4	15	13.4	55
DUCLAIR	66.5	14	59.1	54	177.2	8	31.4	29	13.9	37
CONAN	60.9	55	59.7	43	177.7	14	30.3	47	14.5	13
CORBIN	61.8	50	59.9	37	177.4	12	31.0	36	13.9	35
VOLT	66.3	16	61.8	3	179.7	54	29.7	55	13.7	52
ONEAL	62.8	40	60.0	34	179.7	52	32.2	17	13.8	43
JEDD	58.0	59	60.9	15	177.7	15	26.2	63	13.3	57
WB GUNNISON	62.3	44	60.9	13	177.1	6	30.6	42	13.8	44
MOTT	59.2	58	61.0	12	179.7	55	33.9	4	14.5	12
SY TYRA	63.9	32	61.1	8	179.2	42	28.0	62	13.0	64
BRENNAN	63.1	37	62.1	2	177.2	7	29.5	58	14.4	17
WB9879CL	63.5	34	60.5	25	179.3	46	29.8	54	14.0	33
MT 1002	65.2	24	58.9	58	180.1	58	31.2	31	13.9	36
MT 1007	65.4	23	61.7	4	178.7	31	30.1	49	13.8	46
MT 1053	68.1	4	60.2	31	179.1	39	30.7	38	13.4	56
MT 1103	68.4	3	60.6	22	180.2	59	31.0	34	13.8	42
MT 1118	64.4	27	58.0	63	178.3	22	29.9	53	14.3	25
MT 1133	64.3	28	59.6	46	178.7	32	30.5	43	14.1	31
MT 1142	67.7	7	60.3	30	178.8	34	32.7	10	14.4	16
MT 1172	67.5	10	59.4	50	179.3	44	31.0	37	13.7	53
MT 1173	66.0	18	58.9	59	180.3	60	33.6	5	13.8	45
MTHW1150	69.4	2	60.8	17	179.9	56	32.9	8	13.8	48
CAP 34-1	64.9	25	61.0	10	178.3	23	30.1	50	13.8	50
CAP197-3	68.0	5	59.2	53	179.2	43	33.4	6	13.2	62
CAP219-3	66.4	15	61.1	9	177.0	5	32.2	18	13.3	60
CAP400-1	62.1	47	59.6	45	179.9	57	31.4	28	15.3	2
MT 1203	65.9	19	59.7	42	176.1	1	31.1	33	14.7	8
MT 1205	62.5	41	60.8	19	176.6	2	30.6	41	14.1	30
MT 1206	65.7	20	60.1	33	179.0	36	31.5	27	14.3	23
MT 1211	62.5	42	59.5	47	177.3	10	31.6	25	14.0	34
MT 1213	61.9	49	59.3	51	179.1	40	34.1	3	14.4	20

(continued)

Table 6 (continued). 2013 over-all summary for the advanced spring wheat nursery grown across Montana.

Line or variety	Grain yield (bu/ac)		Test weight (lb/bu)		Heading date (178= June 27)		Plant height (in)		Grain protein (%)	
	average	rank	average	rank	average	rank	average	rank	average	rank
MT 1216	58.0	60	58.9	57	179.0	37	32.6	12	14.4	14
MT 1219	66.9	12	59.9	39	178.3	25	29.2	61	13.8	40
MT 1222	63.1	38	59.1	55	176.8	4	30.0	52	14.7	6
MT 1224	65.5	22	59.0	56	178.8	33	32.3	16	13.8	47
MT 1225	67.0	11	59.4	49	178.9	35	32.1	19	14.1	29
MT 1227	63.8	33	57.1	64	180.6	62	32.0	20	14.5	11
MT 1228	64.0	30	59.4	48	179.3	45	31.2	30	13.8	41
MT 1230	62.0	48	58.8	60	179.4	47	31.6	26	14.4	18
MT 1231	67.6	8	60.0	35	178.2	21	30.7	39	14.3	22
MT 1233	61.1	52	60.1	32	177.9	17	30.0	51	14.6	9
MT 1234	62.3	45	60.4	26	179.1	41	32.9	9	14.6	10
MT 1235	61.0	53	61.0	11	179.6	50	31.8	23	14.3	24
MT 1236	64.7	26	58.1	62	178.4	27	30.1	48	14.8	4
MT 1264	65.6	21	60.5	24	177.4	13	31.7	24	13.9	39
MT 1252	64.2	29	60.6	23	180.6	61	31.9	22	13.3	61
MT 1255	67.5	9	59.3	52	177.3	9	29.4	59	13.8	51
MT 1273	<b>70.5</b>	1	60.8	18	179.7	53	32.7	11	13.2	63
MT 1276	66.0	17	60.3	28	177.7	16	31.2	32	13.6	54
SY605 CL	61.0	54	61.6	5	176.7	3	33.1	7	14.7	5
SY SOREN	62.4	43	60.7	21	178.3	24	29.4	60	14.4	15
SY ROWYN	60.9	56	60.9	16	177.9	18	29.7	56	13.3	59
VANTAGE	63.4	35	60.4	27	178.5	28	29.5	57	13.9	38
WB ROCKLAND	55.2	63	60.0	36	178.3	26	26.0	64	15.2	3
WB MAYVILLE	61.3	51	<b>62.6</b>	1	180.9	64	32.0	21	<b>15.4</b>	1
BUCKPRONTO	66.8	13	59.9	38	177.9	20	30.4	46	14.1	32
LCS BREAKAWAY	56.9	62	61.3	7	177.4	11	30.5	44	14.2	27
LCS POWERPLAY	63.2	36	60.3	29	177.9	19	30.7	40	13.8	49
LNR0551	59.7	57	61.5	6	179.5	48	30.4	45	13.3	58
MEAN	63.6		60.1		178.7		31.3		14.1	
C.V. (S/MEAN %)	9.2		1.5		0.6		3.3		3.3	
F-value	2.51***		8.30***		7.66***		17.76***		7.36***	
LSD (.05)	6.7		1.0		1.1		1.4		0.5	

<sup>1</sup> the overall means do not include data from the Sidney nurseries.