

<u>PROJECT TITLE:</u>	2003 Intra-State Winter Wheat Variety Performance		
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OBJECTIVES:

To evaluate new and existing winter wheat lines and varieties in dryland under various growing conditions in Montana and Western North Dakota.

RESULTS:

The 2003 Intrastate Winter Wheat Evaluation nursery was grown at Bozeman, Havre, Huntley, Kalispell, Moccasin, and Sidney, Montana and Williston, North Dakota.

The 2003 Montana winter wheat crop was generally improved from the 2002 crop due to more spring moisture and in many cases near record levels of April precipitation. Fall 2002 drought conditions precluded some winter wheat from being in a condition to fully exploit the early spring moisture. Areas with shallow soil saw yields reduced due to low test weights caused by severe drought and above average temperatures in late June through July. The Northwest Montana winter wheat was hampered by both a dry fall and a dry May – July period. Some of North central Montana winter wheat was hurt by poor fall establishment due dry fall conditions. Central Montana winter wheat had low test weights due to summer drought. Eastern Montana had good winter survival and good precipitation to produce a high yielding, heavy crop. Most of Southern Montana suffered through another dry year.

MT00159 had the highest statewide mean yield at 73.2 bu/a and its yield ranked in the top six at seven of the test locations (Table 1). MT00159, a Promontory/Judith cross, was the top yielder at Bozeman, Sidney, Williston, and Kalispell. Wahoo, Promontory and Jagalene eight location mean yield ranked 2nd, 3rd and 4th, respectively. Jagalene, an early maturing variety, had the highest test weight at four locations (Table 2). Moccasin was the only location with low test weights. Rampart, Erhardt, and Vanguard continued to be the standard for high protein wheat (Table 3). It was a rare year when the Kalispell location had the shortest plant heights and the earliest heading dates (Tables 4 & 5). Winter hardiness evaluations at Sidney and Williston were successful in that survival ranged between 21 and 97% with a mean of 55.2 % (Table 6).

SUMMARY:

The environmental conditions across the intra-state winter wheat locations provided for an ideal range of yields for good assessment of yield potential. These conditions provided an excellent range of yields and test weights. Grain protein levels were high. Conditions were suitable for good winter survival evaluations at Sidney and Williston.

FUTURE PLANS:

MAES will continue to evaluate winter wheat lines and varieties in uniform statewide trials.

Table 1. 2003 Intrastate Winter Wheat Test (Exp. 35): 8 Location Yield (bu/a)

Cultivar/Line	Bozeman LAT	Havre LAT	Sidney LAT	Williston LAT	Kalispell LAT	Moccasin RCB	Huntley LAT	Conrad LAT	8 Loc Avg
MT00159	109.6**	31.2	78.7**	72.1**	70.6**	46.2	106.3*	71.2*	73.2**
Wahoo	101.8*	31.8	68.3	59.2	70.4*	42.5	99.7	69.5*	67.9*
Promontory	105.4*	30.3	74.2*	63.3	57.9	47.4	98.9	59.1	67.1
#+ Jagalene	103.3*	24.6	62.3	54.7	57.2	51.7*	115.9**	66.1*	67.0
MT9982	103.8*	29.3	75.1*	64.1	60.3	42.5	95.5	64.9*	66.9
MTR9997	105.0*	31.5	68.3	62.7	61.0	42.4	97.7	64.1*	66.6
Paul	107.2*	34.0*	69.9	64.7	59.8	40.2	91.8	65.3*	66.6
# Pryor	100.7	37.3**	69.9	60.5	63.7	45.1	85.7	64.9*	66.0
Neeley	97.0	30.3	69.3	69.0*	60.9	40.4	94.9	64.0*	65.7
Rocky	96.0	29.6	69.6	57.3	58.3	43.5	103.3	67.0*	65.6
+ Millenium	109.2*	28.0	59.4	46.2	56.3	54.0**	106.2*	64.8*	65.5
+ MT01148	108.0*	32.9	73.3*	64.9	59.1	39.9	86.2	58.6	65.4
+ MT0177	100.0	29.0	69.5	57.6	56.9	45.3	97.8	67.2*	65.4
+ MTW01133	99.4	32.3	69.4	59.4	46.7	51.9*	96.9	67.0*	65.4
Bighorn	96.5	31.6	62.5	62.5	56.8	41.3	100.3	66.0*	64.7
MT0097	100.0	31.5	72.5*	62.4	61.2	41.4	86.4	61.8	64.7
Gary (HWW)	107.1*	29.7	68.5	58.5	59.7	41.1	93.9	56.9	64.4
+ MTR01108	93.4	32.0	65.3	57.8	52.1	45.2	97.4	71.6**	64.4
Above (IMI)	106.8*	33.2	52.6	43.6	56.2	47.9	105.5*	67.9*	64.2
Quantum 542	104.9*	25.6	69.3	52.7	57.5	38.3	97.7	67.5*	64.2
MT9989	93.9	30.7	68.8	63.9	66.2	42.8	82.7	61.9*	63.9
Expedition	102.5*	30.2	55.5	46.9	58.8	46.1	101.1	65.0*	63.3
Judith	98.8	30.5	65.4	63.5	60.1	43.3	83.0	61.3	63.2
NuSky (HWW)	95.4	28.4	68.8	63.9	59.1	37.6	89.3	63.4*	63.2
# CDC Falcon	101.8*	28.8	65.8	60.7	55.7	41.9	81.7	64.7*	62.6
#+ BZ9W96-788	97.5	32.3	53.9	48.7	66.5*	45.2	89.8	66.3*	62.5
# NuHorizon (HWW)	102.7*	35.0*	56.8	45.8	44.9	48.9*	98.4	66.2*	62.3
+ MTW01143	97.2	27.7	68.4	61.8	57.5	41.4	84.2	59.3	62.2
+ MTW01132	98.9	28.6	59.8	62.6	61.3	41.3	82.4	61.6	62.1
# Golden Spike (HWW)	98.6	27.6	63.8	52.8	60.9	38.9	102.6	51.0	62.0
# NuFrontier (HWW)	106.5*	33.6*	58.8	48.1	44.2	46.2	93.1	65.5*	62.0
Morgan	91.6	25.4	72.4*	67.5*	55.8	39.7	80.7	61.6	61.8
NuWest (HWW)	99.0	22.8	65.0	57.0	58.3	44.2	84.0	61.9*	61.5
Prowers 99	100.2	26.0	50.7	46.4	53.2	43.8	100.9	66.9*	61.0
Jerry	94.2	25.5	67.3	60.3	47.4	42.4	87.3	60.8	60.7
+ MTW01146	92.2	31.4	65.2	60.6	56.2	38.0	88.5	52.9	60.6
MTS0031	90.1	30.2	61.2	59.1	57.9	35.6	87.1	58.6	60.0
#+ AP 502CL (IMI)	101.4	29.5	46.2	43.8	54.9	44.3	99.9	58.3	59.8
Erhardt	92.7	26.2	64.3	55.8	55.2	38.2	83.0	61.1	59.6
BigSky	93.8	27.8	61.7	59.8	55.4	32.9	83.7	56.4	58.9
#+ GM10004 (HWW)	97.2	27.2	54.2	49.1	56.8	37.0	85.0	64.0*	58.8
+ MT101158 (IMI)	98.4	28.1	49.4	48.5	50.3	41.3	91.7	63.0*	58.8
Vanguard	90.0	32.1	57.0	49.8	52.6	37.1	85.5	64.4*	58.6
Tiber	95.2	26.9	61.0	60.3	51.0	38.0	76.0	57.7	58.3
+ MTS0131	83.0	31.4	59.1	49.8	52.7	40.8	77.9	66.4*	57.6
Elkhorn	86.5	17.8	62.2	67.3*	55.6	36.4	74.9	52.8	56.7
+ MTS0125	86.2	27.9	60.5	45.7	52.6	39.4	85.6	54.8	56.6
Norstar	78.4	18.9	68.8	69.6*	54.9	32.7	75.8	45.9	55.6
Rampart	83.9	30.5	50.5	47.4	42.4	40.2	80.7	60.9	54.6
Average	98.0	29.3	63.9	57.3	56.8	42.1	91.3	62.4	62.6
LSD (0.05)	7.9	4.2	7.3	5.8	8.3	5.7	10.8	9.7	5.7
C.V. (%)	4.6	8.0	6.6	6.3	8.2	4.8	6.7	8.9	9.3
P-value (Varieties)	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.0004	<.0001

+ = new for 2003, '#' = paid entry

Table 2. 2003 Intrastate Winter Wheat Test (Exp. 35): 8 Location Test Weight (lb/bu)

Cultivar/Line	Bozeman LAT	Havre LAT	Sidney LAT	Williston RCB	Kalispell 1 rep	Moccasin RCB	Huntley LAT	Conrad 1 rep	8 Loc Avg
#+ Jagalene	61.9**	60.7	64.7**	64.5*	64.2	59.7**	63.7**	64.9	63.0**
# NuHorizon (HWW)	61.2*	62.6**	64.3*	63.0	63.7	58.9*	62.0	65.2	62.6*
Prowers 99	61.7*	62.1*	63.5	63.8	63.3	58.8*	63.5*	64.2	62.6*
Promontory	61.1	61.4	64.7*	65.0**	63.0	56.8	62.8*	64.2	62.4*
# NuFrontier (HWW)	61.3*	61.9	64.1*	63.0	64.0	56.8	63.7**	63.3	62.3*
Rocky	60.3	61.9*	63.6	63.4	63.0	56.5	63.1*	64.2	62.0
+ Millenium	61.2*	60.3	63.6	63.2	62.5	57.5*	62.5	63.9	61.8
Erhardt	61.2*	61.6	63.9*	63.5	62.0	56.1	62.4	63.0	61.7
#+ BZ9W96-788	60.2	61.1	64.1*	62.7	63.2	56.7	61.2	63.7	61.6
+ MTW01132	60.9	61.9	63.6	63.1	62.4	57.9*	59.4	63.3	61.6
Expedition	60.3	60.6	62.7	63.6	64.0	55.6	61.8	62.9	61.4
Bighorn	58.9	62.1*	63.2	62.6	62.9	55.4	62.3	62.7	61.3
Tiber	59.9	61.7	63.1	62.7	61.9	56.4	62.7*	62.0	61.3
+ MTR01108	58.8	61.8	63.0	63.1	61.6	55.8	63.4*	62.4	61.2
+ MTI01158 (IMI)	60.5	60.9	61.5	62.7	63.3	55.0	62.0	62.9	61.1
+ MT0177	59.1	61.1	62.5	62.8	61.6	56.8	60.5	63.2	61.0
MTR9997	59.9	61.3	62.7	62.6	62.0	55.6	62.2	62.0	61.0
Quantum 542	60.1	60.3	63.1	62.9	62.9	54.5	60.5	63.2	60.9
Vanguard	59.5	61.2	61.8	61.5	61.9	55.9	62.3	62.9	60.9
Above (IMI)	60.5	59.7	62.4	62.2	62.7	54.6	62.3	62.2	60.8
BigSky	59.4	61.4	63.2	62.9	61.9	54.6	61.3	61.8	60.8
Rampart	59.3	61.2	62.2	61.2	61.9	57.0	62.0	61.7	60.8
MT0097	59.5	61.6	63.2	62.3	61.5	54.9	61.3	61.3	60.7
MTS0031	59.7	61.3	62.5	61.7	62.8	53.9	62.7*	61.2	60.7
+ MTS0131	58.5	61.8	62.1	61.9	62.2	56.6	60.6	61.8	60.7
+ MTW01133	58.7	60.3	62.4	62.3	60.6	57.3*	60.2	61.8	60.5
Neeley	59.2	61.3	63.0	62.4	61.7	54.8	60.4	61.3	60.5
Norstar	58.9	62.0*	61.7	61.6	60.9	57.1	63.0*	58.4	60.5
NuSky (HWW)	58.7	60.8	62.0	61.9	62.6	55.0	61.7	61.0	60.5
NuWest (HWW)	58.6	60.4	62.1	62.0	61.1	57.3*	61.1	61.4	60.5
#+ GM10004 (HWW)	59.3	60.8	62.5	61.4	61.7	54.7	60.8	62.2	60.4
# CDC Falcon	57.7	60.1	63.1	62.4	60.4	54.9	59.0	63.0	60.1
Elkhorn	58.9	60.6	61.2	61.2	60.3	56.7	62.6*	59.2	60.1
Jerry	58.2	60.2	62.0	62.1	60.6	54.7	61.0	60.8	60.0
MT00159	58.1	60.0	61.7	62.1	61.7	54.1	60.4	61.5	60.0
+ MTS0125	57.8	61.1	61.2	60.3	61.4	55.5	61.7	60.6	60.0
Morgan	58.4	60.2	62.1	61.5	60.8	55.9	60.0	60.2	59.9
MT9982	57.8	60.3	62.0	62.6	62.4	53.7	60.7	59.8	59.9
#+ AP 502CL (IMI)	59.7	58.3	61.3	62.1	61.8	53.3	60.2	61.3	59.8
# Golden Spike (HWW)	58.8	61.1	61.6	61.3	62.0	52.4	60.8	60.6	59.8
Wahoo	57.4	60.4	62.5	62.2	60.6	53.7	59.7	62.2	59.8
+ MT01148	58.9	60.2	61.9	61.5	60.8	52.9	59.6	60.8	59.6
+ MTW01143	56.2	61.4	60.9	61.3	61.7	54.3	60.6	60.1	59.6
# Pryor	56.3	62.0*	61.7	60.9	59.3	55.1	59.4	60.1	59.4
Gary (HWW)	58.3	60.8	60.8	62.3	61.1	52.1	59.5	59.4	59.3
+ MTW01146	57.0	60.9	61.0	61.3	60.6	53.6	60.5	59.3	59.3
Paul	56.7	61.2	60.5	60.7	60.9	51.8	58.3	60.6	58.8
MT9989	56.0	59.4	61.1	60.4	60.6	53.4	57.8	60.8	58.7
Judith	56.6	58.7	60.8	60.1	59.7	53.2	57.1	60.5	58.3
Average	59.1	60.9	62.4	62.2	61.9	55.4	61.2	61.9	60.6
LSD (0.05)	0.8	0.7	0.9	0.7		2.4	1.1		0.9
C.V. (%)	0.8	0.6	0.9	0.7		1.5	1.0		1.5
P-value (Varieties)	<.0001	<.0001	<.0001	<.0001		<.0001	<.0001		<.0001

+ = new for 2003, # = paid entry

Table 3. 2003 Intrastate Winter Wheat Test (Exp. 35): 8 Location Protein (%)

Cultivar/Line	Bozeman Bulk	Havre Bulk	Sidney Bulk	Williston Bulk	Kalispell Bulk	Moccasin Bulk	Huntley Bulk	Conrad Bulk	8 Loc Avg
Rampart	15.0	16.0	15.0	15.4	14.1	16.2	15.9	14.7	15.3**
Erhardt	15.1	17.1	14.0	15.0	14.6	16.4	14.6	14.4	15.2*
Vanguard	15.1	15.7	15.2	15.1	13.4	16.6	15.9	13.9	15.1*
+ MTS0125	15.4	16.7	12.6	15.1	14.1	15.9	16.5	14.5	15.1*
MTR9997	14.9	16.9	13.3	15.6	14.1	15.4	15.3	14.4	15.0*
Elkhorn	15.2	16.7	13.6	13.7	13.8	15.9	16.0	14.8	15.0*
BigSky	15.1	16.1	12.4	15.3	13.8	16.6	14.8	14.7	14.9*
+ MTS0131	15.4	16.3	13.0	14.7	13.9	16.0	15.2	14.1	14.8*
+ MTI01158 (IMI)	14.2	15.8	13.3	14.6	14.8	16.6	14.8	14.2	14.8*
Tiber	15.2	16.1	13.7	14.6	14.1	15.2	14.9	14.4	14.8*
+ MTW01146	14.9	16.5	11.9	13.6	14.5	15.8	16.0	14.2	14.7
Jerry	14.4	16.6	13.4	14.2	13.8	16.1	14.2	14.3	14.6
+ MTW01143	15.4	16.5	11.9	13.8	13.7	15.8	15.8	13.8	14.6
Norstar	15.3	16.9	12.0	13.6	13.1	15.3	15.5	14.9	14.6
+ MTR01108	14.6	16.7	12.7	14.6	14.1	15.5	13.9	14.4	14.6
+ MTW01132	14.5	15.8	12.8	14.4	14.1	16.4	15.1	13.3	14.6
MTS0031	14.9	16.2	12.1	14.8	13.0	16.9	14.2	14.0	14.5
Prowers 99	14.4	14.9	13.5	15.1	13.7	15.3	14.8	14.3	14.5
#+ Jagalene	14.1	15.8	14.1	14.9	13.9	14.7	13.6	14.4	14.4
Judith	14.5	16.1	12.3	14.0	13.9	15.7	15.5	13.3	14.4
+ MT01148	14.3	16.4	12.5	13.3	13.5	15.7	15.5	14.1	14.4
MT0097	14.3	16.1	12.6	14.3	12.9	15.9	14.2	13.8	14.3
#+ BZ9W96-788	13.5	15.3	13.2	14.8	13.9	15.6	14.2	13.3	14.2
Neeley	14.9	15.6	11.6	13.6	13.5	15.3	15.3	13.7	14.2
+ Millenium	13.6	15.6	13.1	14.8	14.3	15.3	13.1	13.6	14.2
Quantum 542	14.0	15.7	12.5	14.1	13.6	15.4	14.4	13.7	14.2
NuSky (HWW)	14.7	16.3	12.4	14.4	12.6	15.2	13.4	14.1	14.1
Bighorn	14.3	15.7	12.8	14.2	12.6	15.7	13.5	13.9	14.1
MT9989	14.7	16.0	11.3	13.9	13.0	15.1	15.3	13.4	14.1
Paul	14.6	16.1	11.9	13.6	12.5	16.0	14.7	13.3	14.1
Wahoo	13.9	15.5	12.2	14.2	13.3	16.0	14.2	13.4	14.1
MT00159	14.1	15.9	11.4	14.2	12.9	15.6	15.2	13.3	14.1
#+ GM10004 (HWW)	14.0	16.1	11.9	14.1	12.8	15.8	13.8	13.9	14.1
Expedition	14.2	15.3	12.1	14.8	13.4	15.1	13.0	14.2	14.0
NuWest (HWW)	14.4	16.3	12.4	14.2	12.3	14.0	14.6	13.6	14.0
Promontory	13.6	14.8	12.7	13.8	13.7	15.6	14.6	12.9	14.0
Morgan	14.3	16.6	11.9	13.5	13.0	14.3	14.0	13.9	13.9
#+ AP 502CL (IMI)	13.2	14.2	13.8	14.2	13.2	15.9	12.7	14.1	13.9
Rocky	14.2	15.0	11.3	13.8	13.1	15.9	13.9	13.9	13.9
MT9982	14.1	15.7	12.3	14.0	12.3	15.6	13.2	13.6	13.9
+ MT0177	13.6	15.6	12.2	14.1	13.0	14.5	13.9	13.6	13.8
# Pryor	14.1	15.5	11.1	13.2	13.0	15.4	14.9	13.3	13.8
+ MTW01133	14.1	16.2	11.4	14.4	13.1	13.6	13.7	13.9	13.8
# NuHorizon (HWW)	13.6	14.6	13.0	14.5	12.8	14.2	13.3	13.3	13.7
# CDC Falcon	13.5	15.8	11.1	13.3	12.6	15.8	13.9	13.2	13.7
Above (IMI)	13.1	14.2	12.5	14.3	13.1	14.9	12.2	13.9	13.5
Gary (HWW)	13.5	15.0	12.6	12.8	11.5	14.7	14.0	13.7	13.5
# Golden Spike (HWW)	12.9	15.2	11.4	13.6	11.7	15.5	13.1	12.8	13.3
# NuFrontier (HWW)	12.4	14.0	11.4	12.8	12.1	15.2	12.0	13.0	12.9
Average	14.3	15.8	12.6	14.2	13.3	15.5	14.4	13.9	14.3
LSD (0.05)									0.6
C.V. (%)									4.2
P-value (Varieties)									<.0001

+ = new for 2003, # = paid entry

Table 4. 2003 Intrastate Winter Wheat Test (Exp. 35): 8 Location Plant height (in)

Cultivar/Line	Bozeman LAT	Havre LAT	Sidney LAT	Williston RCB	Kalispell LAT	Moccasin RCB	Huntley LAT	Conrad 1 rep	8 Loc Avg
# NuHorizon (HWW)	31.1	25.8	28.5	25.6	21.0	31.7	32.2	30.0	28.2
#+ AP 502CL (IMI)	31.9	25.0	28.0	26.0	21.3	32.0	32.8	29.0	28.3
Above (IMI)	33.2	25.4	28.8	26.1	21.5	34.0	34.6	31.0	29.3
+ MTW01133	32.1	26.2	30.8	27.6	23.0	32.3	33.2	31.0	29.5
# CDC Falcon	33.2	26.6	31.1	27.4	22.8	32.3	35.0	31.0	29.9
#+ BZ9W96-788	34.3	27.0	30.3	25.9	23.9	33.3	36.9	31.0	30.3
Bighorn	35.7	27.0	31.8	28.6	23.3	32.0	35.6	32.0	30.8
#+ Jagalene	34.0	27.4	30.9	28.6	22.5	34.7	35.9	32.0	30.8
Expedition	34.9	27.0	31.8	28.7	23.2	35.0	34.4	32.0	30.9
# Pryor	37.0	28.6	31.9	28.7	25.8	30.3	34.7	34.0	31.4
+ MTW01132	36.6	26.8	31.5	32.3	23.9	31.0	37.3	33.0	31.6
# NuFrontier (HWW)	35.5	27.4	32.0	27.6	22.5	37.0	36.6	35.0	31.7
Paul	37.2	27.3	32.9	29.3	23.1	33.0	35.9	36.0	31.8
+ MTR01108	37.4	29.0	33.6	27.4	25.9	34.7	36.7	34.0	32.3
+ MTI01158 (IMI)	35.6	30.3	30.8	29.7	26.3	36.0	39.0	34.0	32.7
Erhardt	37.6	27.6	34.3	30.6	26.0	35.0	37.4	34.0	32.8
Wahoo	35.6	29.1	34.6	31.8	25.1	34.3	39.1	35.0	33.1
Promontory	36.6	29.9	35.0	32.3	24.2	35.0	38.8	34.0	33.2
MT0097	38.7	28.5	34.3	30.3	25.2	34.7	39.1	37.0	33.5
MT9982	38.2	30.7	35.1	31.6	23.9	33.3	40.4	36.0	33.7
# Golden Spike (HWW)	39.8	30.6	34.4	32.2	25.2	34.0	39.9	35.0	33.9
Rampart	37.7	29.4	34.0	31.1	25.9	37.3	40.1	37.0	34.0
MT00159	37.3	29.9	35.2	33.1	25.1	36.3	39.9	36.0	34.1
+ MT0177	37.3	30.0	35.1	32.3	24.6	36.7	40.8	36.0	34.1
+ Millenium	37.9	30.8	35.0	29.4	26.0	39.0	41.8	35.0	34.4
+ MT01148	40.1	29.3	36.0	31.6	27.2	34.3	40.9	36.0	34.4
+ MTS0125	38.5	29.3	35.5	30.6	27.0	36.7	42.3	36.0	34.5
Morgan	37.5	29.8	36.2	34.1	26.5	34.7	39.8	38.0	34.6
MTR9997	38.7	29.8	36.8	32.5	27.2	37.3	39.6	35.0	34.6
Gary (HWW)	40.5	29.7	35.1	33.1	27.9	35.7	38.5	37.0	34.7
#+ GM10004 (HWW)	39.9	30.8	34.7	31.0	27.5	37.0	40.4	37.0	34.8
+ MTW01143	39.1	29.9	35.9	31.9	28.1	37.0	39.1	38.0	34.9
MT9989	39.6	31.6	34.9	32.3	25.4	36.3	42.1	38.0	35.0
+ MTS0131	38.6	29.3	35.4	31.9	27.3	38.7	40.7	38.0	35.0
+ MTW01146	39.5	31.1	35.7	32.4	28.3	36.0	40.2	37.0	35.0
NuWest (HWW)	39.4	30.9	36.0	32.3	25.9	37.0	39.7	39.0	35.0
Judith	41.4	30.5	36.4	32.9	26.2	36.7	40.7	37.0	35.2
MTS0031	39.7	29.6	37.0	33.7	28.1	35.3	42.2	37.0	35.3
NuSky (HWW)	40.6	30.8	36.5	34.0	28.3	34.3	40.2	38.0	35.3
Vanguard	37.8	31.1	37.0	32.9	27.2	37.0	44.2	39.0	35.8
Prowers 99	40.2	29.4	34.8	31.5	28.9	42.0	43.7	37.0	35.9
Quantum 542	40.4	28.6	37.3	33.3	29.1	38.0	43.5	37.0	35.9
Neeley	40.3	29.0	37.2	32.0	29.1	37.0	44.0	39.0	36.0
Rocky	40.8	30.0	38.5	32.8	26.8	41.0	45.4	38.0	36.7
Jerry	41.4	31.5	38.8	34.1	26.4	38.3	45.9	39.0	36.9
BigSky	40.4	31.8	39.4	35.4	30.9	38.3	44.6	40.0	37.6
Tiber	42.9	31.5	40.3	34.3	32.7	38.7	43.3	40.0	38.0
Elkhorn	44.2	30.1	42.6	40.4	33.3	38.3	46.8	45.0	40.1
Norstar	47.7	32.2	43.8	43.2	34.4	43.0	47.7	48.0	42.5
Average	38.1	29.2	34.8	31.4	26.1	35.8	39.7	36.0	33.9
LSD (0.05)	1.8	2.0	1.7	2.7	3.1	2.9	2.9		1.4
C.V. (%)	2.7	4.0	2.7	5.3	6.8	2.9	4.2		4.1
P-value (Varieties)	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001

+ = new for 2003, # = paid entry

Table 5. 2003 Intrastate Winter Wheat Test (Exp. 35): 8 Location Heading Date (Julian)

Cultivar/Line	Bozeman RCB	Havre LAT	Sidney LAT	Williston RCB	Kalispell LAT	Moccasin RCB	Huntley LAT	Conrad 1 rep	8 Loc Avg
#+ AP 502CL (IMI)	160.7	152.1	153.5	158.3	149.7	165.0	150.5	160.0	156.2
Above (IMI)	162.0	151.4	154.7	159.3	150.5	165.0	150.2	161.0	156.8
Expedition	162.4	153.1	154.1	158.7	150.0	165.0	151.4	161.0	157.0
#+ Jagalene	164.0	155.5	156.1	160.3	150.1	165.0	152.0	161.0	158.0
# NuHorizon (HWW)	164.0	155.5	158.2	161.0	150.9	165.0	152.2	161.0	158.5
+ MTW01133	164.6	159.9	156.3	160.3	151.9	166.0	153.2	161.0	159.2
Wahoo	165.0	156.6	157.7	161.3	151.5	166.0	153.4	163.0	159.3
+ Millenium	165.3	157.4	157.9	161.7	152.0	167.3	154.6	162.0	159.8
# NuFrontier (HWW)	164.7	157.9	159.1	162.3	151.6	166.3	152.7	164.0	159.8
Prowers 99	165.3	158.6	159.5	161.0	151.9	166.3	152.8	163.0	159.8
Quantum 542	166.1	157.0	159.0	161.0	151.8	166.3	153.4	164.0	159.8
#+ BZ9W96-788	166.3	157.5	158.9	162.7	151.2	167.0	154.0	162.0	160.0
Rocky	166.2	159.2	158.0	163.3	152.3	167.0	152.5	165.0	160.4
Promontory	167.7	157.7	159.9	161.3	151.8	167.3	154.9	165.0	160.7
# CDC Falcon	166.7	159.2	159.7	164.3	152.1	167.3	155.1	165.0	161.2
Judith	167.0	159.9	160.3	163.0	152.3	167.0	155.0	166.0	161.3
+ MT0177	167.3	162.0	160.9	164.3	152.3	166.3	155.2	163.0	161.4
Vanguard	166.7	158.8	162.3	164.7	152.0	167.0	156.2	164.0	161.5
MT9989	167.0	160.0	160.8	164.0	154.0	167.7	155.8	165.0	161.8
MT00159	168.7	160.7	160.6	165.3	154.9	157.7	159.2	168.0	161.9
Gary (HWW)	169.0	160.2	161.3	164.7	153.2	168.3	155.6	164.0	162.0
MTR9997	168.7	159.2	161.7	164.3	154.6	167.0	156.7	164.0	162.0
Bighorn	167.7	160.2	160.8	164.0	153.4	167.7	157.3	166.0	162.1
#+ GM10004 (HWW)	167.7	159.7	162.3	165.0	153.2	168.3	156.3	164.0	162.1
+ MTI01158 (IMI)	167.4	158.9	163.0	165.0	154.4	167.3	155.6	166.0	162.2
BigSky	168.1	159.5	161.1	164.0	156.0	167.7	156.2	167.0	162.5
MT0097	168.6	161.5	161.7	164.7	152.5	168.3	157.7	165.0	162.5
NuWest (HWW)	168.6	160.3	160.8	163.7	154.9	168.0	157.6	166.0	162.5
Erhardt	168.0	161.6	161.2	165.0	153.3	168.3	157.0	167.0	162.7
MTS0031	168.4	161.4	162.0	165.0	154.7	167.3	157.2	166.0	162.8
+ MTW01132	169.0	159.6	162.2	164.0	156.8	169.3	156.8	166.0	163.0
+ MTR01108	168.1	160.9	160.4	165.3	154.5	167.3	159.3	169.0	163.1
Rampart	167.7	161.2	163.4	165.7	156.2	167.7	155.7	167.0	163.1
+ MTS0131	169.3	161.4	162.8	165.3	156.0	167.0	157.9	166.0	163.2
Jerry	168.7	161.0	161.6	165.7	154.3	169.3	158.9	167.0	163.3
MT9982	169.0	161.4	160.9	165.3	155.0	168.3	159.5	167.0	163.3
Paul	168.3	161.3	163.4	165.3	154.7	168.3	157.1	168.0	163.3
NuSky (HWW)	169.1	161.0	162.1	165.7	156.4	169.3	157.7	167.0	163.5
Tiber	169.6	161.2	163.1	166.0	157.0	169.7	158.2	167.0	164.0
Neeley	168.6	161.6	162.2	165.3	156.1	170.3	159.0	170.0	164.1
# Golden Spike (HWW)	170.1	161.7	163.5	166.7	157.1	172.0	157.8	167.0	164.5
+ MT01148	169.7	162.3	163.5	166.0	158.2	170.0	158.3	168.0	164.5
Morgan	169.3	163.2	163.3	165.7	156.0	170.7	160.0	169.0	164.7
# Pryor	169.3	161.3	164.3	167.3	157.0	171.3	158.7	168.0	164.7
Elkhorn	169.7	162.5	162.6	166.0	157.6	170.7	159.2	170.0	164.8
+ MTS0125	170.0	163.2	164.1	167.3	156.7	169.7	159.1	171.0	165.1
+ MTW01146	171.0	162.4	164.4	167.0	158.7	171.0	158.7	168.0	165.2
+ MTW01143	172.0	163.5	163.7	167.3	158.8	171.3	159.4	170.0	165.8
Norstar	172.7	164.2	164.8	167.3	159.0	172.0	163.2	171.0	166.8
Average	167.6	159.7	160.8	164.0	154.1	167.8	156.2	165.6	162.0
LSD (0.05)	0.8	2.1	1.6	1.6	1.5	4.1	1.5		1.1
C.V. (%)	0.3	0.7	0.6	7.4	0.6	0.9	0.5		0.7
P-value (Varieties)	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001

+ = new for 2003, # = paid entry

Table 6. 2003 Intrastate Winter Wheat Test (Exp. 35): 2 Location Winter Survival (%)

Cultivar/Line		Sidney LAT	Williston LAT	2 Loc Avg
		15-May	16-May	
Norstar	Alberta, 1977	97.0**	73.3**	81.3**
Elkhorn	North Dakota, 1995	89.0*	60.0	75.0*
Morgan	WPB/Sask, 1996	86.9*	64.2*	75.0*
+ MT01148	Judith/Blizzard	80.4	55.8	69.6
Jerry	North Dakota, 2001	87.8*	50.8	69.2
# CDC Falcon	Sask/WPB, 1999	76.2	53.3	67.1
MT00159	Promontory/Judith	82.6	50.8	67.1
Erhardt	Montana, 1996	82.7	52.5	66.7
MT9982	Promontory/Judith	78.1	54.2	66.3
+ MTR01108	PI372129/Tiber//Judith/3/Tiber/4/MTSF1142/Arap	77.2	49.2	64.6
Judith	Montana, 1989	74.2	50.8	64.2
NuSky (HWW)	Montana, 2001	83.1	48.3	64.2
+ MT0177	ND8895//ND8892/KS87H6	78.2	48.3	63.8
NuWest (HWW)	Montana/Gen. Mills, 1994	79.2	46.7	63.8
Tiber	Montana, 1988	76.2	50.8	63.8
MT0097	Erhardt//Judith/Kestrel	79.4	46.7	62.9
+ MTW01133	NuWest/SD88191	80.3	45.8	62.9
BigSky	Montana, 2001	75.0	46.7	62.1
Wahoo	Nebraska, 2001	79.0	43.3	61.6
MT9989	Blizzard/Arapahoe	72.5	49.2	61.3
+ MTW01132	Neeley*2/PI262505	76.4	44.2	61.3
Expedition	South Dakota, 2002 (SD97457)	78.8	42.5	60.4
Rocky	AgriPro, 1978	80.7	41.7	60.4
+ MTW01143	Promontory/MT91366	79.1	39.2	60.0
Paul	Montana, 2003 (MT8030/Neeley)	69.0	47.5	59.6
+ MTW01146	Promontory/MT91366	71.1	45.0	59.2
Neeley	Idaho, 1980	67.8	50.8	59.2
Bighorn	WPB/Hybritech, 1985	71.2	43.3	58.3
MTR9997	PI262605/MT7863//Redwin	71.9	45.0	58.3
Promontory	Utah, 1990	74.5	44.2	58.3
Quantum 542	WPB/Hybritech, 1988	72.1	38.3	56.7
Gary (HWW)	Idaho, 2001	69.7	36.7	52.5
MTS0031	MTS92015//Vanguard/Norstar	65.1	36.7	50.8
# Golden Spike (HWW)	Utah/Gen. Mills, 1999	69.1	29.2	49.2
# Pryor	WPB, 2002 (BZ9W96-919)	61.6	34.2	47.1
#+ Jagalene	AgriPro, 2002	58.3	35.0	46.3
+ Millenium	Nebraska, 2000	55.6	33.3	44.2
+ MTS0131	Neeley/CH54//MTS92137	55.9	30.0	42.9
#+ BZ9W96-788	WPB, Hatten/HRW popn./MTSF1142	50.0	32.5	42.5
Vanguard	Montana, 1995	55.3	27.5	39.6
Above (IMI)	Colorado, 2001 (CLEARFIELD)	48.2	27.5	38.3
# NuFrontier (HWW)	General Mills, 2001	55.4	26.7	37.9
Prowers 99	Colorado, 1999	49.3	28.3	37.5
#+ GM10004 (HWW)	(BZ9W97-761), experimental white line	47.7	27.5	36.7
+ MTS0125	MTS92137/ID454	55.7	19.2	36.3
Rampart	Montana, 1996	47.9	22.5	33.3
#+ AP 502CL (IMI)	AgriPro, 2002 (CLEARFIELD)	29.9	32.5	32.5
# NuHorizon (HWW)	General Mills, 2001	39.0	17.5	29.6
+ MTI01158 (IMI)	Fidel/Tiber (CLEARFIELD)	27.3	21.7	23.8
Average		68.7	41.7	55.2
LSD (0.05)		12.4	10.5	8.7
C.V. (%)		10.4	15.5	13.9
P-value (Varieties)		<.0001	<.0001	<.0001

+ = new for 2003, # = paid entry

