

<u>PROJECT TITLE:</u>	2002 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 2002 Intrastate Winter Wheat Evaluation nursery was grown at Bozeman, Havre, Huntley, Kalispell, Moccasin, and Sidney, Montana and Williston, North Dakota.

The 2002 Montana winter wheat crop was smaller than average because droughty conditions and low prices reduced the number of acres seeded to winter wheat. Central and Eastern Montana had drier than normal growing season. The Western triangle and Southern Montana had extremely dry conditions that resulted in failure of the intrastate winter wheat nurseries at Conrad and Huntley. Cool April, May and early June weather minimized evapo-transpiration.

2002 winter wheat nursery mean yields ranged from a high of 119.4 bu/a at Kalispell down to 30.4 at Williston for the six locations harvested (Table 1). The experimental line MT00159 and the variety Jerry produced the top two six-location mean yields. Gary, with a 135.8 bu/a yield at Kalispell, had the highest yield at any one location. Overall, test weights were lower than usual and very low at the Bozeman and Williston locations (Table 2). The Williston low test weight may reflect increased suckering due to the winter kill. Nuplains, Prowers 99, Promontory, and MT00154 had the highest six location mean test weights. Grain protein levels were generally above average which often goes along with low test weights. Bozeman had the highest mean protein at 15.1% (Table 3). McGuire had the high mean protein at 15.8% followed by eight other MAES varieties and experimental lines. Mean plant height across the six locations ranged from 27" for NuHorizon up to 40" for Norstar (Table 4). Expedition and `Above`, an IMI tolerant wheat, had the earliest mean heading dates, June 16 and 17, respectively. Norstar had the latest mean heading date, June 25. Winter kill was significant at the Sidney and Williston locations. NuHorizon (HWW), Vanguard, Prowers, and Above were the varieties that had the most winter kill while Norstar, Elkhorn, Jerry, Ransom, and Morgan had the least winter kill (Table 6).

SUMMARY:

A good range of environmental conditions occurred across the intra-state winter wheat locations. 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. 2002 Intrastate Winter Wheat Test (Exp. 35): 6 (& 4) Location Yield (bu/a)

Cultivar/Line	Bozeman LAT	Havre LAT	Sidney LAT	Williston RCB	Kalispell RCB	Moccasin LAT	Huntley	Conrad	6 Loc Average	4 Loc Average
+ MT00159	97.4	39.4	47.4*	42.8*	124.5	50.8*			67.1**	no BZ,KS 45.1*
+ Jerry	87.7	38.3	51.8*	45.1**	118.1	49.2*			65.0*	46.1**
MT9982	90.5	38.7	47.6*	36.3	124.7	51.2*			64.8*	43.5*
+ MT0097	90.1	38.0	43.3	42.4*	124.6	47.5			64.3*	42.8*
+ MT0088	87.9	38.0	45.0	37.9*	127.4*	48.8*			64.2*	42.4*
# CDC Falcon	86.7	41.4	53.0**	40.8*	117.1	45.5	No Harvest: due to extremely dry conditions		64.1*	45.2*
MT9951	86.5	39.8	41.0	37.2	129.7*	49.3*			63.9*	41.8*
+ Wahoo	90.0	39.4	45.6	34.3	127.6*	45.5			63.7*	41.2*
Morgan	87.1	38.9	47.8*	40.0*	121.6	45.7			63.5*	43.1*
# Pryor (BZ9W96-919)	83.4	40.0	45.0	32.1	126.9	52.2*			63.3*	42.3*
DW Red	101.5*	33.0	39.2	27.2	130.5*	48.1			63.3*	36.9
Promontory	99.2*	33.5	42.2	30.4	128.1*	45.6			63.2*	37.9
Gary (HWW)	97.1	33.6	34.8	30.1	135.8**	45.9			62.9*	36.1
Paul, (MT9426)	86.8	33.8	45.2	38.5*	126.6	44.0			62.5*	40.4*
Neeley	88.0	35.8	45.1	36.0	121.1	47.9			62.3*	41.2*
MT9989	82.5	38.5	40.0	41.4*	117.3	51.7*		61.9*	42.9*	
Judith	84.6	34.9	42.2	32.3	129.1*	48.3		61.9*	39.4*	
MT9904	78.6	37.6	39.1	36.5	129.0*	50.0*		61.8*	40.8*	
Ransom	79.9	35.7	49.1*	42.7*	117.3	44.0		61.5*	42.9*	
+ MT00154	96.6	40.2	32.9	31.8	120.8	46.6		61.5*	37.9	
# BZ9W96-895	83.4	43.0	39.0	21.4	127.9*	53.7**		61.4*	39.3*	
+ MT00117	90.2	37.4	32.9	26.8	133.1*	48.2		61.4*	36.3	
Quantum 542	98.4*	35.4	41.2	24.0	122.8	44.5		61.1*	36.3	
NuWest (HWW)	82.6	38.0	43.8	34.2	118.6	48.2		60.9*	41.1*	
NuSky (HWW)	81.7	39.3	46.9*	36.8	112.8	47.2		60.8*	42.6*	
Rocky	86.4	35.6	39.9	29.7	125.5	47.0		60.7*	38.1	
+ Expedition (SD97457)	96.1	30.3	43.0	30.5	115.0	47.4		60.4*	37.8	
+ MTW0049	82.2	38.2	40.8	32.1	123.4	44.1		60.1*	38.8	
MTR9997	90.7	35.7	36.5	23.3	127.5*	46.3		60.0	35.5	
+ MT00118	96.0	34.4	34.5	24.4	120.6	48.8*		59.8	35.5	
+ MT0099	90.4	36.4	37.3	27.4	119.7	44.4		59.3	36.4	
Erhardt	81.9	32.1	42.1	35.5	113.5	43.3		58.1	38.3	
Nuplains (HWW)	93.3	34.4	36.8	23.6	115.5	44.1		58.0	34.7	
# NuFrontier (HWW)	85.6	35.3	35.3	23.2	118.5	46.9		57.5	35.2	
Tiber	81.0	30.8	39.6	28.4	114.4	48.4*		57.1	36.8	
Bighorn	87.7	32.7	39.7	26.8	113.3	42.6		57.1	35.5	
Norstar	70.9	38.0	43.8	41.3*	103.9	40.2		56.4	40.8*	
BigSky	72.5	33.7	42.7	35.4	104.0	48.5*		56.1	40.1*	
Prowers 99	88.1	37.5	30.9	19.1	115.9	45.2		56.1	33.2	
+ Above (IMI)	105.8**	31.6	32.3	9.4	112.8	44.3		56.0	29.4	
# Golden Spike (HWW)	88.0	31.7	38.7	17.2	118.4	41.4		55.9	32.3	
Elkhorn	69.9	35.5	40.9	38.8*	107.5	38.0		55.1	38.3	
+ MTS0031	79.4	34.3	32.2	22.5	110.8	44.8		54.0	33.5	
McGuire	82.6	32.9	31.7	25.1	109.2	42.0		53.9	32.9	
# BZ9W97-761 (HWW)	81.3	36.6	38.2	22.6	104.0	39.4		53.7	34.2	
# NuHorizon (HWW)	87.2	35.4	21.3	10.6	115.4	46.4		52.7	28.4	
Vanguard	81.3	33.7	24.0	20.8	104.1	43.5		51.2	30.5	
+ MTS0023	81.2	40.1	9.1	7.7	120.1	40.3		49.8	24.3	
Rampart	-	37.2	-	-	-	-		-	-	
Average	87.0	36.2	39.5	30.4	119.4	46.1		59.8	38.0	
LSD (0.05)	7.6	-	6.2	7.4	8.5	5.3		7.0	7.1	
C.V. (%)	5.1	11.3	9.2	15.0	4.4	6.7		10.3	13.3	
F-Test (Varieties)	8.04**	1.42ns	12.7**	11.6**	7.25**	3.38**		2.52**	3.35**	

Table 2. 2002 Intrastate Winter Wheat Test (Exp. 35): 6 Location Test Weight (lb/bu)

Cultivar/Line	Bozeman LAT	Havre LAT	Sidney RCB	Williston Bulk	Kalispell Bulk	Moccasin RCB	6 Loc Average
Nuplains (HWW)	58.7	60.6*	62.1**	57.6	63.7	61.2*	60.7**
Prowers 99	58.9	59.3	60.6*	56.1	65.1	62.5**	60.4*
Promontory	58.5	60.2*	61.2*	56.0	63.9	61.4*	60.2*
+ MT00154	60.6**	60.5*	58.6	57.1	63.5	60.3*	60.1*
Rocky	57.6	59.7*	60.6*	56.3	64.2	61.9*	60.1*
Tiber	58.7	60.7**	60.8*	56.5	63.5	59.8	60.0*
Erhardt	58.0	59.8*	60.8*	56.6	63.5	60.7*	59.9*
MTR9997	57.9	60.6*	60.5	56.1	63.5	60.4*	59.8*
BigSky	56.4	60.4*	61.0*	57.7	62.8	60.6*	59.8*
Norstar	58.3	59.8*	59.3	56.8	63.1	61.1*	59.7*
+ MTW0049	57.7	59.7*	60.7*	55.1	63.9	61.1*	59.7
+ Expedition (SD97457)	57.8	58.9	61.2*	55.5	63.6	60.6*	59.6
+ MT00118	59.0	60.1*	59.1	56.5	62.7	60.2*	59.6
# NuHorizon (HWW)	57.6	60.0*	60.7*	55.0	63.9	60.2*	59.6
McGuire	58.4	59.0	59.7	56.3	62.3	61.1*	59.5
NuWest (HWW)	56.5	60.0*	59.5	56.3	62.2	60.4*	59.2
+ MT0097	56.9	58.5	60.2	56.5	62.7	60.0	59.1
NuSky (HWW)	56.1	59.9*	59.8	56.8	62.1	59.4	59.0
DW Red	58.7	58.2	59.2	55.1	63.4	59.6	59.0
Quantum 542	57.8	59.4	60.1	55.7	62.2	58.2	58.9
# BZ9W96-895	54.6	59.0	59.8	56.1	63.2	60.2*	58.8
+ Jerry	56.3	57.9	60.3	55.8	62.9	59.7	58.8
# NuFrontier (HWW)	56.6	58.3	59.3	53.6	63.7	60.0	58.6
MT9982	55.9	59.5*	59.3	55.2	61.6	59.7	58.5
Bighorn	57.0	58.6	60.1	55.0	61.5	58.9	58.5
+ Above (IMI)	58.4	57.6	59.0	52.4	63.2	60.4*	58.5
+ MT00159	56.6	59.0	59.0	54.6	62.3	59.5	58.5
Vanguard	57.1	58.3	59.1	54.3	62.8	58.8	58.4
MT9904	54.1	58.5	59.2	56.2	62.1	59.7	58.3
+ MTS0031	56.7	58.0	58.3	53.9	62.9	59.7	58.3
MT9951	56.0	58.3	58.1	55.6	62.0	59.3	58.2
Gary (HWW)	56.2	58.6	59.1	54.5	61.6	58.9	58.2
# BZ9W97-761 (HWW)	55.7	58.6	58.7	55.7	61.5	58.7	58.1
Morgan	56.1	58.3	58.0	54.4	61.7	60.2*	58.1
Neeley	57.5	57.0	58.2	54.0	62.9	59.1	58.1
+ MTS0023	55.8	58.7	57.2	54.9	61.3	60.2*	58.0
Elkhorn	56.6	57.3	57.8	53.9	62.3	60.1	58.0
# Pryor (BZ9W96-919)	54.7	58.1	58.9	54.7	61.6	59.2	57.9
+ Wahoo	54.9	57.0	59.0	53.1	62.1	60.1	57.7
# CDC Falcon	53.9	57.0	58.8	53.4	61.6	59.1	57.3
+ MT0099	54.6	55.9	58.4	53.7	61.9	59.2	57.3
Paul, (MT9426)	54.5	58.0	57.9	55.3	60.6	56.7	57.2
# Golden Spike (HWW)	55.1	56.2	57.7	51.6	62.0	59.7	57.1
+ MT0088	55.0	55.8	57.9	53.0	61.4	58.6	57.0
+ MT00117	53.9	56.6	56.1	54.2	61.2	59.2	56.9
Ransom	54.0	56.6	58.2	52.4	61.2	58.6	56.8
Judith	53.8	57.3	56.7	52.6	61.7	57.5	56.6
MT9989	53.9	56.8	56.7	52.5	60.7	58.7	56.6
Rampart	-	59.0	-	-	-	-	-
Average	56.6	58.6	59.2	55.0	62.5	59.7	58.6
LSD (0.05)	1.1	1.2	1.5			2.3	0.9
C.V. (%)	1.1	1.1	1.6			2.3	1.4
F-Test (Varieties)	19.7**	10.8**	5.95**			1.99**	10.4**

Table 3. 2002 Intrastate Winter Wheat Test (Exp. 35): 6 Location Protein (%)

Cultivar/Line	Bozeman Bulk	Havre Bulk	Sidney Bulk	Williston Bulk	Kalispell Bulk	Moccasin Bulk	6 Loc Average
McGuire	15.7	15.9	15.4	16.8	14.4	16.7	15.8**
+ MTS0023	16.6	15.3	14.7	16.0	14.2	15.7	15.4*
Vanguard	16.4	15.3	14.4	15.2	14.4	16.1	15.3
+ MTS0031	16.3	14.8	13.6	15.7	13.4	16.8	15.1
BigSky	15.9	15.1	14.0	15.7	13.4	15.8	15.0
+ MT0099	15.8	15.9	14.0	15.7	13.0	15.5	15.0
+ MT00118	14.7	15.5	13.9	16.1	12.5	16.1	14.8
MTR9997	15.2	15.5	13.5	16.2	12.6	15.8	14.8
Erhardt	15.2	15.2	14.3	15.8	13.0	15.2	14.8
Elkhorn	15.8	14.8	13.6	15.2	13.1	16.1	14.8
+ MTW0049	16.4	14.8	12.9	15.9	12.6	15.6	14.7
Prowers 99	15.3	14.8	14.2	14.9	13.4	15.5	14.7
Tiber	15.4	14.9	13.9	15.2	12.8	15.3	14.6
Quantum 542	14.6	14.7	14.3	15.3	13.4	14.7	14.5
Bighorn	14.8	14.9	13.3	15.3	13.5	15.1	14.5
MT9989	15.5	14.5	13.4	14.7	12.7	15.3	14.4
MT9904	15.5	14.7	13.5	14.6	12.3	15.4	14.3
Paul, (MT9426)	15.4	14.2	13.0	15.5	12.4	15.4	14.3
+ Expedition (SD97457)	14.4	14.0	14.2	14.7	13.6	15.0	14.3
+ MT00154	14.3	15.0	13.7	14.8	13.4	14.6	14.3
MT9951	15.1	15.1	13.2	14.6	12.6	15.2	14.3
# BZ9W97-761 (HWW)	14.8	14.9	13.4	14.6	12.3	15.5	14.3
+ MT0097	14.8	14.7	13.1	15.3	12.6	15.0	14.3
Morgan	14.6	15.0	13.7	15.0	12.4	14.4	14.2
Nuplains (HWW)	15.0	14.6	12.8	14.8	13.0	14.9	14.2
Neeley	15.8	14.3	12.8	14.4	12.5	15.0	14.1
+ Jerry	14.9	14.7	13.2	15.1	12.6	14.3	14.1
Judith	15.3	14.5	13.2	14.8	12.3	14.6	14.1
DW Red	14.1	14.7	13.3	14.4	12.5	15.6	14.1
NuSky (HWW)	15.5	14.7	13.4	15.0	12.1	13.9	14.1
NuWest (HWW)	14.8	14.7	13.1	14.9	12.6	14.4	14.1
# CDC Falcon	15.6	14.2	13.0	14.7	12.0	14.9	14.1
Ransom	15.4	14.2	12.7	14.3	12.5	15.3	14.1
+ MT00117	14.8	14.8	13.8	14.7	11.7	14.5	14.1
+ Wahoo	15.0	14.1	12.6	14.7	12.2	15.2	14.0
Norstar	15.0	14.5	12.9	15.2	12.2	13.9	14.0
Rocky	14.9	14.2	13.3	14.4	12.1	14.7	13.9
MT9982	15.3	14.3	12.5	14.6	12.3	14.5	13.9
+ MT00159	14.9	14.3	12.5	14.8	12.1	14.5	13.9
Promontory	14.8	13.9	12.9	14.1	12.1	15.2	13.8
+ Above (IMI)	13.9	13.5	13.5	13.9	13.2	14.8	13.8
# BZ9W96-895	14.8	14.1	12.7	14.4	11.9	14.6	13.8
# NuHorizon (HWW)	14.5	13.9	13.3	14.8	12.2	13.8	13.8
# Golden Spike (HWW)	14.8	14.5	13.0	14.2	10.8	14.7	13.7
# Pryor (BZ9W96-919)	15.3	13.7	11.9	14.1	11.6	15.0	13.6
Gary (HWW)	14.0	13.7	12.3	14.1	11.2	15.0	13.4
# NuFrontier (HWW)	14.6	13.6	12.4	13.5	11.4	14.1	13.3
+ MT0088	13.0	12.9	11.2	13.7	11.3	13.0	12.5
Rampart	-	15.5	-	-	-	-	-
LSD (0.05)	15.1	14.6	13.3	14.9	12.6	15.0	14.3
C.V. (%)							0.5
F-Test (Varieties)							3.1
							10.2**

Table 4. 2002 Intrastate Winter Wheat Test (Exp. 35): 6 Location Plant Height (inches).

Cultivar/Line	Bozeman RCB	Havre LAT	Sidney LAT	Williston RCB	Kalispell RCB	Moccasin LAT	6 Loc Average
# NuHorizon (HWW)	38.6	23.8	24.1	19.3	32.0	27.5	27.6
# CDC Falcon	35.6	22.1	28.0	23.5	32.4	27.3	28.2
+ Above (IMI)	37.5	24.7	24.9	21.7	35.3	27.7	28.6
Nuplains (HWW)	41.4	23.2	25.4	21.8	32.7	27.4	28.7
Bighorn	38.4	23.5	26.9	21.5	35.3	28.8	29.1
+ Expedition (SD97457)	40.9	23.3	28.4	25.3	35.0	28.1	30.2
# Pryor (BZ9W96-919)	40.4	25.7	29.0	22.8	33.9	30.2	30.3
DW Red	40.5	24.2	27.8	24.7	35.0	30.2	30.4
+ MTW0049	40.0	22.3	29.1	23.4	36.6	30.7	30.4
Paul, (MT9426)	39.9	23.6	29.9	26.0	34.7	28.4	30.4
# NuFrontier (HWW)	41.0	25.8	27.8	24.1	34.9	30.6	30.7
+ Wahoo	40.7	24.5	30.2	26.4	34.4	30.2	31.1
# BZ9W96-895	40.3	25.2	28.5	23.8	36.6	32.6	31.2
Promontory	39.7	25.7	28.9	25.7	35.7	31.5	31.2
+ MT0097	41.0	25.4	27.7	25.3	36.6	31.6	31.3
Erhardt	41.7	25.3	28.9	23.4	37.3	32.0	31.4
+ MT00159	41.1	24.9	29.4	27.2	35.2	32.5	31.7
MTR9997	40.0	27.1	28.8	24.7	38.6	30.9	31.7
+ MT00118	42.8	25.6	28.7	24.4	38.7	30.6	31.8
+ MTS0023	44.7	27.8	25.5	23.3	40.9	30.2	32.1
+ MT0088	39.3	26.1	31.8	26.5	37.4	32.9	32.3
+ MT00117	42.7	25.2	29.3	26.0	37.8	33.4	32.4
MT9982	42.2	25.6	30.5	26.5	37.1	32.3	32.4
+ MT0099	41.1	26.3	29.7	26.4	38.1	33.4	32.5
McGuire	44.1	27.3	29.0	26.4	35.6	32.9	32.6
+ MTS0031	43.5	25.7	31.4	25.3	37.7	32.6	32.7
Gary (HWW)	42.8	24.4	31.6	26.2	40.7	30.8	32.8
NuWest (HWW)	44.0	26.9	31.4	26.5	37.0	30.9	32.8
Morgan	42.3	23.6	32.2	28.1	38.5	33.1	33.0
Judith	42.4	24.9	30.5	28.6	38.6	33.7	33.1
MT9989	43.3	26.1	30.1	26.2	39.5	34.2	33.2
# BZ9W97-761 (HWW)	45.2	25.4	32.0	25.5	38.5	33.2	33.3
# Golden Spike (HWW)	44.1	26.1	32.2	26.8	39.4	31.2	33.3
Vanguard	45.3	26.6	30.1	24.8	39.9	33.1	33.3
MT9904	46.0	25.7	30.4	26.0	40.8	31.5	33.4
NuSky (HWW)	43.7	28.2	32.5	27.0	38.3	30.9	33.4
Quantum 542	45.8	25.7	31.6	27.0	39.5	32.7	33.7
+ MT00154	45.4	27.3	29.4	26.6	41.5	33.2	33.9
Neeley	46.5	26.0	33.9	29.1	39.1	30.2	34.1
Prowers 99	46.7	27.2	30.8	26.4	39.8	34.1	34.2
Ransom	46.2	27.2	32.7	28.3	39.8	31.1	34.2
BigSky	45.7	26.0	32.4	28.6	39.4	33.4	34.3
Rocky	46.2	26.8	32.0	28.5	40.3	33.8	34.6
+ Jerry	47.1	25.5	32.9	29.1	39.4	34.0	34.7
MT9951	47.4	27.7	32.1	29.1	42.1	33.6	35.3
Tiber	48.3	27.3	33.5	29.5	41.7	34.1	35.7
Elkhorn	48.8	27.3	37.0	34.4	45.7	32.4	37.6
Norstar	53.3	29.5	34.9	37.4	49.9	34.8	40.0
Rampart	-	26.2	-	-	-	-	-
Average	43.1	25.7	30.2	26.2	38.0	31.6	32.4
LSD (0.05)	2.6	2.5	2.9	3.1	1.9	3.4	1.8
C.V. (%)	3.6	5.7	5.6	7.2	3.3	6.3	4.8
F-Test (Varieties)	13.3**	2.94**	6.34**	7.8**	20.0**	2.68**	13.3**

Table 5. 2002 Intrastate Winter Wheat Test (Exp. 35): 6 Location Heading Date (Julian)

Cultivar/Line	Bozeman RCB	Havre RCB	Sidney LAT	Williston RCB	Kalispell RCB	Moccasin RCB	6 Loc Average
+ Expedition (SD97457)	167.3	172.0	165.7	168.3	162.3	168.7	167.4
+ Above (IMI)	166.3	171.3	168.2	173.3	161.3	168.7	168.2
# NuHorizon (HWW)	168.0	171.3	169.8	172.7	162.0	171.0	169.1
McGuire	171.0	171.0	168.5	170.3	162.3	172.0	169.2
+ Wahoo	169.0	172.7	171.0	170.0	162.7	170.3	169.3
# NuFrontier (HWW)	170.0	172.0	169.8	172.7	163.7	171.0	169.9
Prowers 99	169.7	171.7	171.8	175.0	162.7	172.7	170.6
+ MT0099	172.0	175.0	171.1	173.3	165.0	173.0	171.6
Quantum 542	172.3	176.0	171.0	173.7	164.0	173.0	171.7
Rocky	173.3	174.0	171.4	175.0	165.0	173.0	172.0
# CDC Falcon	175.3	175.7	169.6	174.3	164.7	173.7	172.2
Nuplains (HWW)	171.7	176.7	172.5	175.0	164.3	172.7	172.2
Ransom	175.0	174.7	170.0	174.3	165.0	174.7	172.3
+ MT0088	174.7	176.3	170.0	174.7	165.3	173.3	172.4
Erhardt	175.0	175.3	170.0	173.7	166.7	174.0	172.5
Promontory	174.0	175.0	172.0	174.3	164.3	175.3	172.5
Judith	174.0	178.0	172.3	174.3	165.0	172.7	172.7
MT9989	174.0	177.3	172.7	173.7	165.3	173.3	172.7
# BZ9W96-895	174.3	176.3	172.2	175.3	165.0	174.3	172.9
+ Jerry	175.7	176.7	171.3	173.0	167.3	173.3	172.9
MT9904	174.0	175.7	172.6	176.0	166.3	173.3	173.0
MTR9997	173.7	175.3	173.2	176.3	165.3	174.0	173.0
+ MTS0031	173.7	177.7	171.9	175.3	165.7	173.7	173.0
Bighorn	174.3	177.7	171.9	175.0	166.0	174.3	173.2
+ MT00118	174.0	176.7	174.2	175.0	165.3	173.7	173.2
Vanguard	174.3	176.7	174.6	174.7	166.3	174.0	173.4
# BZ9W97-761 (HWW)	175.3	177.0	172.5	176.0	165.3	175.0	173.5
+ MT00154	173.7	176.7	174.8	175.7	166.7	173.3	173.5
NuWest (HWW)	175.0	178.0	172.2	175.0	166.7	174.0	173.5
BigSky	175.0	178.3	172.3	175.0	167.3	174.0	173.7
+ MT00159	175.7	178.0	172.0	174.3	166.0	176.0	173.7
+ MT00117	175.0	175.7	174.5	176.0	166.7	174.7	173.8
+ MT0097	175.3	179.3	172.1	175.0	166.3	175.0	173.8
MT9951	175.0	179.0	173.4	175.0	166.7	174.0	173.9
NuSky (HWW)	175.0	178.3	172.6	175.3	167.0	175.3	173.9
DW Red	175.7	177.0	172.2	175.3	166.7	177.0	174.0
MT9982	176.0	178.3	172.5	175.0	166.7	175.7	174.0
+ MTW0049	175.0	178.3	173.9	175.0	166.7	175.0	174.0
Neeley	176.3	177.0	172.9	174.7	167.3	176.0	174.0
Gary (HWW)	176.4	178.7	172.7	175.3	165.7	176.0	174.1
Tiber	175.0	177.3	173.5	175.7	168.0	175.0	174.1
Paul, (MT9426)	176.0	177.7	174.0	175.0	166.7	176.0	174.2
# Pryor (BZ9W96-919)	175.7	179.7	172.9	175.0	167.3	175.7	174.4
Elkhorn	176.7	178.3	173.5	175.3	167.7	175.7	174.5
Morgan	176.3	179.3	173.9	174.7	167.7	177.7	174.9
# Golden Spike (HWW)	176.0	180.0	173.7	176.0	169.0	176.7	175.2
+ MTS0023	176.7	179.3	175.8	176.7	169.0	176.7	175.7
Norstar	180.3	178.3	174.9	175.3	168.7	177.7	175.9
Rampart	-	175.0	-	-	-	-	-
Average	174.0	176.4	172.1	174.5	165.8	174.1	172.8
LSD (0.05)	1.1	2.5	1.8	1.6	0.3	1.2	1.2
C.V. (%)	0.4	0.9	0.6	0.6	0.5	0.4	0.6
F-Test (Varieties)	47.3**	7.06**	8.81**	7.8**	14.2**	24.4**	18.2**

Table 6. 2002 Intrastate Winter Wheat Test (Exp. 35): 2 Location Winter Survival (%).

Cultivar/Line	Pedigree	Sidney LAT	Williston LAT	2 loc Average
Norstar	Alberta, 1977	89.6**	55.7**	72.7**
Elkhorn	North Dakota, 1995	81.2*	48.8*	65.0*
+ Jerry	North Dakota, 2001	88.1*	41.5	64.8*
Ransom	North Dakota, 1998	82.3*	45.0	63.6*
Morgan	WPB/Sask, 1996	84.5*	36.5	60.5
Erhardt	Montana, 1996	86.9*	27.8	57.3
+ MT0088	S86-736/SD89341	83.1*	30.9	57.0
NuSky (HWW)	Montana, 2001	87.8*	24.6	56.2
# CDC Falcon	Sask/WPB, 1999	84.4*	27.2	55.8
+ Expedition (SD97457)	Tomahawk/Bennett	80.3*	27.4	53.9
+ MT00159	Promontory/Judith	72.8*	32.1	52.5
NuWest (HWW)	Montana/Gen. Mills, 1994	73.6*	29.1	51.4
Paul (MT9426)	Montana, 2003 (MT8030/Neeley)	74.9*	27.0	50.9
MT9982	Promontory/Judith	72.3*	23.4	47.8
BigSky	Montana, 2001	71.7*	23.9	47.8
+ MT0097	Erhardt//Judith/Kestrel	69.4	25.8	47.6
+ Wahoo	Nebraska, 2001	69.8*	24.4	47.1
+ MTW0049	Judith/PI262605//S86-740	67.8	23.9	45.8
# Pryor (BZ9W96-919)	WPB, Hatten/Abilene	71.1*	19.2	45.2
MT9989	Blizzard/Arapahoe	58.4	30.0	44.2
Neeley	Idaho, 1980	57.8	26.1	41.9
MT9951	Tiber/Centurk	61.7	19.7	40.7
Judith	Montana, 1996	63.0	17.4	40.2
Tiber	Montana, 1988	61.1	14.9	38.0
+ MT0099	Erhardt//Judith/Kestrel	61.2	13.4	37.3
Quantum 542	WPB/Hybritech, 1988	63.3	10.8	37.0
Rocky	Agripro, 1978	51.5	17.2	34.3
# BZ9W97-761 (HWW)	WPB, Nuwest*2/solid stem line	58.4	9.9	34.1
MT9904	MT85200/Tiber	50.0	17.8	33.9
Gary (HWW)	Idaho, 2001	52.7	14.2	33.4
Bighorn	WPB/Hybritech, 1985	53.2	13.4	33.3
DW Red	Idaho, 2001	53.5	12.6	33.0
Nuplains (HWW)	Nebraska, 1998	51.3	12.8	32.0
+ MTS0031	MTS92015//Vanguard/Norstar	53.9	9.3	31.6
# NuFrontier (HWW)	General Mills, 2001	54.3	8.9	31.6
Promontory	Utah, 1990	44.5	17.3	30.9
# Golden Spike (HWW)	Utah/Gen. Mills, 1999	53.4	8.2	30.8
McGuire	Montana, 1996	44.0	16.8	30.4
MTR9997	PI262605/MT7863//Redwin	52.7	8.1	30.4
# BZ9W96-895	WPB, male sterile population	45.8	9.3	27.6
+ Above (IMI)	Colorado, 2001	34.3	8.4	21.4
Prowers 99	Colorado, 1999	35.1	7.3	21.2
+ MT00118	PI262605/MT7863//Redwin	31.4	8.9	20.2
+ MT00117	Judith/PI499377	25.2	7.2	16.2
+ MT00154	SD88191//Judith/Blizzard	17.5	10.5	14.0
Vanguard	Montana, 1995	16.8	7.2	12.0
# NuHorizon (HWW)	General Mills, 2001	12.8	3.9	8.3
+ MTS0023	MTS92021//Judith/Arapahoe	2.1	3.3	2.7
Rampart **NO**	Montana, 1996	-	-	-
Average		59.0	20.1	39.6
LSD (0.05)		19.8	8.8	11.3
C.V. (%)		19.6	25.2	25.2
F-Test (Varieties)		9.07**	14.5**	15.2**

+ = new for 2002, '#' = paid entry'