PROJECT TITLE: Intrastate, Advanced Yield, and Preliminary Winter Wheat Variety Performance Trials

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OBJECTIVES:
To evaluate agronomic performance of new experimental lines and existing winter wheat varieties in Central Montana.

RESULTS:

The statewide nurseries were seeded with a double disk drill into untilled 2000 barley stubble. Much of the stubble had deteriorated, but there was sufficient stubble to influence snow catch. The 50 pounds per acre of a 20-20-20-10 blend was placed with the seed at seeding. The intrastate and advanced yield trials were harvested prior to receiving significant rain. Therefore, the grain test weight should be generally better than the preliminary nurseries. The advanced yield nursery had deer trails through one of the ranges.

Intrastate Nursery – Winter wheat yields and test weights were near average with a nursery mean yield of 46.1 bu/a and a mean test weight of 59.7 lbs/bu (Table 2). Two Western Plant Breeder entries, BZ9W96-895 and Pryor, top the nursery yield ranks with 53.7 and 52.2 bu/a, respectively. Prowers 99 had the nursery's high test weight at 62.5lbs/bu. Protein levels averaged 15.0 with MTS 00031producing grain with a 16.8 % protein content. The mean heading date was 174.1 or June 23, 2002. Multi-year tables with comparisons to Tiber's performance for the same years are presented for yield, test weight, plant height, and protein content (Tables 3-6).

Advanced Yield Nursery – The advanced yield nursery mean yield of 41.9 bu/a was lower than the NRPN and Intra-state (Table 7). This should primarily be due to some of the lines not panning out. However, it may be in part due to the soil being of slightly lower quality in the center and eastern portion of the NW8 nursery field. Soil quality may have had a greater effect on test weight than it had on yield, as the nursery mean test weight was 57.2 lbs/bu. Ten experimental lines had mean yields greater than any of the five check varieties.

Preliminary A and B – The performance results of the preliminary nurseries are used to advance the lines to the advanced yield nursery or eliminate them from future consideration. Preliminary A was harvested prior to early August rains and Preliminary B was harvested after the rains. The difference in nursery mean test weights for Preliminary A and Preliminary B, reflect the impact rain can have on grain density and potentially on over all quality (Tables 8 and 9).

SUMMARY:
The winter wheat yields were much above what would normally be anticipated for the levels of spring soil moisture and spring precipitation. Cooler than average temperatures in April and May contributed to lower evaporative demand and reduced soil drying.

FUTURE PLANS:
These nurseries will be continued in the 2002-2003 crop year. However, they will not be seeded into untilled stubble because suitable weed control was not maintained through the 2002 growing season.

Table 2 2002 Intrastate Winter Wheat Variety Trial
Exp. 3507 Central Agricultural Research Center, Moccasin, MT

sym	Cultivar/Line	Pedigree	Grain Yield	Test Weight	% Stand	Heading date	Plant Height	Grain Protein
			bu/a	lbs/bu	%	days	inches	%
#	BZ9W96-895	WPB, male sterile population	53.7	60.2	89.0	174.3	32.6	14.6
#	Pryor(BZ9W96-919)	WPB, Hatten/Abilene	52.2	59.2	85.4	175.7	30.2	15.0
	MT9989	Blizzard/Arapahoe	51.7	58.7	85.0	173.3	34.2	15.3
	MT9982	Promontory/Judith	51.2	59.7	70.0	175.7	32.3	14.5
*	MT00159	Promontory/Judith	50.8	59.5	82.6	176.0	32.5	14.5
	MT9904	MT85200/Tiber	50.0	59.7	87.3	173.3	31.5	15.4
	MT9951	Tiber/Centurk	49.3	59.3	87.9	174.0	33.6	15.2
*	Jerry	North Dakota, 2001	49.2	59.7	82.4	173.3	34.0	14.3
*	MT00118	PI262605/MT7863//Redwin	48.8	60.2	83.8	173.7	30.6	16.1
*	MT0088	S86-736/SD89341	48.8	58.6	85.5	173.3	32.9	13.0
	BigSky	Montana, 2001	48.5	60.6	87.0	174.0	33.4	15.8
	Tiber	Montana, 1988	48.4	59.8	83.8	175.0	34.1	15.3
	Judith	Montana, 1989	48.3	57.5	85.4	172.7	33.7	14.6
*	MT00117	Judith/PI499377	48.2	59.2	88.1	174.7	33.4	14.5
	NuWest (HWW)	Montana/Gen. Mills, 1994	48.2	60.4	90.7	174.0	30.9	14.4
	DW Red	Idaho, 2001	48.1	59.6	80.2	177.0	30.2	15.6
	Neeley	Idaho, 1980	47.9	59.1	81.9	176.0	30.2	15.0
*	MT0097	Erhardt//Judith/Kestrel	47.5	60.0	81.3	175.0	31.6	15.0
*	SD97457	Tomahawk/Bennett	47.4	60.6	83.4	168.7	28.1	15.0
	NuSky (HWW)	Montana, 2001	47.2	59.4	87.6	175.3	30.9	13.9
	Rocky	Agripro, 1978	47.0	61.9	83.9	173.0	33.8	14.7
#	NuFrontier (HWW)	General Mills, 2001	46.9	60.0	85.1	171.0	30.6	14.1
*	MT00154	SD88191//Judith/Blizzard	46.6	60.3	86.9	173.3	33.2	14.6
#	NuHorizon (HWW)	General Mills, 2001	46.4	60.2	80.9	171.0	27.5	13.8
	MTR9997	PI262605/MT7863//Redwin	46.3	60.4	87.0	174.0	30.9	15.8
	Gary (HWW)	Idaho, 2001	45.9	58.9	76.2	176.0	30.8	15.0
	Morgan	WPB/Sask, 1996	45.7	60.2	81.4	177.7	33.1	14.4
	Promontory	Utah, 1990	45.6	61.4	73.0	175.3	31.5	15.2
#	CDC Falcon	Sask/WPB, 1999	45.5	59.1	83.3	173.7	27.3	14.9
*	Wahoo	Nebraska, 2001	45.5	60.1	89.7	170.3	30.2	15.2
	Prowers 99	Colorado, 1999	45.2	62.5	82.1	172.7	34.1	15.5

(Continued)

Table 2 2002 Intrastate Winter Wheat Variety Trial
Exp. 3507 (continued)

sym	Cultivar/Line	Pedigree	Grain Yield	Test weight	% Stand	Heading date	Plant height	Grain Protein
			bu/a	lbs/bu	%	days	inches	%
*	MTS0031	MTS92015//Vanguard/Norstar	44.8	59.7	80.7	173.7	32.6	16.8
	Quantum 542	WPB/Hybritech, 1988	44.5	58.2	85.7	173.0	32.7	14.7
*	MT0099	Erhardt//Judith/Kestrel	44.4	59.2	85.8	173.0	33.4	15.5
*	Above (IMI)	Colorado, 2001	44.3	60.4	77.9	168.7	27.7	14.8
	Nuplains (HWW)	Nebraska, 1998	44.1	61.2	83.5	172.7	27.4	14.9
*	MTW0049	Judith/PI262605//S86-740	44.1	61.1	82.2	175.0	30.7	15.6
	MT9426, (Paul)	Montana, 2003 (MT8030/Neeley)	44.0	56.7	88.0	176.0	28.4	15.4
	Ransom	North Dakota, 1998	44.0	58.6	86.2	174.7	31.1	15.3
	Vanguard	Montana, 1995	43.5	58.8	74.5	174.0	33.1	16.1
	Erhardt	Montana, 1996	43.3	60.7	87.0	174.0	32.0	15.2
	*XXXXXXX **NO***	Montana, 1996	42.7	56.8	81.6	177.3	30.4	14.8
	Bighorn	WPB/Hybritech, 1985	42.6	58.9	80.3	174.3	28.8	15.1
	McGuire	Montana, 1996	42.0	61.1	80.7	172.0	32.9	16.7
#	Golden Spike (HWW)	Utah/Gen. Mills, 1999	41.4	59.7	82.0	176.7	31.2	14.7
*	MTS0023	MTS92021//Judith/Arapahoe	40.3	60.2	75.2	176.7	30.2	15.7
	Norstar	Alberta, 1977	40.2	61.1	88.2	177.7	34.8	13.9
#	BZ9W97-761 (HWW)	WPB, Nuwest*2/solid stem line	39.4	58.7	87.4	175.0	33.2	15.5
	Elkhorn	North Dakota, 1995	38.0	60.1	87.1	175.7	32.4	16.1
Average			46.11	59.73	83.50	174.14	31.56	15.00
LSD (0.05)			5.28	2.27	4.93	1.15	3.44	
C.V. %			6.69	2.28	3.36	0.41	6.30	
F-Test (Varieties)			3.38**	1.99**	6.29**	24.4**	2.68**	

* = new for 2002, # = paid entry

Rampart plots planted with MTS9719, mistakenly

Seeded: September 24, 2001 at a depth of 3/4 inch

Soil Moisture: 17"

Soil Temperature: 66.2 F

Fertilizer: 50 lbs of 20-20-20-10 w/ the seed; 60 lbs of N top dressed in February

Previous Crop: Fallow

Growing Season (Sept-July) Precip.: 11.14"

Long term precip. average (Sept-July): 13.78"

Herbicide: Bronate in May

Harvested: August 1, 2002

Table 3 Yield summary of selected winter wheat varieties, 1992-2002
Exp. 3507 Central Agricultural Research Center, Moccasin, MT

Selected Varieties	1992	1993	1995	1996	1997	1998	1999	2001	2002	Avg.	Tiber Same Yrs
						bu/a					
Tiber	23	62	53	41	64	66	53	45	48	50.6	-
Rocky	27	52	53	47	68	71	55	51	47	52.3	50.6
Norstar	14	60	38	39	56	64	50	38	40	44.4	50.6
Neeley	22	67	62	50	78	67	63	42	48	55.4	50.6
Judith	23	55	57	45	71	73	69	47	48	54.3	50.6
Quantum 542	33	52	58	52	64	68	60	47	45	53.2	50.6
NuWest	--	55	50	48	70	68	54	52	48	55.7	54.1
Bighorn	26	--	55	42	61	70	63	48	43	51.0	49.2
Paul (MT9426)	--	--	--	--	--	--	71	52	44	55.7	48.8
Vanguard	23	53	35	34	61	63	46	47	44	45.1	50.6
Promontory	--	56	47	50	63	70	60	49	46	55.1	54.1
BigSky	--	--	54	47	66	74	56	47	49	56.1	52.9
Morgan	--	--	--	40	69	70	58	47	46	55.0	52.9
Nursery Mean	22.8	53.6	50.6	40.9	64.5	66.1	57.2	47.0	46.1	53.6	

Rampart was in a different nursery in 1993; 1991 and 2000 nurseries damaged by hail; 1994 nursery damaged by wind.

Table 4 Test weight summary of selected winter wheat varieties, 1992-2002

Exp. 3507 Central Agricultural Research Center, Moccasin, MT

Selected Varieties	1992	1993	1995	1996	1997	1998	1999	2001	2002	Avg.	Tiber Same Yrs
	---------- lbs/bu ----------										
Tiber	60.2	59.0	61.3	59.3	62.0	61.7	60.5	55.7	59.8	59.9	-
Rocky	58.8	57.8	63.3	58.3	60.0	61.7	60.9	59.6	61.9	60.3	59.9
Norstar	58.9	60.1	61.6	59.0	61.7	61.7	58.8	57.6	61.1	60.1	59.9
Neeley	58.3	57.7	62.5	57.3	62.3	60.3	61.4	54.1	59.1	59.2	59.9
Judith	57.0	56.4	61.4	55.3	59.0	60.1	59.9	55.3	57.5	58.0	59.9
Quantum 542	60.2	57.3	63.0	58.0	60.0	61.8	60.4	59.4	58.2	59.8	59.9
NuWest	--	58.3	60.4	57.7	60.0	61.2	60.2	59.3	60.4	59.7	59.9
Bighorn	59.5	--	62.8	58.3	60.3	61.2	61.1	58.0	58.9	60.0	60.1
Paul (MT9426)	--	--	--	--	--	--	61.1	54.9	56.7	57.6	58.7
Vanguard	58.7	58.0	63.2	57.3	60.3	61.1	58.6	57.7	58.8	59.3	59.9
Promontory	--	57.3	63.6	59.7	61.7	62.9	61.1	58.9	61.4	60.8	59.9
BigSky	--	--	62.7	58.3	62.3	62.9	60.5	59.4	60.6	61.0	60.0
Morgan	--	--	--	57.7	61.0	60.5	60.3	56.9	60.2	59.4	59.8
Nursery Mean	60.0	57.4	58.0	62.6	57.3	60.5	60.9	60.1	59.7	59.6	

Rampart was in a different nursery in 1993; 1991 and 2000 nurseries damaged by hail; 1994 nursery damaged by wind.

Table 5 Plant height summary of selected winter wheat varieties, 1992-2002

Exp. 3507 Central Agricultural Research Center, Moccasin, MT

Selected Varieties	1992	1993	1995	1996	1997	1998	1999	2001	2002	Avg.	Tiber Same Yrs
	---------- inches ----------										
Tiber	23	34	37	31	40	35	37	31	34	33.6	-
Rocky	21	27	35	31	38	34	33	34	34	31.9	33.6
Norstar	22	39	40	36	45	45	39	37	35	37.5	33.6
Neeley	19	30	36	30	38	35	34	31	30	31.5	33.6
Judith	24	29	31	33	35	36	37	30	34	32.1	33.6
Quantum 542	24	33	37	32	36	35	35	29	33	32.6	33.6
NuWest	--	32	33	31	36	35	33	30	31	32.6	34.9
Bighorn	21	--	29	26	31	30	31	26	29	27.9	27.9
Paul (MT9426)	--	--	--	--	--	--	31	26	28	28.5	34.0
Vanguard	24	30	33	31	38	36	35	31	33	32.3	33.6
Promontory	--	29	29	29	33	32	33	30	32	30.8	34.9
BigSky	--	--	36	34	39	37	38	29	33	35.2	35.0
Morgan	--	--	--	30	37	36	34	30	33	33.4	34.7
Nursery Mean	22.2	30.6	33.5	29.3	35.7	34.2	34.6	28.8	31.6	32.3	

Rampart was in a different nursery in 1993; 1991 and 2000 nurseries damaged by hail; 1994 nursery damaged by wind.

Table 6 Protein summary of selected winter wheat varieties, 1993-2002.

Exp. 3507 Central Agricultural Research Center, Moccasin, MT

Selected Varieties	1993	1995	1996	1997	1998	1999	2001	2002	Avg.	Tiber Same Yrs
		---------- % ----------								
Tiber	10.5	9.2	15.2	9.6	13.1	12.1	15.7	15.3	12.59	-
Rocky	11.4	9.7	14.3	7.6	11.7	12.4	14.5	14.7	12.04	12.59
Norstar	9.9	9.8	15.1	8.5	12.0	11.6	16.1	13.9	12.11	12.60
Neeley	9.5	9.4	14.6	7.9	11.0	11.1	15.1	15.0	11.70	12.60
Judith	10.8	10.0	15.2	9.3	12.4	12.2	15.5	14.6	12.50	12.60
Quantum 542	12.0	9.6	14.1	8.9	12.2	12.0	15.6	14.7	12.39	12.60
NuWest	10.9	9.1	14.4	7.9	12.1	11.3	15.0	14.4	11.89	12.60
Bighorn	--	9.3	14.9	9.3	13.7	12.1	15.7	15.1	12.87	12.89
Paul (MT9426)	--	--	--	--	--	10.4	15.3	15.4	13.70	14.37
Vanguard	12.4	10.4	15.0	9.5	13.2	13.6	16.3	16.1	13.31	12.60
Promontory	11.2	10.3	13.7	9.6	12.1	11.9	14.6	15.2	12.33	12.60
BigSky	--	9.7	15.1	9.2	11.9	11.9	16.0	15.8	12.80	12.90
Morgan	--	--	14.5	9.1	12.6	11.9	16.0	14.4	13.08	13.50
Nursery Mean	11.40	10.20	14.80	8.90	12.70	11.80	15.40	15.00	12.56	

Rampart was in a different nursery in 1993; 1991 and 2000 nurseries damaged by hail; 1994 nursery damaged by wind.

Table 7 2002 Advanced Yield Winter Wheat Nursery
Exp. 1407 Central Agricultural Research Center, Moccasin, MT

ID	Pedigree	Grain Yield	Test Weight	Stand 28-May	Heading Date	Plant Height	Grain Protein	Agron score
		bu/ac	lbs/bu	%	days	in	%	PLB
MT0177	ND8895//ND8892/KS87H6	49.6	58.8	90.2	174.0	31.5	13.3	7.0
MTR01116	Judith*4/PI372129	49.4	58.0	81.9	173.3	34.3	14.6	6.7
MTR01108	PI372129/Tiber//Judith/3/Tiber/4/MTSF1142/Arapahoe	48.9	57.9	78.4	173.1	34.7	14.4	6.7
MTW01133	NuWest/SD88191	48.4	58.9	80.0	172.1	29.3	13.5	6.0
MT01148	Judith/Blizzard	48.2	58.4	76.2	176.0	32.7	14.5	6.0
MTI01158	Fidel/Tiber **(IMI)**	47.9	59.4	77.6	173.0	32.4	14.8	5.0
MTC01102	Judith/PI499377//MTS92015/MT8909	47.5	57.7	83.9	176.0	33.7	14.1	5.4
MTW01146	Promontory/MT91366	45.6	57.9	83.9	177.6	32.8	14.0	6.1
MTW01143	Promontory/MT91366	45.4	56.0	84.6	177.7	31.5	15.1	6.0
MTS0125	MTS92137/ID454	45.3	57.2	78.2	176.1	33.0	15.6	6.0
Morgan	check	44.6	58.2	80.6	177.7	32.8	14.1	5.4
MT01134	Judith/Blizzard//Judith/Pion 2548	43.6	56.5	84.7	172.9	33.9	14.5	8.0
Erhardt	check	43.4	58.6	84.9	175.1	32.4	13.6	5.7
MTR01110	Tiber*4/PI262605	43.2	57.5	76.6	175.6	33.8	15.3	3.9
MTS0126	MTS92021/UT182016	43.1	54.0	72.5	177.7	27.7	16.4	5.0
MT0153	Erhardt/3/KS93WGRC27/Judith//Norstar*5/CMC2	43.0	55.3	80.4	173.3	30.0	14.8	7.0
MTR01109	PI372129/Tiber//Judith/3/Tiber/4/S86-736	42.9	56.2	83.1	174.3	36.2	15.2	6.6
MTS0122	MT85200/MT88001//MTSF2708	42.0	57.9	80.2	176.4	32.6	13.9	6.1
Neeley	check	41.9	56.9	77.7	176.4	32.0	14.9	5.4
MTS0112	MTS92045/2*Erhardt	40.8	58.5	84.9	174.3	30.8	14.1	7.6
MT0140	Erhardt/3/88X9D105-6//KS93WGRC27/MT9415	40.7	57.3	81.5	176.4	27.9	14.0	5.7
MT0192	MT8709/NuWest//Erhardt	40.7	56.3	76.9	175.7	29.3	13.5	6.3
MT0182	Ransom/ND9162	40.3	57.0	85.9	175.1	31.1	15.7	6.6
Judith	check	39.5	55.9	81.6	173.0	36.7	14.9	6.9
MTS019	MTS92015//Amidon/Judith	39.3	56.4	70.2	176.0	36.1	15.0	5.6
MTS0131	Neeley/CH54//MTS92137	39.2	58.2	77.1	174.9	35.2	14.4	5.6
MTW01132	Neeley*2/PI262505	38.9	59.2	78.9	176.0	28.4	14.5	5.7
MTS0135	MTS92015//Vanguard/Norstar	38.5	56.6	78.6	173.3	33.4	15.3	5.4
MT0188	Erhardt//Judith/Kestrel	38.3	56.8	82.0	173.0	33.4	15.2	7.0

(Continued)

Table 7 2002 Advanced Yield Winter Wheat Nursery
Exp. 1407 (continued)

ID	Pedigree	Grain Yield	Test Weight	Stand 28-May	Heading Date	Plant Height	Grain Protein	Agron score
		bu/ac	lbs/bu	%	days	in	%	PLB
MT0163	MT91366/Quantum 542	37.5	58.4	82.1	177.7	30.7	14.1	5.0
MTV0142	MT9222*2//KS93WGRC27/MT9415	37.3	54.5	83.4	174.4	34.3	15.1	5.1
MT01137	Neeley/Blizzard//Neeley/MT8713	37.0	56.2	78.4	176.0	33.2	15.4	5.4
XXXXXXX	check	36.0	57.0	76.4	175.0	30.9	14.9	5.0
MT0157	MT8918/Kestrel	34.8	57.4	78.5	176.3	32.8	13.9	6.4
MTS0119	MT8949/MTS92015	34.7	56.7	83.6	174.7	35.0	14.6	6.1
MT01149	Erhardt//KS85WGRC1/Judith	32.8	53.9	68.0	177.3	29.7	15.9	6.3
Average		41.9	57.2	1088.8	175.2	32.4	14.6	6.0
LSD (0.05)		6.0	1.5	7.6	1.1	3.0		0.6
C.V. (%)		8.0	1.5	5.7	0.4	5.2		6.2
F-Test (Varieties)		4.67**	7.56**	2.77**	18.3**	5.09**		13.9**

Seeded: September 25, 2001 at a depth of 3/4 inch Harvested: August 2, 2002
Fertilizer: 50 lbs of 20-20-20-10 placed with the seed; 60 lbs N in February 2002
Previous Crop: Fallow
Soil Moisture: 17"
Soil Temperature: 66.2 F
Growing season precipitation (Sept-July): 11.14" Long term precipitation average (Sept-July): 13.78"
Herbicide: Bronate applied in late May.

Table 8 2002 Preliminary A Winter Wheat Nursery
Exp. 3607 Central Agricultural Research Center, Moccasin, MT

ID	Pedigree	Grain Yield	Test Weight	Heading Date	Plant Height	[1/]Grain Protein
		bu/a	lb/bu	days	inches	%
MT0259	MT8039-9279*2/KL91-113	54.5	56.6	177	32	15.9
MTW0269	NuWest*2/93IWSSN-15	53.9	58.6	175	34	14.2
MTW0271	NuWest*2/93IWSSN-15	52.1	59.9	176	32	14.1
MTW0251	MT91051/NuWest	52.0	58.4	175	34	13.7
MTW0252	MT91051/NuWest	50.7	57.9	225	34	14.1
MT0239	Erh/3/88X9D105-6//KSWGRC27/941	49.3	54.8	177	33	16.0
MTW0253	MT91051*2/NuWest	49.0	58.2	177	32	14.2
MT0241	MT91192/3/88X9D105-6//KS27/941	48.5	54.8	178	35	15.2
MT98110R	MT8713/Redwin	48.5	57.0	176	32	15.0
MT0282	MT8039-9279/Karl 92	48.3	57.9	176	33	14.1
9426OT90	MT8030/Neeley	48.3	54.9	176	29	16.0
MTW0250	MT91051*2/NuWest	48.0	59.1	176	33	14.8
MT0283	WN-OT47/OR2619	47.0	57.2	177	29	14.4
MTV0236	MTSF2238-64/3/AMN4LV//KSWGRC27	46.1	57.3	176	33	15.6
MT0257	McGuire/Mironovskaya 28	46.0	59.2	175	35	15.3
MT0262	MT8039-9279*2/KL91-113	45.9	57.1	175	35	15.4
MT0261	MT8039-9279*2/KL91-113	45.7	57.5	176	35	15.6
MT0266	Mirleben/S86-736//KS92PO425-15	45.7	56.0	175	33	15.4
MT0245	Erh/3/KS27/Jdh//Nsr*5/CMC2	45.6	58.2	175	31	15.5
MT0272	McGuire/MT91192	45.5	56.1	176	33	14.4
MT0279	MT8039-9279/Karl 92	45.3	57.3	177	31	14.7
MT0248	MT91192//McGuire/Judith	45.3	56.1	176	29	15.7
MT0281	MT8039-9279/Karl 92	45.2	56.5	175	37	16.1
PI586806	NUWEST	45.0	59.0	176	30	15.4
MT0278	MT9417/Ogallala	44.9	58.5	174	32	14.8
MT0243	MT91192/3/KS27/MT9415//MT9420	44.9	59.9	175	32	15.0
CI 17860	NEELEY	44.9	56.7	178	33	15.9
MT0275	MT9417/Ogallala	44.9	57.6	174	32	15.9
PI584526	JUDITH	44.7	57.4	173	34	15.3
MT0284	WN-OT47/Martonvasari 16	44.7	57.0	175	37	16.4
MTW0286	MT8713/MT88005//Erhardt	44.6	56.8	173	32	14.3
MT0240	Erh/3/88X9D105-6//KSWGRC27/941	44.5	56.5	175	32	14.7
MT0274	McGuire/MT91192	44.1	54.8	176	33	15.5
MT0258	MT8039-9279*2/KL91-113	43.7	56.0	176	32	16.5
MTW0270	NuWest*2/93IWSSN-15	43.6	57.3	177	32	14.7
MT0263	KS85W663-7-4-2/WN-OT47//MT8909	43.4	59.5	174	29	15.4
MT0246	MTS92045/2*Erhardt	43.4	60.3	174	30	14.6
MT0288	MT8713/Kestrel	43.2	56.4	177	33	14.9
MT0260	MT8039-9279*2/KL91-113	43.0	57.6	175	33	14.8
PI599336	MORGAN	42.9	56.9	178	33	15.5
MTW0249	MT91051*2/NuWest	42.9	57.4	175	32	15.4
MT0255	Erhardt//NuWest/MT91051	42.8	56.2	174	31	16.2
MT0285	MT8039-9279/KL91-113	42.7	56.1	177	33	15.7
MT0277	MT9417/Ogallala	42.4	57.1	174	33	16.2

(Continued)

Table 8 2002 Preliminary A Winter Wheat Nursery
Exp. 3607 (continued)

ID	Pedigree	Grain Yield	Test Weight	Heading Date	Plant Height	[1/]Grain Protein
		bu/a	lbs/bu	Julian	inches	%
MT0268	MT8039-9279/Karl 92//Kestrel	42.3	58.1	176	34	16.8
PI593889	RAMPART	42.0	58.1	177	33	16.7
MT0254	Erhardt//NuWest/MT91051	41.4	58.1	177	31	16.4
MT9882R	S86-736/Rampart (reselection)	41.1	58.2	177	29	15.4
MT0280	MT8039-9279/Karl 92	41.0	58.1	178	29	14.1
MT0289	Judith-dwf/Kestrel	40.9	56.0	173	33	15.2
MTW0290	MT91366/Quantum 542	40.6	61.2	178	32	14.9
MT0264	MT9415/MT9422	40.3	53.7	175	33	16.1
MT0267	Mirleben/S86-736//KS92PO425-15	40.2	57.6	178	35	15.5
MT0273	McGuire/MT91192	39.8	56.2	176	32	16.4
MTW0256	OR860126/MT91051//MT91192	39.6	57.8	178	30	14.3
MT0276	MT9417/Ogallala	39.2	57.4	174	31	16.2
MT0291	Ransom//ND8844/KS8010-72	38.0	53.8	175	34	16.7
MTV0242	MT9222*2//KSWGRC27/MT9415	37.1	58.1	176	32	16.0
MTV0238	Erh/3/88X9D105-6//KSWGRC27/941	36.8	58.0	175	31	15.7
MTV0244	MT91192/3/KS27/MT9415//MT9420	36.2	55.9	178	26	16.6
MT0287	Kestrel/OR841708//MTS92045	36.0	55.2	177	31	15.9
MTV0237	MTSF2238-64/3/AMN4LV//KSWGRC27	35.5	58.9	177	30	14.8
MT0265	Mirleben/S86-736//KS92PO425-15	33.6	53.8	176	30	17.0
MT0247	MT8709/MT88001//Erhardt	31.4	56.9	174	30	16.7
OVERALL MEAN		43.75	57.22	176.40	32.16	15.4
F-RATIO df=63		2.18	1.97	1.01	2.54	
P-VALUE TRTS		0.00	0.00	0.48	0.00	
CV (S/MEAN) %		10.00	2.76	5.03	5.53	
LSD(0.05 by t)		8.74	3.16	17.74	3.55	

*The anov using standard RCB rather than lattice analysis.

[1/] bulk

Date Seeded: 9/25/2001 at a depth of 3/4 inch Harvest Date: August 2, 2002

Soil Moisture: 17"

Soil Temperature: 66.2 F

Fertilizer: 50 lbs 20-20-20-10 w/seed; 60 lbs N top dressed in February 2002

Weed Control: Bronate applied in early May

Previous Crop: Fallow

Growing season precipitation (Sept-July): 11.14"

Long term precipitation 94 yr average (Sept-July): 13.78"

Table 9 2002 Preliminary B Winter Wheat Test
Exp. 3707 Central Agricultural Research Center, Moccasin, MT

ID	Pedigree	Grain Yield	Test Weight	Heading Date	Plant Height	Grain Protein[1/]
		bu/a	lbs/bu	days	inches	%
MT02147	ID423/NuWest	57.3	54.9	178	32	13.1
PI586806	NUWEST	51.9	58.6	175	31	12.7
MT02136	NE92522/MT9418	51.6	52.9	173	31	14.3
MT02112	Karl 92/UT190	51.4	56.7	174	31	14.1
MTR02131	Tiber*2//Redwin*2/PI262605	51.0	58.8	176	36	14.4
MT0295	Erhardt//KS85WGRC1/Judith	50.8	55.9	175	29	14.0
MTR02129	PI372129/Tbr//Jdh/3/Tbr/4/S86-	50.5	54.8	176	36	15.0
MTW02111	KarL 92/UT190	49.9	55.4	178	31	14.3
MT92104	ND85137/TX84V2036//Ransom	49.2	53.3	175	35	
MT02139	N93LO67/MT9625	49.1	51.3	177	29	13.8
MT0292	MT8713//Arapahoe/Kestrel	49.1	58.2	175	35	13.6
MT02142	89X12E30//Judith/WI88-291	49.0	54.4	177	32	14.5
MT02116	Neeley/Blizzard//Neeley/MT8713	49.0	56.5	175	31	14.4
CI 17860	NEELEY	48.9	55.5	177	33	15.5
PI599336	MORGAN	48.3	55.9	178	32	14.1
MT0298	ND89137//Roughrider/KS87H6	48.2	54.6	176	33	13.1
MTR02135	MTSF1142/Ksl//MTRWA92-116/3/MT	47.8	54.0	178	29	14.5
MTW02105	SWM801489/NuWest	47.7	54.5	177	32	13.5
MT02144	MT91192/Kestrel	47.7	56.3	176	31	14.2
MT0294	Erhardt//KS85WGRC1/Judith	47.7	52.9	178	29	14.9
MT0293	MT8713//Arapahoe/Kestrel	47.2	54.6	176	33	13.7
MTR02127	PI372129/Tbr//Jdh/3/Tbr/4/MTSF	47.1	54.2	176	30	13.5
MTR02128	PI372129/Tbr//Jdh/3/Tbr/4/MTSF	47.1	56.9	173	31	13.8
MT02117	Neeley/Blizzard//Neeley/MT8713	47.0	57.3	175	33	15.1
MT02100	ND8895//ND8892/KS87H6	46.8	56.2	175	30	14.0
MTR02133	Judith*4/PI372129	46.3	54.8	176	32	15.2
MT02145	ID423/NuWest	46.2	55.2	176	28	13.6
MT02114	MT91366//Judith/Blizzard	46.2	53.8	176	33	15.6
MT0296	Judith/MT91051	45.5	50.3	174	33	15.3
MTR02134	MTSF1142/Ksl//MTRWA92-116/3/MT	45.3	53.9	178	28	15.6
PI584526	JUDITH	45.2	56.7	173	33	15.1
MT02122	Promontory/MT91366	45.1	58.2	178	29	14.1
MT02137	MT91192-48/NE93669	45.0	53.6	175	31	15.5
MT02118	Promontory/Judith	44.8	56.0	178	30	14.5
MT02113	Karl 92/UT190	44.7	53.5	175	31	14.8
MT02106	DS0001/PI499376//MT9222	44.6	52.7	174	32	15.3
MTW02110	Karl 92/UT190	44.6	51.2	178	29	15.7
MTW02115	MT91366//Judith/Blizzard	44.4	56.0	176	33	14.7
MT02119	Erhardt//PI564550/MT8713	43.9	53.0	178	30	14.4
MTR02126	MT8713*2/PI222680//Blz/Arap	43.8	57.0	173	34	15.2
MT02101	ND90109/NE88635	43.8	55.7	178	31	15.3
MT02108	KS-HF5/5 Lines	43.7	56.1	177	32	14.2
MT02120	Erhardt*2/PI564550	43.2	56.5	177	29	13.7
MT02149	McGuire/Yuma	43.0	55.7	173	36	16.0

(Continued)

Table 9 2002 Preliminary B Winter Wheat Test
Exp. 3707 (continued)

ID	Pedigree	Grain Yield	Test Weight	Heading Date	Plant Height	Grain Protein[1/]
		bu/a	lbs/bu	days	inches	%
MTR02125	MT8713*2/PI222680//Blz/Arap	42.7	56.3	173	29	15.2
MT02138	N92L005/MT9608	42.5	54.0	176	32	15.4
MT02146	ID423/NuWest	42.1	54.3	177	29	13.7
MT02140	MT9526/Promontory	41.9	55.4	176	30	16.1
MTW0297	Judith/MT91051	41.6	52.6	175	31	15.5
MT02143	89X9D105-6/McGuire//Alliance	41.6	53.1	175	29	14.5
MT0299	ND8895//ND8892/KS87H6	41.3	56.1	174	28	15.0
MTW02123	Promontory/MT91366	40.1	54.9	178	31	15.6
MTW02121	Promontory/MT91366	39.6	56.2	178	29	15.2
MT02102	Ransom/NE89526	39.5	54.5	177	26	15.4
MTR02124	MTS92015//CORWA-1/Neeley	39.2	52.6	175	32	15.5
MTR02130	Tiber*4/PI262605	38.9	56.9	176	31	15.8
MTW02148	ID423/NuWest	38.4	55.2	177	29	15.1
MT02150	McGuire/S86-736	38.2	56.0	175	33	16.0
MT02103	ND8930//ND8735/Vista	38.2	52.3	176	30	15.3
MTR02132	Erh/3/Rdw*2//PI262605/NuWest	37.9	55.9	175	30	15.8
MT02107	Jdh/PI499377//MTS92015/MT8909	37.4	53.0	175	31	16.2
PI593889	RAMPART	36.3	56.6	175	29	
MT02141	MT9526/Promontory	35.2	54.8	178	29	16.1
MTW02109	PI434646/Erhardt	32.8	56.7	173	32	16.3
OVERALL MEAN		44.76	55.01	175.60	31.08	14.77
F-RATIO df=63 TRTS		1.82	7.83	7.64	2.13	
P-VALUE TRTS		0.01	0.00	0.00	0.00	
CV (S/MEAN) %		10.94	1.65	0.45	6.72	
LSD(0.05 by t)		9.79	1.82	1.57	4.18	

*The anov using standard RCB rather than lattice analysis.

[1/] bulk

Date Seeded: 9/24/2001 at a depth of 3/4 inch Harvest Date: August 13, 2002
Soil Moisture: 17"
Soil Temperature: 66.2 F
Fertilizer: 50 lbs 20-20-20-10 w/seed; 60 lbs N top dressed in February 2002
Weed Control: Bronate applied in early May
Previous Crop: Fallow
Growing season precipitation (Sept-July): 11.14"
Long term precipitation average (Sept-July): 13.78"