

PROJECT TITLE: Advanced Yield and Preliminary Spring Wheat Variety Performance Trials

PROJECT LEADER: D. M. Wichman, Agronomist, Moccasin, MT

PROJECT PERSONNEL: L. E. Talbert, Spring Wheat Breeder, Bozeman, MT
S. P. Lanning, Spring Wheat Research Assoc., Bozeman, MT
G. L. Sharp, Research Associate, Moccasin, MT
J. Vavrovsky, Research Specialist, Moccasin, MT

OBJECTIVES:

To evaluate agronomic performance of new experimental lines and existing hard red spring wheat varieties in Central Montana.

RESULTS:

The advanced and preliminary yield spring wheat nurseries were hailed on July 8, August 20, and August 22, 2002 resulting in a complete loss. Plant heights and heading dates were recorded before the trials were damaged. Heading information is presented as day of the year from January 1st.

Advanced Yield –

Heading dates ranged from June 30th for GM40002 to July 7th for Thatcher, Seedex SX1501B, and MT0154 (Table 20). Seedex SX1501B was also the shortest variety with a plant height of 21 inches. Plata followed closely at 22 inches. Fortuna, Thatcher, MT0158, and MT0135 were the tallest varieties in the trial, standing 30 inches tall. The nursery mean was 26.2 inches (Table 20).

Preliminary Yield –

All varieties in the 2002 preliminary yield spring wheat trial headed within a one-week period, starting June 30th with MT0236 and MTHW0202. Twelve varieties headed on July 6, 2002 (Table 25). The range of nursery plant heights was a relatively narrow eight inches. MT0206 was the shortest at 22 inches while MT0250 and Fortuna were the tallest at 30 inches. Plant heights averaged 25.5 inches with the check variety McNeal at 26 inches (Table 25).

SUMMARY:

FUTURE PLANS:

The advanced yield and preliminary yield spring wheat trials will continue to be evaluated at the Central Agricultural Research Center in Moccasin, Montana.

Table 20
Exp. 3107

2002 Advanced Yield Spring Wheat Nursery
Central Agricultural Research Center, Moccasin, MT

ID	Pedigree	Trt #	Heading	Plant	Grain	Test	Grain	Straw-
			Date days	Height inches	Yield bu/a	Weight lbs/a	Protein %	breaker %
AGRIPRO2	KNUDSON	62	186	24				
MT 9905	MT9311/MT9328	15	187	25				
MT 0108	ERNEST/MCNEAL	28	185	29	Hailed		Hailed	
MT 0134	MT9410/ERNEST	37	186	26				
MT 0012	MCNEAL/MT9410	23	182	24				
GM40002	GENERAL MILLS GM40002	55	181	25				
GM40019	PLATA	58	182	22				
BZ992322	HANK	12	183	24				
MT 0103	BZ992632/MCNEAL	27	186	26				
MT 0141	MT9410/MT9619	40	186	28				
MT 0063	REDWIN/LEW//MT9406	25	184	26				
MT 0127	MCNEAL/MT9410	36	183	26				
AGRIPRO1	NORPRO	61	185	25				
GM40004	GENERAL MILLS GM40004	57	184	25				
MT 0121	ERNEST/MT9619	33	184	28				
PI527682	AMIDON	6	185	29				
MT 0009	MCNEAL/MT9410	22	184	24				
MT 0118	ERNEST/MT9410	32	184	28				
MT 0013	MCNEAL/MT9410	24	183	24				
MT 0149	MT9565/MCNEAL	43	185	27				
GM40003	GENERAL MILLS GM40003	56	182	26				
PI607557	SCHOLAR	8	186	28				
PI549275	HI-LINE	4	183	24				
MT 0112	ERNEST/MT9410	29	184	28				
MT 0124	ERNEST/MT9668	34	185	27				
MTHW9905	MTHW9417/MTHW9430	50	183	26				
PI612605	MTHW9420	47	184	25				
WB 926	WESTBRED 926	10	182	25				
MT 9806	MINNPRO/AMIDON	13	184	25				
BZ996472	WPB BZ996472	59	183	26				
MT 9874	RGABC199/MT9312	14	186	27				
MT 0154	MT9565/MONROE	44	188	24				
CI 17430	NEWANA	3	187	25				
MT 0140	MT9410/MT9619	39	187	28				
MT 9929	MT9401/MT9328	18	184	24				
ND 695	Reeder	9	185	26				
SX1501B	SEDEX SX1501B	63	188	21				
MTHW0001	MTHW9520/MTHW9427	51	183	27				
CI 13596	FORTUNA	2	186	30				
MT 0158	MT9619/ERNEST	45	185	30				
MT 9918	MT9328/MT9419	16	183	28				
PI592761	ERNEST	7	185	29				
MT 0008	MCNEAL/MT9408	21	183	29				

(Continued)

Table 20 2002 Advanced Yield Spring Wheat Nursery
Exp. 3107 (continued)

ID	Pedigree	Trt #	Heading Date days	Plant Height inches	Grain Yield bu/a	Test Weight lbs/a	Grain Protein %	Straw- breaker %
SAXON	SAXON	46	185	27				
PI574642	MCNEAL	5	186	27				
MTHW0168	MTHW9520/ID493	54	186	27	Hailed		Hailed	
MT 0147	MT9565/ERNEST	41	183	24				
MT 0125	ERNEST/MT9668	35	185	26				
MT 9931	MT9401/MT9328	19	184	26				
BZ992588	Conan	11	184	24				
CI 10003	THATCHER	1	188	30				
BZ996434	WPB BZ996434	60	184	25				
MTHW9901	MT9311/MTHW9417	49	185	27				
MTHW0167	MTHW9420/SRHW4	53	183	27				
MT 9923	MT9401/MT9311	17	186	27				
MT 9955	MCNEAL/KS27//MCNEAL	20	186	26				
MT 0117	ERNEST/MT9410	31	185	28				
MT 0135	MT9410/ERNEST	38	186	30				
MT 0148	MT9565/MCNEAL	42	186	26				
MT 0113	ERNEST/MT9410	30	184	28				
SX1502B	SEEDS SX1502B	64	187	24				
PI619086	EXPLORER	48	182	24				
MT 0076	MT9406/MTHW9520	26	183	28				
MTHW0002	MTHW9520/MTHW9427	52	183	26				
OVERALL MEAN =			184.50	26.22				
F-RATIO TRTS (df=126)			27.68	6.29				
P-VALUE TRTS			0.00	0.00				
CV (S/MEAN) %			0.30	5.10				
LSD(0.05 by t)			0.88	2.16				

Seeded: April 17, 2002 at a depth of 3/4 inch

Harvested: Hailed

Fertilizer: 50 lbs of 20-20-20-10 placed with the seed; 60 lbs of N top dressed in February 2002

Weed Control: 14 oz/ac Roundup Ultra applied post-plant pre-emergence, Bronate applied in late May

Growing Season Precipitation (April-July): 7.49"

Growing Season Precipitation (April-July) 94 yr avg: 8.62"

Soil Moisture: 18-21"

Soil Temp: 46.4 F

Previous Crop: Fallow

Table 21
Exp. 3107
Yield summary of selected spring wheat varieties, 1992-2002
Central Agricultural Research Center, Moccasin, MT

Selected Varieties	1992	1993	1994	1995	1996	1997	1998	1999	2001	2002*	Average	McNeal Same Years
----- bu/a -----												
McNeal	51	78	31	34	25	66	56	49	48	*	48.7	-
Fortuna	28	64	26	28	25	61	45	43	40	*	40.0	48.6
Lew	50	59	29	28	22	57	42	42	37	*	40.7	48.6
Hi-Line	40	69	26	26	22	70	61	47	38	*	44.3	48.6
Outlook (MT 9874)								46	42	*	44.2	48.5
Reeder (ND 695)								49	44	*	46.2	48.5
Conan (BZ992588)				29	23	53	--	37	40	*	36.7	44.4
Ernest			29	30	29	57	48	42	34	*	38.4	44.1
Scholar				29	27	57	48	46	40	*	41.2	46.3
Explorer (MTHW9710)									40	*	40.0	48.0
MT 9929									38	*	38.3	48.0
Nursery Mean	39.6	69.8	28.6	31.9	24.9	61.6	48.8	44.8	40.5		43.4	

*Advanced Yield Spring Wheat nursery suffered complete hail damage.

C31

Table 22
Exp. 3107
Test weight summary of selected spring wheat varieties, 1992-2002
Central Agricultural Research Center, Moccasin, MT

Selected Varieties	1992	1993	1994	1995	1996	1997	1998	1999	2001	2002*	Average	McNeal Same Years
----- lbs/bu -----												
McNeal	60.7	59.8	58.9	61.5	56.5	62.7	57.3	55.1	58.3	*	59.0	-
Fortuna	61.4	59.1	61.7	59.9	59.6	63.0	57.9	57.9	58.6	*	59.9	59.0
Lew	63.5	61.1	61.0	61.5	57.7	64.4	57.2	58.8	58.7	*	60.4	59.0
Hi-Line	61.1	59.2	57.3	61.3	55.3	63.1	56.1	56.1	58.1	*	58.6	59.0
Outlook (MT 9874)								54.9	56.6	*	55.8	56.7
Reeder (ND 695)								59.9	57.7	*	58.8	56.7
Conan (BZ992588)				62.3	59.5	62.3	--	59.0	58.6	*	60.3	58.8
Ernest			62.1	60.7	59.5	62.6	56.2	58.8	58.6	*	59.8	58.6
Scholar				61.8	59.1	63.4	55.8	59.9	58.4	*	59.7	58.6
Explorer (MTHW9710)									58.0	*	58.0	58.3
MT 9929									57.2	*	57.2	58.3
Nursery Mean	61.3	59.1	60.4	61	57.8	62.9	56.5	57.6	58		59.4	

*Advanced Yield Spring Wheat nursery suffered complete hail damage.

Table 23 Protein summary of selected spring wheat varieties, 1992-2002
Exp. 3107 Central Agricultural Research Center, Moccasin, MT

Selected Varieties	1992	1993	1994	1995	1996	1997	1998	1999	2001	2002*	Average	McNeal Same Years
	----- % -----											
McNeal	14.9	12.3	15.7	12.1	16.9	12.4	14.8	16.1	16.2	*	14.60	-
Fortuna	15.5	13.6	15.7	11.0	15.5	13.0	15.4	15.4	16.4	*	14.61	14.60
Lew	13.6	13.5	15.1	10.4	17.4	11.6	17.1	15.4	18.3	*	14.71	14.60
Hi-Line	15.0	13.3	16.4	10.0	17.1	12.8	15.0	16.3	18.4	*	14.92	14.60
Outlook (MT 9874)								15.4	16.9	*	16.15	16.15
Reeder (ND 695)								15.2	17.0	*	16.10	16.15
Conan (BZ992588)					16.7	13.8	--	16.3	16.8	*	15.89	15.40
Ernest			16.4	10.9	16.0	13.0	16.7	16.1	18.0	*	15.30	14.90
Scholar				11.9	16.9	12.8	16.8	15.5	19.3	*	15.53	14.70
Explorer (MTHW9710)									17.7	*	17.70	16.20
MT 9929									17.3	*	17.30	16.20
Nursery Mean	14.50	13.10	15.80	11.30	16.50	12.60	15.50	15.70	17.30		14.70	

*Advanced Yield Spring Wheat nursery suffered complete hail damage.

C32

Table 24 Plant height summary of selected spring wheat varieties, 1992-2002
Exp. 3107 Central Agricultural Research Center, Moccasin, MT

Selected Varieties	1992	1993	1994	1995	1996	1997	1998	1999	2001	2002*	Average	McNeal Same Years
	----- inches -----											
McNeal	30	38	26	31	25	37	37	33	31	27	31.5	--
Fortuna	32	37	27	32	26	41	43	36	34	30	33.8	32.1
Lew	37	40	29	34	25	41	44	37	36	--	35.9	32.1
Hi-Line	27	32	23	27	22	32	34	31	30	24	28.2	32.1
Outlook (MT 9874)								32	31	27	29.9	32.0
Reeder (ND 695)								33	31	26	29.9	32.0
Conan (BZ992588)				28	25	32	--	30	33	24	28.7	31.4
Ernest			29	35	26	41	42	35	33	29	33.7	31.5
Scholar				34	25	39	41	33	32	28	33.1	32.3
Explorer (MTHW9710)									29	24	26.5	28.9
MT 9929									29	24	26.5	28.9
Nursery Mean		35.5	25.4	31.0	25.0	37.0	37.9	32.8	31.6	26.2	31.4	

Table 25
Exp. 3307

2002 Preliminary Yield Spring Wheat Nursery
Central Agricultural Research Center, Moccasin, MT

ID	Pedigree	Trt #	Heading	Plant	Grain Yield bu/a	Test Weight lbs/bu	Grain Protein %	Straw- Breaker %
			Date day	Height inches				
MT 0224	MCNEAL/ND695	24	187	24				
MT 0275	MT8808/MT9653	75	184	28				
MT 0261	ND695/MT9653	61	185	28				
MT 0225	ND695/MCNEAL	25	187	25				
MT 0229	MCNEAL/WA7802	29	184	25				
MT 0243	MT9433/MT9662	43	186	26				
MT 0254	MT9542/ND695	54	184	27				
MT 0248	ND695/MT9433	48	186	25				
MT 0250	ND695/MT9433	50	184	30	Hailed		Hailed	
MT 0241	MT9433/MT8808	41	185	26				
MT 0218	MT9755/MCNEAL	18	184	26				
MT 0253	MT9542/ND695	53	186	26				
MTHW0204	MTHW9427/MT9410	74	185	24				
MT 0215	MCNEAL/MT9662	15	186	25				
MTHW0202	ID377S/MTHW9701	68	181	24				
MT 0204	MCNEAL/GRANDIN	4	186	25				
MT 0242	MT8808/ND695	42	184	25				
MT 0219	MT9755/MCNEAL	19	183	24				
MT 0209	MCNEAL/MT8808	9	186	24				
PI607557	SCHOLAR	79	187	28				
MT 0210	MCNEAL/MT8808	10	183	25				
MT 0231	ERNEST/MT8808	31	186	27				
MT 0259	MT8808/ERNEST	59	187	24				
MT 9929	MT9401/MT9328	81	185	25				
MT 0270	WA7802/MT9542	70	185	27				
MT 0273	MT9410/MTHW9427	73	185	24				
MT 0203	MCNEAL/GRANDIN	3	183	26				
MT 0252	ND695/MT9433	52	185	25				
MT 0230	WA7802/MCNEAL	30	187	25				
MT 0216	MCNEAL/MT9662	16	186	25				
MT 0264	MT9662/WA7802	64	185	23				
MT 0256	MT9755/WA7802	56	186	26				
MT 0207	MCNEAL/MT8808	7	185	24				
MT 0238	MT8808/MT9653	38	182	26				
MT 0236	MN94200/GRANDIN	36	181	26				
MT 0202	MCNEAL/GRANDIN	2	183	27				
MT 0212	MCNEAL/MT8808	12	184	25				
MT 0240	MT9433/MT8808	40	182	27				
MT 0257	MT8808/ERNEST	57	183	26				
MT 9874	RGABC199/MT9312	80	186	25				
MT 0239	MT8808/MT9433	39	184	27				
MT 0272	MT9408/MTHW9427	72	183	23				
MT 0221	MCNEAL/ND695	21	183	28				
MT 0214	MCNEAL/MT9675	14	185	26				
MT 0205	MCNEAL/MT8808	5	185	24				

(Continued)

Table 25 2002 Preliminary Yield Spring Wheat Nursery
Exp. 3307 (continued)

ID	Pedigree	Trt #	Heading Date day	Plant Height inches	Grain Yield bu/a	Test Weight lbs/bu	Grain Protein %	Straw- Breaker %
MT 0251	ND695/MT9433	51	187	28				
MT 0223	MCNEAL/ND695	23	187	25				
MT 0271	MTRWA116/MT9408	71	185	26				
CI 13596	FORTUNA	76	186	30				
MT 0227	MCNEAL/MN94200	27	186	27				
MT 0233	MT8808/ERNEST	33	185	25				
MT 0245	MT9433/ND695	45	186	24				
MTHW0203	ID377S/MTHW9701	69	183	24	Hailed		Hailed	
MT 0232	MT8808/ERNEST	32	183	26				
MT 0265	ND695/MT9755	65	184	27				
MT 0234	ERNEST/ND695	34	182	26				
MT 0258	MT8808/ERNEST	58	184	27				
MT 0220	MCNEAL/ND695	20	185	24				
MT 0201	MCNEAL/GRANDIN	1	186	25				
MTHW0201	ID377S/MTHW9701	67	185	24				
MT 0246	MT9433/ND695	46	184	25				
MT 0249	ND695/MT9433	49	184	24				
MT 0206	MCNEAL/MT8808	6	186	22				
MT 0255	MT9755/WA7802	55	184	26				
MT 0222	MCNEAL/ND695	22	184	27				
MT 0235	WA7802/ERNEST	35	186	24				
MT 0217	MT9755/MCNEAL	17	186	26				
MT 0247	MT9433/ND695	47	183	26				
MT 0262	MT8808/MCNEAL	62	184	24				
MT 0260	MT9653/ND695	60	187	26				
MT 0208	MCNEAL/MT8808	8	187	24				
MT 0263	MT9662/MN94200	63	187	24				
MT 0213	MT9542/MCNEAL	13	186	24				
MT 0226	ND695/MCNEAL	26	187	28				
PI574642	MCNEAL	77	187	26				
MT 0266	ND695/MT9755	66	183	26				
MT 0211	MCNEAL/MT8808	11	185	23				
ND 695	REEDER	78	185	25				
MT 0228	MCNEAL/WA7802	28	185	26				
MT 0244	MT8808/WA7802	44	186	25				
MT 0237	GRANDIN/WA7802	37	184	25				
OVERALL MEAN			184.90	25.48				
F-RATIO df= 160			19.84	4.37				
P-VALUE TRTS			0.00	0.00				
CV (S/MEAN) %			0.32	4.94				
LSD(0.05 byt)			9651.00	2.03				

Seeded: April 17, 2002 at a depth of 3/4 inch

Harvested: Hailed

Fertilizer: 50 lbs of 20-20-20-10 placed with the seed; 60 lbs of N top dressed in February 2002

Weed Control: 14 oz/ac Roundup Ultra applied post-plant pre-emergence, Bronate applied in late May

Growing Season Precip. (April-July): 7.49"

Growing Season Precip. (April-July) 94 yr avg: 8.62"

Soil Moisture: 18-21"

Soil Temperature: 46.4 F

Previous Crop: Fallow