

PROJECT TITLE: Evaluation of spring wheat variety performance in recrop systems near Moccasin, Denton, and Fort Benton.

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OBJECTIVES:
Evaluate the agronomic performance of spring wheat varieties in recrop or continuous crop environments in the southern triangle and central Montana.

RESULTS:
The Moccasin location was hailed out prior to harvest. Therefore, Denton and Fort Benton were the only two locations harvested in 2002. Late spring moisture provided for fair spring wheat yield levels.

Heading Date – Heading dates are reported for the Moccasin nursery only (Table 1). Explorer headed 02-July-02 and was the first in the nursery to head. Lew was the last to head and headed on 07-July-02.

Yield – Recrop spring wheat variety trials at Denton and Fort Benton had mean yields of 21.1 and 22.7 bu/a, respectively (Table 1). Scholar and Hi-Line had the high mean yields for the two locations. McNeal is used as the standard for evaluating long-term relative yield performance (Tables 3, 4, and 5). McNeal has a long-term yield higher than all other varieties evaluated at the Moccasin no-till site. At Denton and Fort Benton, Reeder and Outlook (MT9874) have three year and two year mean yields, respectively, greater than McNeal's average for the same years.

Test Weight – Test weights for spring wheat averaged 57.4 lbs/bu across the two locations (Table 1). Hank and MTW9420 had the lowest two location mean test weights.

Protein – Grain protein content averaged 17.4 percent across the two locations (Table 2). The old varieties Newana, Fortuna, and Lew had the lowest mean grain protein contents, while MT9808 and Hank had the highest mean protein. Only one sample per location was used to determine protein content.

Plant Height – Plant heights averaged 23.4 inches across three locations (Table 2). Five entries had three location mean heights of just over 21 inches with Conan being the shortest at 21.1 inches.

SUMMARY:
Drought conditions contributed to low yields and test weights and above normal grain protein levels. These trials continue to show how spring wheat varieties perform in less than ideal plant available water conditions.

FUTURE PLANS:
Uncertain because of MAES budget restrictions. If able, spring wheat variety evaluations on recrop will continue at Moccasin, Denton, and Fort Benton.

Table 1 2002 Spring wheat variety grain yields and test weight on recrop in central Montana and Moccasin recrop heading date.

Exp. 9900 Central Agricultural Research Center, Moccasin, MT

ID #	Pedigree / Variety	MoccRC Headdate d of y	Denton Recrop bu/a	Ft Benton Recrop bu/a	Yield Average bu/a	Denton Recrop lbs/bu	Ft Benton Recrop lbs/bu	Average lbs/bu
PI607557	SCHOLAR	187	20.9	27.6	24.2	59.4	58.0	58.7
PI549275	HI-LINE	185	22.5	25.7	24.1	56.4	57.1	56.7
MT 9874	RGABC199/MT9312	187	24.1	24.1	24.1	57.9	56.5	57.2
ND 695	REEDER	186	24.0	23.7	23.9	58.3	56.5	57.4
BZ992588	CONAN	184	21.5	25.0	23.2	59.4	57.8	58.6
PI574642	MCNEAL	187	21.6	24.8	23.2	56.6	56.6	56.6
CI17429	LEW	188	20.3	25.3	22.8	59.4	59.6	59.5
CI17430	NEWANA	187	23.9	21.2	22.5	59.7	57.9	58.8
CI13596	FORTUNA	187	18.5	25.6	22.1	58.7	58.3	58.5
PI619086	EXPLORER	183	23.7	20.0	21.9	58.7	56.5	57.6
WB 926	WESTBRED 926	184	22.1	21.5	21.8	56.4	57.7	57.0
MT 9929	MT9401/MT9328	184	20.7	22.1	21.4	59.6	55.2	57.4
WB 936	WESTBRED 936	182	20.5	22.1	21.3	55.5	56.1	55.8
PI592761	ERNEST	187	18.1	24.4	21.3	58.4	58.2	58.3
MT 9806	MINNPRO/AMIDON	186	21.8	20.0	20.9	58.1	54.7	56.4
PI527682	AMIDON	186	17.4	24.4	20.9	58.5	57.2	57.9
C982-324	RAMBO	186	18.3	22.6	20.5	59.5	58.0	58.7
BZ992322	HANK	184	20.6	20.1	20.4	56.8	53.5	55.1
MTHW 9420	MTHW 9420	184	20.4	17.1	18.8	55.9	55.4	55.7
WBEXPRES	WPB EXPRESS	185	20.1	16.1	18.1	55.7	57.7	56.7
Mean		186	21.1	22.7	21.9	57.9	56.9	57.4
CV (S/MEAN) % =			0.3618	9.367				
LSD(0.05 by t)=			3.261	6.732				
Seeding Date:		15-Apr-02	19-Apr-02	22-Apr-02				
Previous Crops:		Peas	Lentils	Spring Wht				
Soil Temperature @ seeding:		46.4 F		42.8 F				
Moist Soil Depth @ seeding:		14-18"	9-12"	6"				
Moccasin recrop hailed out in mid-August								

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Table 2
Exp. 9900

2002 Spring wheat grain protein content and plant height on recrop in Central Montana
Central Agricultural Research Center, Moccasin, Montana

Variety	----- Grain Protein -----			----- Plant Height -----			
	Denton Recrop	Ft Benton Recrop	Average	Mocc Recrop	Denton Recrop	Ft Benton Recrop	Average
	%	%	%	"	"	"	"
SCHOLAR	17.4	17.6	17.5	24	25	24	24.4
HI-LINE	18.1	17.4	17.7	22	24	22	22.7
MT9874 (Outlook)	15.9	16.5	16.2	22	24	24	23.5
REEDER	17.2	17.2	17.2	24	22	23	22.9
CONAN	18.0	17.2	17.6	20	21	23	21.1
MCNEAL	18.6	17.3	18.0	24	26	27	25.7
LEW	16.9	16.0	16.4	26	27	27	26.8
NEW ANA	15.1	16.1	15.6	23	23	23	23.1
FORTUNA	15.8	16.7	16.3	26	22	31	26.3
EXPLORER	17.1	18.1	17.6	22	23	22	22.3
WESTBRED 926	18.9	17.3	18.1	22	22	23	22.3
MT 9929	17.2	18.5	17.8	22	20	23	21.5
WESTBRED 936	17.9	17.6	17.8	22	20	21	21.1
ERNEST	18.2	17.4	17.8	24	26	28	25.9
MT 9806	18.3	19.2	18.8	24	25	21	23.4
AMIDON	17.6	16.6	17.1	25	25	31	26.9
RAMBO	17.9	16.8	17.4	24	22	26	23.7
HANK	17.8	19.7	18.7	21	24	22	22.3
MTHW 9420	17.0	17.2	17.1	22	23	19	21.3
WB EXPRESS	17.1	16.6	16.9	22	20	22	21.4
Mean	17.4	17.4		23.1	23.2	24.0	23.4

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Table 3
Exp. 9970
2002 Moccasin recrop spring wheat multi-year yield
Central Agricultural Research Center, Moccasin, MT

Selected Varieties	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002**	Mean	McNeal Same Yrs
	----- bu/a -----												
McNeal	39	52	22	45	24	63	37	42	33	33	*	39.0	--
Grandin	30	54	20	40	20	52	35	33	31	31	*	34.6	39.0
Fortuna	27	44	24	35	22	48	33	37	33	29	*	33.2	39.0
Rambo	34	43	23	39	21	55	33	36	31	28	*	34.3	39.0
Lew	34	46	20	36	19	52	35	35	29	30	*	33.6	39.0
Hi-Line	29	49	21	39	22	57	35	31	33	29	*	34.5	39.0
Ernest			21	40	20	48	34	30	30	27	*	31.3	37.3
Fergus				41	20	56	34	33	30	--	*	35.7	39.5
WB Express				39	23	57	34	40	31	34	*	36.9	39.5
WestBred 936				43	23	53	34	37	32	28	*	35.7	39.5
Scholar					24	51	33	35	33	35	*	35.2	38.6
MTHW 9420					23	66	38	37	33	31	*	38.0	38.6
Conan (BZ 992588)								37	28	34	*	33.0	36.0
Reeder (ND 695)								33	35	36	*	34.4	36.0
Outlook (MT 9874)										32	*	32.0	33.0
Nursery Mean	31.1	48.1	22.4	40.4	21.9	54.8	34.5	35.5	31.6	31.3			

**Hailed July 8, Aug 20 and Aug 22 in Moccasin.

Table 4 Denton rerop spring wheat multi-year yield summary of selected varieties
Exp. 9971 Central Agricultural Research Center, Moccasin, MT

Selected Varieties	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Mean	McNeal Same Yrs
	----- bu/a -----												
McNeal	27	92	22	43	24	47	34	17	29	29	22	35.1	-
Grandin	25	81	24	36	20	44	32	15	26	28	--	33.1	35.1
Fortuna	17	66	20	33	22	42	32	18	29	26	19	29.4	35.1
Rambo	25	74	20	37	23	43	29	12	25	27	18	30.3	35.1
Lew	27	65	20	36	23	40	29	13	25	27	20	29.6	35.1
Hi-Line	26	76	23	45	23	46	32	12	26	27	23	32.6	35.1
Ernest			19	41	25	46	29	17	24	28	18	27.5	29.6
Fergus				36	26	43	28	15	23	--	--	28.5	32.3
W B Express				41	24	41	30	13	25	27	--	28.7	30.6
WestBred 936				39	26	43	35	16	26	31	21	29.6	30.6
Scholar					26	46	37	16	29	31	21	29.4	28.8
MTHW 9420					24	44	30	12	26	28	20	26.3	28.8
Conan (BZ 992588)								14	26	28	22	22.5	24.2
Reeder (ND 695)								18	28	32	24	25.6	24.2
Outlook (MT 9874)										29	24	26.8	25.3
Nursery Mean	24.0	77.0	22.0	38.0	24.0	44.0	32.0	15.0	26.6	28.0	21.1		

The variety trial was planted recrop on pea ground in 1992, recrop on buckwheat in 1996, recrop following millet in 1997, and lentils in 2002. All other years the trial was planted on fallow ground.

Table 5 Fort Benton recrop spring wheat multi-year yield summary of selected varieties
 Exp. 9972 Central Agricultural Research Center, Moccasin, MT

Selected Varieties	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Mean	McNeal Same Yrs
	----- bu/a -----												
McNeal		18	47	37	45	32	22	28	14	10	25	27.8	-
Grandin	29	10	43	35	32	33	17	23	12	9	--	24.3	28.1
Fortuna	33	12	36	35	42	31	21	27	16	10	26	26.2	27.8
Rambo	27	15	43	36	46	35	19	24	13	11	23	26.5	27.8
Lew	24	23	41	31	43	32	21	26	13	11	25	26.4	27.8
Hi-Line	22	12	44	32	44	34	19	26	13	10	26	25.6	27.8
Ernest					45	34	19	21	13	11	24	23.9	25.1
Fergus					34	33	20	17	12	--	--	23.2	28.2
WB Express					41	33	19	17	11	8	16	20.7	25.1
WestBred 936					34	32	19	19	14	7	22	21.0	25.1
Scholar						36	19	20	16	12	28	21.8	21.8
MTHW 9420						30	19	20	14	8	17	18.0	21.8
Conan (BZ 992588)								29	13	9	25	19.2	19.2
Reeder (ND 695)								34	15	10	24	20.7	19.2
Outlook (MT 9874)										11	24	17.5	17.4
Nursery Mean	28.2	14.2	40.8	34.3	40.8	32.9	19.1	22.4	13.6	10.0	22.7		

The 1991-1996 variety trials were located on Ron Long's farm; the 1997-2000 trials were located at the Birkeland farm. 1997 trial was abandoned. All trials were planted on re-crop ground.

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