

PROJECT TITLE: Evaluation of agronomic performance of winter wheat, spring wheat, and barley varieties under no-till recrop near Moccasin and Denton, Montana.

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OBJECTIVES:

Evaluate the relative agronomic performance of cereal grain varieties and development lines under no-till recrop environments in central Montana.

RESULTS:

Winter wheat yields and test weights were above average for both the Moccasin and Denton no-till recrop trials. The winter wheat responded well to the above average April precipitation. Variety yield rankings were not unusual (see Tables 1 and 2)

Spring wheat yields and test weights were depressed by below average precipitation in May, June and July. Grain protein levels were down at the Moccasin location, which indicates available N may have limited yields, also. (see Tables 3 and 4).

Barley yields at Denton were below expected due to drier than average weather in May and June. The Moccasin site was not harvested for yield due variable stand as a result of unusually heavy winter wheat stubble. The stands would have been sufficient for bulk harvesting. Test weights were above average at Denton. The dry conditions in May reduced yield potentials, so those kernels that developed were plumper.

SUMMARY:

2006 cereal yields under recrop were levels were mixed with winter wheat producing good to excellent and the spring cereals producing below average yields. Grain quality was generally good. However, some producers applying urea in mid to late April saw significant N deficiencies in the early to mid May which resulted in reduced yield levels. Straw and cold temperatures caused the N tie up. March and earlier urea applications appeared to escape of the N tie up problems.

FUTURE PLANS:

These trial will be continued in 2007 provide funding is available.

Table 1 2006 No-Till recrop winter wheat variety evaluation at CARC.
 Exp. 3870 Central Agricultural Research Center. Moccasin, Montana.

Cultivar/Line	Pedigree	Entry	Heading	Plant	Grain	Test	Grain	Protein
			date	height	Yield	weight	moist.	
			Julian	in	bu/ac	lb/bu	%	%
Neeley	Idaho, 1980	2	156.7	33.7	54.2**	63.3	9.3	13.9
MT02113	Karl 92/UT190	24	155.7	33.5	53.9*	62.0	9.3	13.9
Yellowstone	Montana, 2005	15	156.0	34.0	52.2*	62.1	9.6	14.4
Tiber	Montana, 1988	3	156.0	34.8	50.7*	63.6	9.5	14.5
Paul	Montana, 2003	13	155.3	31.9	49.5*	63.2	9.3	13.7
Pryor	WestBred, 2002	9	155.0	27.3	48.8*	63.8	9.1	13.5
Promontory	Utah, 1990	8	155.0	35.4	48.3*	64.6	9.5	14.5
Norris (IMI)	Montana, 2005 (MTCL0316)	20	153.3	32.0	47.4*	63.3	9.9	14.3
MT01148	Judith/Blizzard	17	156.3	33.9	47.1*	61.6	9.4	14.2
Hyalite (IMI HWW)	MTW9727/Fidel/Nuwest	19	154.0	32.4	46.6*	63.5	9.7	15.2
NuSky (HWW)	Montana, 2001	12	156.3	35.0	46.3	62.7	9.7	14.6
BigSky	Montana, 2001	10	155.3	33.2	46.1	63.5	9.8	14.9
Genou	Montana, 2004	14	154.3	31.5	44.9	63.3	9.2	15.1
Rocky	Agripro, 1978	5	153.3	32.9	44.4	64.4	9.7	14.5
CDC Falcon	WPB/Sask, 1999	7	155.3	27.8	44.3	63.2	9.2	13.8
Vanguard	Montana, 1995	6	155.0	34.1	44.2	63.2	9.1	15.8
Wahoo	Nebraska, 2001	18	152.3	30.7	43.1	62.9	9.5	14.4
Jagalene	AgriPro, 2002	11	153.0	28.0	42.1	64.0	10.3	15.3
Jerry	North Dakota, 2001	16	155.3	36.1	41.8	62.2	9.4	15.1
Millenium	Nebraska, 2000	23	153.7	34.1	41.0	62.5	10.1	14.3
Rampart	Montana, 1996	1	154.7	32.9	40.8	63.0	8.9	15.5
Ledger	WestBred, 2004	22	155.0	31.1	40.8	64.0	9.2	15.1
Morgan	WPB/Sask, 1996	4	156.3	34.8	40.4	62.5	9.8	13.9
Bynum (IMI)	Montana, 2005 (MTCL0318)	21	153.0	31.8	38.6	63.4	8.9	15.8
Average			154.8	32.6	45.7	63.1	9.5	14.6
C.V. (%)			0.5	6.8	10.3			
LSD (0.05)			1.3	3.6	7.8			

** = indicates highest value within a column

* = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05)

Seeded: 29-Sep-05 Soil: Moist soil: 9 " 2 inch temp: 11C

Fertilizer: 10-10-10-5 NPKS w/seed March Top dress urea: 80lbsN

Pest Control: 1.5 pints (Bromoxynil +MCPA factory mix)

Harvest: 18-Jul-06

Table 2 2006 No-Till recrop winter wheat variety evaluation near Denton.
Exp. 3871 Central Agricultural Research Center. Moccasin, Montana.

Cultivar/Line	Entry	Grain Yield	Test weight	Plant height	moist.	Grain Protein
	#	in	bu/ac	lb/bu	%	%
MT02113	24	56.4**	63.2	28.3	9.6	9.7
Pryor	9	55.0*	64.7*	23.2	8.9	8.3
Neeley	2	54.0*	63.4	28.3	10.6	9.8
Paul	13	53.7*	62.9	26.4	9.5	9.6
Tiber	3	50.3	64.3	25.6	9.5	9.7
Yellowstone	15	50.3	62.9	29.5	9.3	10.5
NuSky (HWW)	12	49.7	63.6	31.1	10.0	9.8
Morgan	4	49.4	64.0	30.3	9.4	9.6
Promontory	8	49.4	64.7*	28.0	9.5	10.7
Genou	14	49.1	64.9*	30.7	9.0	10.6
BigSky	10	48.5	64.5*	33.9	10.4	10.5
Norris (IMI)	20	48.5	64.4	26.8	8.8	9.5
MT01148	17	48.3	63.2	32.3	10.7	10.0
CDC Falcon	7	46.6	64.0	29.9	8.7	9.9
Rocky	5	46.0	64.5*	28.7	9.5	10.9
Vanguard	6	45.7	63.5	31.1	8.8	12.0
Jerry	16	45.7	63.2	26.0	9.0	10.2
MTCL0306 (IMI, †	19	45.2	64.4	26.0	9.5	10.6
Rampart	1	44.0	63.7	28.7	8.8	10.5
Millenium	23	43.5	64.4	24.4	9.6	11.4
Jagalene	11	42.7	65.2**	22.4	9.2	10.8
Wahoo	18	42.5	63.7	24.0	9.2	10.5
Bynum (IMI)	21	39.5	63.0	27.6	8.4	11.9
Ledger	22	38.9	64.4	25.6	8.8	11.6
Average		47.6	63.9	27.9	9.3	10.4
LSD (0.05)		4.1	0.7		0.7	
C.V. (%)		5.2	0.6		3.8	
P-value (Varieties)		<.0001	<.0001		<.0001	

** = indicates highest value within a column

* indicates varieties with values equal to highest variety within a column. Fisher's protected LSD (0.05)

Seeded: 23-Sep-2005 No-till recrop on barley

Soil: Moist soil: 6 " 2 inch temp: 15 C

Fertilizer: 10-10-10-5 NPKS w/seed Top dress urea: 60 lbsN

Table 3 2006 No-till continuous crop spring wheat at CARC.
 Exp 997006 Central Agricultural Research Center, Moccasin, Montana

Variety/pedigree	Entry	Head Date	Plant Height	Grain Yield	Test Weight	Grain Protein
	#	julian	cm	bu/a	lbs/bu	%
Vida	18	179	82	28.3	59.0	11.1
MT 0564	20	177	80	28.0	59.0	12.8
NorPro	11	177	77	27.5	59.0	11.2
MTHW0202	16	172	81	25.9	60.5	11.0
MT 0515	19	178	79	25.3	61.5	11.6
Choteau	9	177	75	25.2	60.5	11.6
Hank	10	175	78	25.2	58.0	11.7
Glenn	14	174	91	25.1	63.0	10.9
McNeal	2	178	84	24.8	57.5	12.5
Scholar	6	178	92	24.6	60.5	12.5
Fortuna	1	177	92	24.4	59.5	12.9
Agawam	17	173	76	24.3	63.0	10.9
Conan	5	176	77	24.3	59.5	13.7
Reeder	7	177	78	24.0	61.0	12.5
Knudson	12	177	77	23.5	59.5	11.4
Explorer	15	173	75	23.4	59.5	11.2
Ernest	3	177	91	23.2	59.0	13.9
WestBred 926	4	173	79	22.6	58.5	12.9
Outlook	8	179	77	21.5	58.5	11.5
Freyr	13	177	81	20.8	62.0	11.1
Mean		176	81.15	24.59	59.92	11.95
CV 1		0.46	4.624	9.977	2.466	
LSD(0.05 by t)		1.33	6.202	4.055	3.092	
Seed date:	20-Apr-06		No-till recrop after lentils			
Fertilizer:	10-10-10-5 NPKS w/seed		45 N Topdress urea			
Soil:	20 to 24 inch moist soil.		Temp: 10 C			

Table 4 2006 No-till continuous crop spring wheat near Denton.
 Exp 997006 Central Agricultural Research Center. Moccasin, Montana.

Variety/pedigree	Entry	Plant Height	Grain Yield	Test Weight	Grain Protein
		cm	bu/a	lbs/bu	%
Glenn	14	75	28.4	63.1	13.4
Agawam	17	61	27.7	63.1	13.1
MT 0515	19	61	26.7	61.2	13.7
Vida	18	61	26.7	59.7	12.9
Fortuna	1	81	25.9	60.8	14.3
MTHW0202	16	67	25.5	61.7	13.2
Reeder	7	68	25.4	60.3	13.8
Outlook	8	66	25.1	58.4	13.2
MT 0564	20	64	25.0	60.1	13.7
Hank	10	64	24.7	59.0	13.2
NorPro	11	64	24.6	60.9	13.0
WestBred 926	4	67	24.4	58.1	14.3
McNeal	2	71	24.3	57.3	14.3
Ernest	3	79	24.2	59.8	14.7
Freyr	13	70	23.8	61.3	13.1
Scholar	6	80	23.6	60.3	14.0
Conan	5	64	23.6	59.5	14.9
Explorer	15	65	23.1	59.8	13.9
Knudson	12	65	22.5	61.1	13.5
Choteau	9	61	22.2	60.4	14.2
Mean		68	24.87	60.27	13.7
C.V. 1:			12.72	0.96	
LSD(0.05)			5.23	1.21	

Seed date: 12-Apr-06 No-till recrop after lentils
 Fertilizer: NPKS 10+10+10+5 w/seed. Topdress urea 60 N.
 Soil: 2"depth 7 C Moist Probe:
 Harvested: 11-Aug-06 Herbicide: Roundup 16 oz 16 Apr 06

Table 5 2006 Off-station no-till recrop barley variety trial at Moccasin.
Exp 3670 Central Agricultural Research Center. Moccasin, Montana.

Variety or ID	ENTRY	Heading Date	Plant Height	Yield
	#	d of y	cm	not
Haxby	1	175.0	81.3	harvested
MT970229	2	176.7	89.0	due to
Boulder	3	174.3	85.7	variable
Eslick	4	177.0	88.0	stand
Xena	5	177.0	85.0	
Harrington	6	178.3	81.0	
Copeland	7	178.7	93.7	
Conrad	8	177.7	84.0	
Kendall	9	178.0	87.0	
Merit	10	178.3	88.7	
Metcalfe	11	173.3	95.7	
MT910189	12	177.7	89.7	
MT960101	13	177.7	82.7	
MT970116	14	175.7	98.0	
Drummond	15	172.7	98.0	
Legacy	16	172.7	93.3	
Robust	17	170.7	93.3	
Tradition	18	173.0	92.0	
Stellar	19	172.0	90.7	
Hays	20	179.7	74.3	
Mean		175.8	88.55	
CV 1 %		0.5646	3.586	
LSD(0.05)		1.641	5.249	

Seeded: 10-Apr-06 No-Till recrop into heavy winter wheat stubble.

Fertilizer: 10-10-10-5 w/seed. Topdress 60 N as urea.

Soil: Moist Probe: 17" 2" temp: 8 C

Emerged: 26-Apr-06 Height: to convert cm to inches, divide by 2.5.

Straw piling and rodent damage caused variable stands that prevented evaluation of relative yield performance.

Table 6 2006 Off-station no-till recrop barley variety trial near Denton.
Exp 3671 Central Agricultural Research Center, Moccasin, Montana.

Variety or ID #	ENTRY	Plant Height	Grain Yield	Test Weight	Plump	Mid	Thin	Protein Content
	#	cm	bu/a	lbs/bu	%	%	%	%
Boulder	3	68.0	41.1	54.1	72.5	21.3	6.2	13.5
Haxby	1	69.0	40.3	54.8	50.2	35.3	14.4	12.6
MT960101	13	70.0	38.4	53.2	48.3	31.9	19.8	14.0
MT910189	12	70.0	37.7	54.3	56.5	28.9	14.6	12.9
Drummond	15	81.0	37.5	51.9	21.1	43.4	35.6	13.3
Eslick	4	69.0	36.2	51.6	41.6	35.4	23.0	12.0
Xena	5	68.0	35.6	51.7	23.3	43.2	33.4	12.2
MT970229	2	72.0	35.5	53.0	75.8	18.2	6.0	16.3
Kendall	9	70.0	35.4	50.9	59.7	25.5	14.8	14.5
Metcalfe	11	72.0	34.6	52.0	60.1	29.0	10.9	13.3
Tradition	18	75.0	34.6	51.7	12.4	36.6	50.9	12.5
Conrad	8	72.0	34.4	50.4	48.5	30.8	20.7	14.0
Merit	10	72.0	34.4	52.2	55.2	28.3	16.5	14.5
Hays	20	59.0	32.5	45.4	6.5	30.1	63.5	13.7
Legacy	16	82.0	32.4	50.6	16.8	37.7	45.5	13.5
MT970116	14	85.0	31.6	54.1	56.8	29.1	14.0	13.4
Copeland	7	74.0	31.4	50.1	42.2	34.5	23.3	12.9
Stellar	19	77.0	29.0	51.6	23.1	33.0	43.9	12.1
Harrington	6	66.0	28.8	49.6	41.3	33.6	25.1	13.0
Robust	17	81.0	28.6	49.2	8.0	24.5	67.5	15.1
Mean		72.6	34.51	51.59	41.0	31.5	27.5	13.5
P-value			0.014	0.0095				
CV 1 %			11.87	3.408				
LSD(0.05)			6.767	3.68				
Seeded:	12-Apr-06 No-till recrop following continuous crop lentils.							
Fertilizer:	10+10+10+_5 NPKS with seed and 60 lbs N topdress as urea.							
Harvest:	11-Aug-06							