

**PROJECT TITLE:** 2004 Evaluation of winter wheat variety performance on no-till recrop at Moccasin and Denton.

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**OBJECTIVES:**  
Evaluate agronomic performance of winter wheat varieties in no-till recrop (continuous) crop environments near Moccasin and Denton, Montana.

**RESULTS:**  
The growing conditions for the 2004 winter wheat crop were much better than most recent years. Moisture conditions were not outstanding, but cool June temperatures minimized evaporation demand during critical seed fill. However, below average precipitation in June and July resulted in below average test weights. The Moccasin and Denton sites have been no-till continuous crop for a number of years with pulse and oilseeds included in the rotation along with winter wheat, barley and spring wheat. The continuous cropping has reduced yield levels slightly, but not as much as some suspect. Both of these sites are on relatively shallow soils, 2-3.5 feet in depth, and thus do not have soils with large water holding capacities. The use of broadleaf legume and oilseed crops has facilitated the use of a wider array of herbicides which has help managed wild oats, downy brome and other weeds often associated with cereal only systems.

Development line MT00159 along with Falcon and Neeley were the two location high grain producers (Tables 1 & 2). Falcon, Promontory and Paul, relatively new varieties, have multi-year yield levels, under Moccasin No-Till, similar to slightly higher than Neeley along with the old stand by Rocky (Table 3). At Denton, Promontory and Falcon have multi-year yields slightly higher than Neeley (Table 4). Sawfly were not a problem at any of the test sites. Therefore, the sawfly lines, including the newest release Genou, did not show an advantage at these sites.

**SUMMARY:**  
MT00159 continues to have outstanding yield performance as it has done in the two previous years. Winter wheat yields were much above expectations for both the Moccasin and Denton locations given the below average precipitation levels. The protein levels indicate some nitrogen loss may have occurred at the Denton location.

**FUTURE PLANS:**  
CARC will continue to evaluate winter wheat varieties under no-till continuous crop environments in central Montana.

Table 1 2004 Moccasin no-till recrop winter wheat variety performance.  
Exp 3870 Central Agricultural Research Center, Moccasin Montana.

Variety	Head Date d of Y	Plant Height "	Grain Yield bu/a	Test weight lbs/bu	Grain Protein %
MT00159	171	34.5	50.7	56.5	13.5
Paul	169	33.6	48.7	55.8	13.5
CDC Falcon	168	32.5	47.4	55.2	13.7
Neeley	170	33.5	47.2	53.8	13.6
Pryor	172	31.2	47.1	57.0	13.5
Jagalene	164	32.0	46.8	56.4	14.0
MT01148	167	32.5	46.7	56.5	13.6
Rocky	165	34.9	46.3	56.0	14.5
Morgan	173	36.3	45.9	55.5	13.0
Wahoo	164	31.1	45.9	56.3	13.9
Millenium	166	33.5	45.4	58.8	13.4
MT0177	173	34.0	45.0	55.1	14.3
Jerry	171	36.3	44.9	56.9	14.3
NuWest (HWW)	170	31.3	44.6	56.0	14.7
NuSky (HWW)	173	34.0	44.6	57.8	13.4
Promontory	168	33.6	44.3	56.3	14.2
MTW01133 (HWW)	165	27.5	42.7	59.9	14.4
MT0097	172	33.6	42.2	57.6	15.0
MTCL01159	170	33.5	41.0	55.4	14.6
Vanguard	169	33.1	39.0	56.4	15.0
Tiber	174	35.7	37.7	57.8	15.2
BigSky	170	36.8	37.2	56.3	14.8
Rampart	171	34.9	36.6	56.3	15.1
Genou(MTS0031)	172	33.9	36.0	57.5	14.5
MEAN	169.5	33.488	43.9	56.57	14.2
CV(S/MEAN)%	0.748	6.22	6.96	1.114	
LSD(0.05)	2.084	3.4	5.02	1.304	

d 170= June 19

Seeded: 23-Sept-03 No-till recrop after barley

Fertilizer: NPKS 10+10+10+10+05 w/seed. Urea (90N) top dress.

Weed Control: Pre-plant 10 oz glyphosate (Roundup Ultra).  
Pre-boot 1.5 pt bromoxynil + MCPA (Bronate).

Table 2 2004 Off-Station winter wheat variety evaluation near Denton.  
Exp3871 Central Agricultural Research Center. Moccasin Montana.

variety	Ht	Yield	Test Wt	Protein
	"	bu/a	lbs/bu	%
Wahoo	73.0	60.6	58.3	10.6
MT00159	81.7	59.1	59.5	11.5
CDC Falcon	78.3	55.6	59.1	11.0
Neeley	82.0	55.6	60.8	11.6
Jagalene	75.7	55.5	62.7	10.7
Millenium	82.3	55.5	60.6	11.6
MT0177	84.7	54.9	59.8	11.8
NuSky (HWW)	90.0	54.8	60.3	10.9
Pryor	83.3	54.7	60.0	9.0
MT01148	80.0	54.7	60.2	11.3
Rocky	93.7	53.9	61.0	11.3
Promontory	84.7	53.8	62.1	11.6
MT0097	80.0	53.5	59.4	11.7
Morgan	87.7	52.2	60.0	11.3
MTW01133 (HWW)	67.0	52.1	59.4	12.3
Rampart	91.3	51.7	60.7	11.3
Paul	78.7	51.0	58.9	11.6
Genou (MTS0031)	83.3	50.2	60.2	11.1
Jerry	91.0	50.2	59.4	11.9
Big Sky	90.7	49.9	60.1	12.2
Vanguard	87.0	48.7	60.3	11.9
NuWest (HWW)	88.7	48.7	60.6	11.8
Tiber	96.0	47.8	60.2	10.4
MTCL01159	76.0	41.4	57.8	11.0
Mean	83.61	52.76	60.04	11.31
cv 1	4.914	6.738	1.284	
LSD(0.05)	6.753	5.843	1.594	

Seeded: 1-Oct-03 No-till recrop after hayed hay barley.  
 Fertilizer: Post plant top dress urea (60N/a). Farmer applied  
 Herbicide: Farmer applied  
 Soil Moisture: Shallow

Table 3 . Moccasin recrop winter wheat multi-year, 1995-2004, yield summary of selected varieties.  
Exp. 38700 Central Agricultural Research Center, Moccasin, Montana.

Selected Varieties	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	avg	Neeley Same Yrs
	----- bu/a -----											
Neeley	33	31	69	47	45	43	36	34	38	47	42	42
Rocky	39	34	73	50	43	45	39	31	38	46	44	42
Tiber	36	29	56	46	45	41	39	35	33	38	40	42
NuWest	38	30	51 <sup>2/</sup>	50	39	40	37	38	30	45	39	42
Vanguard	27 <sup>1/</sup>	27	59	47	38	39	34	35	30	39	39	42
Rampart	36	27	55 <sup>2/</sup>	48	38	37	33	-	34	37	38	42
Promontory		29	61	50	48	46	36	39	31	44	43	44
BigSky			65	47	39	40	37	36	27	37	41	45
Morgan					42	38	35	36	35	46	39	41
Paul (MT 9426)							35	36	38	49	40	39
NuSky								40	32	45	39	40
cdc Falcon								39	39	47	42	40
<b>Genou</b> (MTS0031)								36	37	36	36	40
Pryor									39	47	43	43
Jerry									38	45	41	43
<b>Mean</b>	<b>37</b>	<b>29</b>	<b>61</b>	<b>47</b>	<b>42</b>	<b>41</b>	<b>35.2</b>	<b>36</b>	<b>35</b>	<b>44</b>		

<sup>1/</sup> Suspected low germination resulted in low yields. <sup>2/</sup> Yields from one rep only.

1994 trial was abandoned due to variable stand as a result of extremely wet conditions at seeding.

Table 4 Denton recrop winter wheat multi-year yield summary of selected varieties, 1994-2004  
Exp. 3801 Central Agricultural Research Center, Moccasin, MT

Select Varieties	1995	1996	1997	1998	1999	2001	2002	2003	2004	average	Neeley Same Yrs
	----- bu/a -----										
Neeley	82	44	62	61	45	48	51	37	56	54	54
Rocky	73	46	59	61	40	31	53	35	54	50	54
Tiber	73	42	65	61	46	45	49	35	48	52	54
NuWest	67	43	64	59	45	39	51	34	49	50	54
Vanguard	56	41	56	62	35	34	46	36	49	46	54
Rampart	76	40	51	55	37	33	--	32	52	47	54
Promontory		53	56	65	47	37	52	43	54	51	<b>50</b>
BigSky			64	62	44	39	46	36	50	49	51
Morgan					46	34	49	32	52	43	47
Paul (MT 9426)						41	46	39	51	44	48
NuSky							46	34	55	45	48
cdc Falcon							53	41	56	50	48
<b>Genou</b> (MTS0031)							47	37	50	45	48
Pryor								43	55	49	46
Jerry								37	50	44	46
<b>Nursery Mean</b>	<b>73</b>	<b>43</b>	<b>60</b>	<b>60</b>	<b>42</b>	<b>36</b>	<b>49</b>	<b>37</b>	<b>53</b>	<b>50</b>	

1994 stand was variable due to wind damaged. Thus abandoned.

1999 two reps were harvested . 2000 yields not reported due to plugged drill opener in some rows.



**PROJECT TITLE:** 2004 Evaluation of spring wheat variety performance in no-till recrop systems in central Montana.

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**PROJECT PERSONNEL:** L. E. Talbert, Spring Wheat Breeder, Bozeman, MT  
S. P. Lanning, Spring Wheat Research Assoc., Bozeman, MT  
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**OBJECTIVES:**  
Evaluate the agronomic performance of spring wheat varieties in recrop or continuous crop environments in central Montana.

**RESULTS:**  
2004 Spring wheat recrop variety trial followed lentils at the Central Ag Research Center and was established on land in its ninth year of continuous no-till annual cropping. The continuous no-till site at Denton was also established after lentils. The Geraldine Location was established after winter wheat. The Geraldine location had excellent establishment in spite of very heavy residual wheat stubble. However, a variable and dense stand of wild oat escapes rendered the Geraldine site useless.

Dry April conditions hindered early plant growth at both Moccasin and Denton. Moisture conditions improved later at the Denton site and cool June weather help maximize plant growth from the available soil water. The Moccasin yields were slightly below long-term expectations and Denton yields were at or slightly above long term expectations for recrop spring wheat. Outlook and Reeder were in the top three grain producer at both locations. The test weights at Moccasin were below standard (mean 54.9 lbs/bu) and near standard at Denton (mean 59.1 lbs/bu). Protein levels averaged 16.0 and 14.0 percent at Moccasin and Denton, respectively, which is expected when test weights are below standard. Multi-Year average yields are compared to McNeal yields for the same years in table 3 and 4.

**SUMMARY:**  
Outlook, released to growers in 2004, and Reeder were top performers for yield and protein content. Outlook faltered in test weight at Moccasin (54.2 lbs/bu) compared to Reeder (57.5 lbs/bu). Ernest was the low yielder at both locations.

**FUTURE PLANS:**  
The spring wheat recrop variety performance evaluations will continue at Moccasin, Denton and Geraldine.

Table 1 2004 No-till continuous spring wheat variety trial.  
Exp 997004 Central Agricultural Research Center, Moccasin, Montana.

ID	Variety	Trt	Head Date	Plant Height	Grain Yield	Test Weight	Protein Content
		#	d of y	"	bu/a	lbs/bu	%
MT 0249	ND695/MT9433	18	183.3	31.3	31.2	55.8	15.6
PI632252	Outlook	11	185.0	31.6	30.9	54.2	14.8
ND 695	Reeder	10	184.0	34.0	30.3	57.5	14.9
BZ992322	Hank	13	183.0	32.2	29.9	54.0	15.7
MT 0245	MT9433/ND695	17	185.3	31.7	29.8	55.1	15.9
MT 0266	ND695/MT9755	19	182.0	32.6	28.8	51.9	15.2
WB 936	Westbred 936	22	181.7	29.7	28.6	55.5	15.8
BZ992588	Conan	8	182.0	31.8	28.4	56.6	16.0
PI574642	McNeal	3	185.0	32.9	28.3	53.4	16.5
PI607557	Scholar	9	185.0	33.7	28.3	56.2	15.9
CI 13596	Fortuna	1	184.7	33.2	27.7	55.7	15.9
MTHW0202	ID377S/MTHW9701	16	179.3	32.4	27.6	56.1	16.3
MT 9929	Choteau	12	184.7	32.6	27.5	57.2	15.1
PI615543	Alsen	20	182.7	32.2	27.4	55.3	16.3
MTHW9420	MT8182/MT8289	14	185.0	30.4	27.2	52.2	16.0
WB 926	Westbred 926	7	181.3	34.0	27.2	54.0	16.6
PI549275	Hi-Line	2	182.0	32.0	27.2	52.6	16.5
PI527682	Amidon	4	184.3	34.4	26.5	55.1	16.5
C982-324	Rambo	5	184.3	28.8	26.0	55.4	16.5
CI 17430	Newana	21	186.0	30.3	26.0	54.7	16.2
PI619086	Explorer	15	181.0	31.1	25.8	55.2	17.2
PI592761	Ernest	6	185.3	33.6	24.0	54.6	17.4
Mean			183.5	32.1	27.93	54.93	16.0
F test for var (df= 42)			13.83	1.68	3.22	7.51	
C.V. 1: (S/MEAN)*100			0.45	6.11	6.15	1.71	
LSD (0.05)			1.36	3.23	2.83	1.55	

Planted: April 12, 2004 No-till CC after lentils 03, barley 02, and yellow mustard 01.

Fertilizer: Pre-plant topdress 30N as urea. W/seed 10-10-10-5.

Herbicide: Post plant 10 oz glyphosate.

Bronate: wheat @ 3-4 lb May 24

Precipitation: sept -Aug 13.5 (ave 15.4)

Table 2 2004 Denton spring wheat variety performance trial.  
Exp 9971 Central Agricultural Research Center. Moccasin, Montana.

ID	Pedigree	Trt	Plant Height	Grain Yield	Test Weight	Protein Content
		#	"	bu/a	lbs/bu	%
MT 0245	MT9433/ND695	17	28.7	37.1	59.8	13.3
PI632252	Outlook	11	30.3	36.0	58.6	13.9
ND 695	Reeder	10	31.5	35.5	59.9	13.8
WB 926	Westbred 926	7	28.4	34.9	58.8	14.6
MT 0249	ND695/MT9433	18	28.4	34.8	60.5	13.6
MTHW0202	ID377S/MTHW9701	16	28.4	34.2	60.9	13.3
MT 9929	Choteau	12	29.1	34.1	61.0	14.6
BZ992322	Hank	13	30.7	33.8	56.9	14.2
PI615543	Alsen	20	29.5	33.4	60.2	14.4
WB 936	Westbred 936	22	25.6	33.3	57.7	14.1
PI619086	Explorer	15	27.2	32.9	59.0	14.1
CI 17430	Newana	21	27.6	32.6	61.0	13.0
MT 0266	ND695/MT9755	19	29.9	32.5	55.5	14.3
PI574642	McNeal	3	31.5	32.4	58.4	14.0
BZ992588	Conan	8	28.7	32.4	59.7	14.4
C982-324	Rambo	5	30.3	32.1	58.8	14.6
PI607557	Scholar	9	34.7	31.9	60.1	13.4
PI549275	Hi-Line	2	27.2	31.8	59.4	14.2
MTHW9420	MT8182/MT8289	14	28.4	31.3	58.2	12.8
CI 13596	Fortuna	1	36.2	29.1	58.3	13.6
PI527682	Amidon	4	37.0	28.2	56.8	15.4
PI592761	Ernest	6	35.0	27.9	59.6	15.2
Mean			30.2	32.8	59.1	14.0
F test for var (df= 42)				1.85	6.48	
C.V. 1: (S/MEAN)*100				8.99	1.67	
LSD (0.05)				4.87	1.62	

Planted: April 6, 2004 No-till in to continuous crop lentil stubble. 2" Soil temp: 15C

Fertilizer: N 45 lbs urea topdress. W/seed NPKS 10-10-10-05.

Herbicide:

Precipitation:

18" moist soil @ seeding.



Table 3. Moccasin recrop spring wheat multi-year summary of selected varieties 1992-2004  
Exp. 9970 Central Agricultural Research Center, Moccasin, Montana.

Selected Varieties	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2003	2004	Ave	McNeal Same Years
	----- bu/a -----													
McNeal	39	52	22	45	24	63	37	42	33	33	23	28	37.5	38.0
Amidon	35	55	23	40	22	52	34	39	31	32	21	26	34.9	38.0
Fortuna	27	44	24	35	22	48	33	37	33	29	22	28	32.1	38.0
Rambo	34	43	23	39	21	55	33	36	31	28	21	26	33.1	38.0
Ernest			21	40	20	48	34	30	30	27	18	24	29.8	35.7
WestBred 936				43	23	53	34	37	32	28	21	29	33.8	37.4
Scholar					24	51	33	35	33	35	19	28	32.9	36.4
MTHW 9420					23	66	38	37	33	31	18	27	35.2	36.4
Reeder (ND 695)								32.8	35	36	20	30	30.8	31.8
Conan (BZ992322)								36.6	28	34	17	28	29.0	31.8
Explorer (MTHW9710)									30	35	17	26	27.4	29.2
Outlook (MT 9874)										32	22	31	27.1	27.9
Choteau (MT 9929)										29	21	28	25.0	27.9
Hank (BZ 992588)											17	30	17.2	25.4
Nursery Mean	31.1	48.1	22.4	40.4	21.9	54.8	34.5	35.5	31.6	31.3	19	28	34	

Table 4 Denton recrop spring wheat multi-year yield summary of selected varieties, 1992-2004  
Exp. 9971 Central Agricultural Research Center, Moccasin, Montana.

Selected Varieties	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Ave.	McNeal Same Yrs
	----- bu/a -----														
McNeal	27	92	22	43	24	47	34	17	29	29	22	15	32	33.3	33.3
Fortuna	17	66	20	33	22	42	32	18	29	26	19	18	29	28.5	33.3
Rambo	25	74	20	37	23	43	29	12	25	27	18	17	32	29.4	33.3
Ernest			19	41	25	46	29	17	24	28	18	16	28	26.5	28.2
WestBred 936				39	26	43	35	16	26	31	21	18	33	28.8	28.9
Scholar					26	46	37	16	29	31	21	18	32	28.5	27.1
MTHW 9420					24	44	30	12	26	28	20	17	31	25.9	27.1
Reeder (ND 695)								18	28	32	24	17	36	25.8	22.4
Conan (BZ 992588)								14	26	28	22	17	32	23.3	22.4
Explorer (MTHW9710)									27	29	24	18	33	26.1	23.8
Outlook (MT 9874)										29	24	18	36	26.8	22.0
Choteau (MT 9929)										30	21	16	34	25.3	22.0
Hank (BZ992322)											21	17	34	23.7	18.5
Nursery Mean	24.0	77.0	22.0	38.0	24.0	44.0	32.0	15.0	26.6	28.0	21.1	16.9	32.8		

The variety trial was planted re-crop on pea ground in 1992, re-crop on buckwheat in 1996, re-crop following millet in 1997, and lentils in 2002 & 03. All other years the trial was planted on fallow ground.

**PROJECT TITLE:** 2004 Evaluation of durum wheat variety performance under recrop conditions following a pulse crop near Moccasin, Denton and Geraldine.

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

**RESULTS:**  
The statewide durum no-till recrop trial was reduced from 20 entries to 14 entries because central Montana interest in durum is marginal and many varieties have had several years of evaluation. Also, the hard red spring wheat check McNeal was dropped from the nursery. McNeal yields have consistently been greater than the yields of the top durum entries. Further, the processing companies generally have criteria other than agronomic performance in central Montana trials for determining which durum varieties they will contract. The majority of entries in the statewide trial were first time entries. Development line PI574642 and AC Avonlea produced the high grain yields (See Table 1). Test weights were sub-par averaging 55.9 lbs/bu. Six durum lines were planted on recrop at Denton and on fallow at Moccasin and Winifred. AC Avonlea had the highest mean grain yield across the three locations (see Table 2). AC Avonlea and Ben had the high mean test weight. Protein levels were near even with Kyle and Ben have a slightly higher mean protein level (Table 3). Multi-Year yield summaries for the Denton and Geraldine location are presented in Tables 4 and 5. With the change in entries, a multi-year table for Moccasin would differ little from the 2003 report.

A durum trial was established on winter wheat stubble at Geraldine but was not harvested due to excessive wild oat infestation.

**FUTURE PLANS:**  
Durum work will be reduced to a single nursery under no-till continuous crop at the CARC.

Table 1 2004 Durum variety performance under no-till continuous crop environment.  
 Exp 9870 Central Agricultural Research Center. Moccasin, Montana

Variety	Head Date	Grain Yield	Test Weight
	d of Y	bu/a	lbs/bu
Kyle	186.7	23.1	56.3
Ben	183.3	23.0	56.0
Mountrail	184.7	26.2	54.3
Maier	184.3	26.2	56.0
AC Avonlea	183.3	29.0	56.7
Dilse	186.0	25.6	57.7
Plaza	185.7	24.0	55.3
Monroe	181.0	26.8	56.0
Vic	184.0	22.3	57.0
Lebsock	184.3	24.2	57.0
Pierce	184.3	23.2	56.7
WPB YU8	182.0	27.7	55.0
Munich	183.7	26.8	55.3
McNeal	184.3	29.3	52.7
Mean	184.1	25.52	55.86
CV1	0.3992	6.943	1.381
LSD(0.05 by t)	1.234	2.974	1.295

Planted: April 12, 2004 No-till CC after lentils 03, barley 02, and yellow mustard 01.

Fertilizer: Pre-plant topdress 30N as urea. W/seed 10-10-10-5.

Herbicide: Post plant 10 oz glyphosate. Bronate: wheat @ 3-4 lb May 24

Precipitation: sept -Aug 13.5 (ave 15.4)

Table 2 2004 Durum three location grain yield and test weight performance.  
Exp. 9870-73

Variety	Grain Yield			Test Weight		
	Moc-Fal	Denton	Winifred	Moc-Fal	Denton	Winifred
	bu/a	bu/a	bu/a	lbs/bu	lbs/bu	lbs/bu
Kyle	32.4	29.9	28.3	58.7	59.0	57.4
Ben	32.8	27.7	30.0	59.9	59.8	59.5
Mountrail	33.7	29.3	31.3	57.6	56.7	57.5
Maier	33.9	29.3	29.7	60.6	57.2	57.5
AC Avonlea	34.4	31.3	32.7	58.9	58.7	59.1
Dilse	31.6	26.3	33.3	60.3	dumped	58.8
Mean	33.2	28.96	30.9	59.3	58.3	58.3
CV 1	6.58	8.62	4.1			
LSD (0.05)	3.97	4.54	2.29			
Seed Date:	12-Apr	6-Apr	6-Apr			
Fertilizer:	NPKS 10-10-10-05 w/seed plus 60 N top dress as urea					

Table 3 2004 Durum three location protein content, plant height and head date performance.  
Exp. 9870-73 Central Agricultural Research Center. Moccasin, Montana.

Variety	Protein Content			Protein Content		Headed Moc-Fal d of y
	Moc-Fal	Denton	Winifred	Denton	Winifred	
	%	%	%	"	"	
Kyle	17.7	13.9	18.1	41.2	39.0	186
Ben	17.4	14.2	17.8	34.0	33.0	183
Mountrail	17.3	14.2	17.1	34.4	27.0	184
Maier	16.0	14.7	17.9	34.4	29.0	184
AC Avonlea	16.8	14.6	17.0	36.0	33.0	183
Dilse	16.9	dumped	18.2	33.2	30.0	184
Mean	17.0	14.3	17.7	35.5	31.8	184.0

Table 4 Denton recrop spring durum multi-year yield summary for 1997-2004.  
Exp. 9871 Central Agricultural Research Center, Moccasin, MT

Variety	Yield							
	1997	1998	1999	2000	2001	2002	2003	2004
	----- bu/a -----							
McNeal <sup>1/</sup>	43	34	21	31	24			
Kyle	28	33	17	23	22	19	13	30
Maier			14	23	24	17	21	29
Mountrail			16	26	26	18	16	29
Lebsock				26	24	20	18	
Plaza				24	25	--		
AC Avonlea						21	14	31.3
Nursery Mea	26.8	28.3	14.5	25.0	24.1	19.4	16.6	30.9

Table 5 Winifred spring durum variety multi-year yield summary.  
Exp. 9873 Central Agricultural Research Center, Moccasin, MT

Variety	1998	1999	2000	2001	2002	2003	2004
	----- bu/a -----						
McNeal <sup>1/</sup>	47	44	33	25			
Kyle	39	33	34	23	36	18	28.3
Maier		36	35	23	43	18	29.7
Mountrail		34	36	26	40	18	31.3
Lebsock			30	24	36	20	
Plaza			31	23	--		
AC Avonlea						19	32.7
Mean	38.7	34.3	31.7	24.0	40.1	18.6	30.9

**PROJECT TITLE:** 2003 Evaluation of barley variety performance in recrop following an oilseed or pulse crop near Moccasin, Denton and Geraldine.

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

**PROJECT PERSONNEL:** T. Blake, Barley Breeder, Bozeman, MT  
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**OBJECTIVES:**  
Evaluate the agronomic performance of spring barley varieties in recrop or continuous crop environments in the southern triangle and central Montana.

**RESULTS:**  
The Geraldine location was established after winter wheat rather than a specialty crop. The post emerge wild oat control measure was not successful so the barley trial was abandoned due to variable wild oat stand. Barley stands at Moccasin (after mustard) and Denton (after lentils) were decent but not outstanding. Dry spring weather delayed emergence and hindered uniform emergence. However, yield were near expected levels at Moccasin (56.6bu/a) and below expectation at Denton (42.4 bu/a). Hays, Haxby, Tradition and MT970116 were the top grain producers at both locations. Haxby, Conlon and MT970116 had the highest test weights at both locations.

**SUMMARY:**  
2004 Barley yields were suppressed by dry early spring conditions. However, the barley was able to respond positively to the cool June weather. Early seeding help the yields at both locations.

**FUTURE:**  
The barley variety evaluations will continue at Moccasin and Denton but will be suspended at Geraldine due dilution of resources.

Table 1 2004 No-Till continuous crop spring barley variety trial.  
Exp 3670 Central Agricultural Research Center. Moccasin, Montana.

Variety	ID code	Grain	Test			Protein
		Yield	Weight	Plump	Thin	Content
		bu/ac	lb/bu	%	%	%
MT970116	MT970116	61.9	52.9	11.6	32	13.1
Hays	MT981060	61.7	41.45	58.3	28.9	13.1
Tradition	6B952482	61.4	49.25	32.4	38.4	11.6
Haxby	MT950186	60.5	52.5	61.6	28.5	13.4
MT960228	MT960228	60.3	50.35	48.8	36.2	13.8
Conlon	ND13299	60.0	52.85	36.9	43.2	12.1
Baronesse	PI568246	58.9	48.7	29	35.1	14.3
MT970229	MT970229	57.7	52.25	77.2	18.4	13.6
Gallatin	PI491534	56.5	51.65	34.6	38.5	14.2
Valier	PI610264	56.2	51.5	68.1	23.5	13.9
Harrington	SK 76333	55.1	49.4	20.4	46.4	13.9
MT910189	MT910189	54.3	51.8	32.4	39.5	12.1
Lacey	PI613703	52.0	48.45	19.2	38.2	13.2
Haybet	PI533600	51.6	45.1	18.1	38.9	13.1
Metcalfe	TR232	50.6	47.2	90.8	7	13.2
Copeland	TR150	47.4	46.5	10	39.5	13
Means		56.62	49.49			
F TEST FOR VAR.		3.85	29.95			
C.V. 1: (S/MEAN)*100		6.95	1.67			
LSD (0.05)		6.56	1.77			

Planted: April 7, 2004 No-till CC after yellow mustard 03, spr wheat 02, and peas 01.  
Fertilizer: Pre-plant topdress 30N as urea. W/seed 10-10-10-5.  
Herbicide: Post plant 10 oz glyphosate. Bronate: \ barley @ 4-5 leaf on May 24  
Precipitation: Sept -Aug 13.5 (ave 15.4)

Table 2 2004 Denton spring barley performance evaluations.  
 Exp. 3671 Central Agricultural Experiment Station. Moccasin, Montana.

Variety	ID	Plant Height	Grain Yield	Test Weight	Sieve Size			Protein Content
					Plump	Mids	Thin	
		"	bu/a	lbs/bu	%	%	%	%
Hays	MT981060	29.1	48.4	39.3	10.6	54.1	35.3	14.4
Haxby	MT950186	26.8	47.7	51.4	16.4	32.1	51.5	12.9
Tradition	6B952482	32.7	45.8	48.4	16.5	47.6	35.9	12.0
MT970116	MT970116	35.0	45.3	51.1	51.2	14.6	34.2	12.4
Valier	PI610264	28.4	45.0	49.3	10.1	52.4	37.6	13.6
Conlon	ND13299	30.7	43.6	51.4	91.7	3.6	4.6	12.5
Metcalfe	TR232	33.1	43.2	46.0	24.5	28.4	47.1	13.6
Baronesse	PI568246	27.2	43.1	46.3	9.4	50.5	40.1	12.2
Gallatin	PI491534	28.4	42.5	48.1	20.7	35.5	43.8	13.8
MT970229	MT970229	28.4	41.7	50.2	61.7	11.7	26.5	13.3
Lacey	PI613603	37.8	41.4	45.3	12.6	51.7	35.6	12.1
MT910189	MT910189	26.8	41.0	46.9	7.1	43.7	49.2	13.6
Copeland	TR150	35.0	39.2	45.3	23.5	32.9	43.7	12.5
MT960228	MT960228	28.0	39.0	47.4	15.3	40.8	43.9	12.4
Harrington	SK 76333	29.9	36.4	45.4	17.8	40.9	41.3	14.6
Haybet	PI533600	30.7	35.3	39.4	3.7	77.1	19.2	14.1
Mean		30.5	42.4	47.0	24.6	38.6	36.8	13.1
F test var			1.27					
C.V. 1:			13.37					
LSD (0.05)			9.46					

Planted: April 6, 2004 No-till in to continuous crop 2" Soil temp: 15C

Fertilizer: N 45 lbs urea topdress. W/seed NPKS 10-10-05.

Herbicide:

Precipitation: 18" moist soil @ seeding.



Table 3 Moccasin recrop barley multi-year yield summary of selected varieties, 1993-2004  
Exp. 3670 Central Agricultural Research Center, Moccasin, MT

Selected	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Ave.	Gallatin Same Yrs	
Varieties	----- bu/a -----														
Gallatin	58	48	56	30	67	39	60	49	52	45	23	57	48.7	48.7	
Harrington	62	44	65	31	71	36	50	51	57	44	24	55	49.2	48.7	
Lewis	66	44	58	33	76	37	58	54	53	46			52.5	50.7	
Baronesse	76	44	63	33	73	44	54	57	54	50	21	59	52.3	48.7	
Xena							53	57	60	54	21		49.1	45.9	
Valier							56	50	53	43	23	56	46.8	47.7	
Haxby							53	57	50	48	31	60	50.0	47.7	
Eslick	MT 960228						57	60	50	53	24	60	50.8	47.7	
Hays	MT9601	<i>Seed available to seed growers in 2003.</i>							52	52	51	27	62	48.6	45.2
Mean	64.3	42.1	63.5	30.6	71.7	41.8	54.9	53.2	52.6	52.6	24.2	56.6			

Table 4 Denton recrop barley multi-year yield summary of selected varieties, 1993-2004  
Exp. 3671 Central Agricultural Research Center, Moccasin, MT

Selected	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Ave.	Gallatin Same Yrs
Varieties	----- bu/a -----													
Gallatin	100	40	68	31	78	38	31	55		39	21	43	49.4	49.4
Harrington	102	33	70	25	68	40	33	47		40	20	36	46.8	49.4
Baronesse	121	38	73	31	73	41	27	52		39	24	45	51.2	49.4
Xena							34	56		42	28		39.8	36.5
Valier							27	48		40	25	45	46.8	37.7
Haxby							34	56		36	30	48	46.1	37.7
Eslick	MT 960228						27	51		42	16	39	46.0	37.7
Hays	MT960100							49		42	20	48	44.7	39.4
Mean	104	38	67.9	29.8	72.3	39.3	31.6	51.8		40.4	23.1	42.4		

\* Trial was not harvested in 2001 because of extreme uneven germination throughout the nursery.  
1996 trial was re-crop following buckwheat. 1997 trial was recrop following millet.  
1998 through 2002 recropped on pulse stubble.