PROJECT TITLE: Evaluation of winter and spring cereals under a no-till recrop environment at Moccasin.

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OBJECTIVES:
To evaluate the performance of winter and spring grain varieties in no-till recrop environment at Moccasin. To determine yield potential of winter wheat, barley, spring wheat, and oat varieties under recrop environment.

RESULTS:
1995 variety trials were planted no-till following barley on a site that has been continuously cropped no-till since 1990. Volunteer barley was a problem in the winter wheat variety trial. The site received 13.39 inches (155% of average) April through July precipitation.

Winter Wheat: Yields ranged from 44 to 27 bu/a with Kestrel producing the highest yield. Test weights averaged 61.2 lbs/bu while proteins averaged 10.2%. Stands were thin due to the dry conditions at seeding. Data for the winter wheat variety trial are presented in Tables 1 & 2.

Barley: Yields were above average, ranging from 70 to 56 bu/a with Targhee, an Idaho selection, producing the highest yield. Varieties with long term high yield performance are Hector, Steptoe, and Bowman. Test weights averaged 49 lbs/bu, while proteins averaged 12%. Data for the 1995 trial, and multi-year summary, are presented in Tables 3 & 4.

Spring Wheat: Yields were above average, ranging from 47 to 33 bu/a, with Newana producing the high yield. Long term high yielders under recrop at Moccasin are Amidon and Newana. The average test weight was 58.2 lbs/bu, while proteins averaged 15.1%. Data for the 1995 trial, and multi-year summary, are presented in Tables 5 & 6.

Oats: Oat variety yields were above average, ranging from 3670 to 1549 lbs/a. Robert was the high yielder. Varieties with long term high yield performance are Robert, and Monida. Data for the 1995 trial, and multi-year summary, are presented in Tables 7 & 8.

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SUMMARY:
At Moccasin, cereal varieties which perform well under crop-fallow conditions tend to perform well under recrop conditions. The performance of a variety on a given year was more a factor of that year's weather than whether it was planted on recrop or fallow.

FUTURE PLANS:
Winter and spring cereal no-till variety trials will be continued on station.

Table 1 1995 CARC No-Till Winter Wheat Variety Trial
Exp. 3875 Central Agricultural Research Center, Moccasin, MT.

ID#	Variety	Head Date	Plant Ht.	Grain Yield	Test Wt.	Protein Content
		d	"	bu/a	lbs/bu	%
S86-15	KESTREL	183	34	44.1	60.4	9.4
CI 17940	ARCHER	179	26	40.6	60.9	9.5
RH78W296	BIGHORN	182	26	40.3	61.0	11.0
MT 8039	JUDITH	182	30	39.7	60.1	9.6
CI 17879	ROCKY	182	32	39.0	61.0	9.4
PI518591	ARAPAHOE	177	32	38.6	60.5	10.6
MT 7811	MT 7811	184	31	37.9	59.4	10.3
PI478771	AGASSIZ	182	38	37.3	62.4	9.8
CI 17846	MANNING	182	29	36.4	62.5	9.1
MTS92042	LEW/TBR//RDW	182	31	36.4	61.5	10.9
PI517194	TIBER	184	34	36.1	60.3	10.2
RDW(SEL)	AC READYMADE	182	35	36.0	61.2	10.7
CI 17902	WINRIDGE	187	33	36.0	61.4	9.5
CI 17952	HAWK	179	24	35.7	62.8	10.5
PI564761	MT 8719	182	30	34.8	62.5	11.5
CI 15075	CENTURK	182	30	34.1	61.5	9.5
CI 17844	REDWIN	184	34	33.2	61.4	9.7
CI 17860	NEELEY	185	31	33.0	62.7	9.2
CI 17735	NORSTAR	188	39	32.6	57.3	9.4
PI512302	BLIZZARD	186	33	32.2	61.3	9.6
C1 17727	WESTON	182	35	31.8	63.0	11.7
MT 88046	PMN5MMT77003//HP344	178	29	31.5	61.5	11.8
QT 542	HYBRITECH 542	181	32	30.4	62.3	10.4
MTSF2238	VANGUARD	183	30	27.1	60.2	10.8
EXPERIMENTAL MEANS		182.46	31.64	35.62	61.24	10.20
NO. OF REPLICATIONS		3.00	3.00	3.00	2.00	2.00
F TEST FOR VAR.		19.99	15.78	1.52	2.71	3.22
C.V. 1: (S/MEAN)*100		.54	4.85	14.98	1.79	6.31
LSD (0.05)		1.63	2.52	8.77	2.27	1.33

Planted: 10-26-94 no-till on barley stubble (winter wheat followed four barley crops).
Harvested: 8-23-95.
Fertilizer: 50# 28-28-0 w/seed, 80 units N broadcast fall 1994.
Growing Season Precipitation (April-July): 13.39 inches.

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Table 2 CARC Recrop Winter Wheat Multi-Year Summary
Central Agricultural Research Center, Moccasin, MT.

Variety	1993	1995	Ave.
CENTURK	38	34	36
NORSTAR	39	33*	36
REDWIN	42	33	37
NEELEY	44	33	38
ROCKY	40	39	39
TIBER	45	36	40
JUDITH	36	40	38
HYBRITECH542	38	30	34
BIGHORN	35	40	37
HAWK	32	36	34
AGASSIZ	32	37	34
MT 7811		38	
KESTREL	40	44	42
AC READYMADE	35	36	35
ARAPAHO	26	39	32
MT 8719		35	
VANGUARD		27*	
MTS92042		36	
Mean	37.1	35.6	

All trials were seeded no-till on barley stubble.
1994 trial was abandoned due to variable stand resulting from extrememly wet conditions at seeding.
*Suspected low germination resulted in low yields.

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Table 3 1995 CARC No-Till Spring Barley Trial
Exp. 3673 Central Agricultural Research Center, Moccasin, MT.

ID#	Variety	Grain Yield	Test Wt.	Plant Ht.	Head Date	Protein Content
		bu/a	lbs/bu	"	day	%
PI537438	Targhee	70.1	48.1	31	195	11.6
MT890008	MT890008	68.2	46.4	28	198	11.5
21140523	Chinook	68.0	48.1	31	196	12.5
CI 9558	Piroline	66.6	51.1	32	193	11.9
H1851195	H1851195	66.1	49.9	32	194	12.2
CI 15514	Hector	65.9	49.6	33	195	12.7
CI 15229	Steptoe	65.6	44.7	28	190	11.3
SK 76333	Harrington	65.5	46.7	31	195	12.4
H3860224	H3860224	64.3	50.0	30	197	12.6
MT886610	MT886610	64.2	48.9	34	195	12.3
PI483237	Bowman	62.7	51.8	30	192	12.2
NS 78054	Baronesse	62.7	48.9	29	198	12.0
MT890070	MT890070	62.3	51.4	30	194	11.7
PI537967	Colter	60.6	45.5	28	193	10.5
CI 15856	Lewis	58.5	50.5	31	194	12.5
ND 9866	Stark	57.6	52.7	30	193	12.0
MT889106	MT889106	57.5	52.5	33	193	12.2
PI491534	Gallatin	56.5	49.6	30	193	12.2
EXPERIMENTAL MEANS		63.50	49.25	30.59	194.31	12.01
F TEST FOR VAR.	df=34	1.50	45.45	3.25	18.85	6.82
C.V. 1: (S/MEAN)*100		8.93	1.21	5.10	.41	2.99
LSD (0.05)		9.41	.99	2.59	1.33	.60

Planted: 5-15-1995 no-till.
Previous Crop: Clark barley (4 consecutive barley crops).
Harvested: 8-24-1995.
Fertilizer: 50# 18-46-0 with seed, 60 units N broadcast.
Growing Season Precipitation (April-July): 13.39 inches.

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Table 4 Moccasin Off-Station Barley Multi-Year Summary
Central Agricultural Research Center, Moccasin, MT.

Variety	1983 *	1984 *	1985 *	1985 **	1989 **	1990	1992 **	1993 **	1994 **	1995 **	Ave.	Hector Same Yrs
	- bu/a -											
HECTOR	42	27	26	18	48	31	58	66	47	66	43	--
PIROLINE	43	27	22	18	45	30	52	60	39	67	40	43
HARRINGTON	39	26	8	6	45	25	45	62	44	65	36	43
LEWIS	43	26	20	16	41	34	55	66	44	58	40	43
BOWMAN			26	26	40	29	56	62	35#	63	42	45
STEPTOE			25	23	46	33	52	71	38	66	44	45
GALLATIN		30	18	15	39	34	53	58	48	56	39	43
CHINOOK					43	38	48	68	40	68	51	53
STARK						35	58	60	38	58	50	54
BARONESSE							59	76	44	63	60	59
COLTER								54	43	61	53	60
MT890008								72	41	68	60	60
MT889106									52	57	54	56
Mean	39.3	26.2	17.6	14.6	44.1	31.9	52.6	64.3	42.1	63.50		

* Recrop
** No-Till

1990 Variety trial was planted on fallow ground.
1991 Variety trial on no-till barley stubble experienced severe hail damage.
#Bowman experienced animal damage in 1994 trial.

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Table 5 1995 CARC Recrop Spring Wheat Variety Trial
Exp. 9970 Central Agricultural Research Center, Moccasin, MT.

ID#	Variety	Plant Ht.	Head Date	Grain Yield	Test Wt.	Protein Content
		"	day	bu/a	lbs/bu	%
CI 17430	NEWANA	31	197	47.4	59.8	14.9
CI 17790	LEN	33	197	45.5	57.3	15.5
PI574642	McNEAL	32	196	45.2	59.5	15.3
BZ684-23	VANNA	29	197	43.9	56.5	13.4
MTHW9406	MT8182/KLASIC	33	192	43.7	57.4	14.8
WB 936	WESTBRED 936	28	193	43.0	57.6	16.1
WB 926	WESTBRED 926	31	192	42.0	57.7	15.5
TR983239	FERGUS	29	193	40.9	59.6	15.7
MT 9360	LEW/PND	32	193	40.7	59.3	15.3
CI 17828	PONDERA	32	193	40.5	60.2	14.9
ND 677	ND622*2/CUTLESS	37	193	40.4	58.1	15.5
ND 626	GRANDIN	33	194	40.0	59.3	15.4
ND 606	AMIDON	37	194	39.9	57.7	14.6
PNR 2375	PIONEER 2375	34	193	39.6	59.2	14.9
MT 9354	MT7810/(SU73/LEW)	34	194	39.6	58.4	15.1
PI549275	HI-LINE	30	195	39.5	58.0	15.2
C982-324	RAMBO	30	198	39.1	58.5	15.0
WBEXPRES	WESTBRED EXPRESS	28	197	39.0	58.4	15.0
PI483235	GLENMAN	31	198	39.0	57.8	14.7
CI 17429	LEW	38	198	36.4	59.1	15.2
ND 582	STOA	36	196	35.6	56.8	15.7
CI 13596	FORTUNA	38	195	34.9	57.6	15.1
BZ984326	BORDER	30	192	33.5	55.8	14.9
EXPERIMENTAL MEANS		32.46	194.81	40.41	58.25	15.11
F TEST FOR VAR. df=44		13.57	28.45	1.52	2.42	8.25
C.V. 1: (S/MEAN)*100		4.60	.35	11.85	2.15	2.05
LSD (0.05)		2.46	1.11	7.88	2.06	.51

Planted: 5-15-1995 no-till.
Previous Crop: Clark barley (4 consecutive barley crops).
Harvested: 9-16-1995.
Fertilizer: 50# 18-46-0 w/seed, 90 N Urea broadcast.
Growing Season Precipitation (April-July): 13.39 inches.

File: AR997095.SWD

Table 6 Moccasin Off-Station Spring Wheat Multi-Year Summary
Central Agricultural Research Center, Moccasin, MT.

Variety	1983 *	1984 *	1985 *	1985 **	1989 **	1990	1992 **	1993 **	1994 **	1995 **	Ave.	Newana Same Yrs
	bu/a											
AMIDON					39	20	35	55	23	40	35	36
LEN					34	19	27	47	23	45	32	36
STOA		17	14	14	40	20	31	46	21	36	26	29
GLENMAN	26	18	15	13	43	21	36	47	24	39	28	29
WESTBRED 926R						20	29	51	23	42	33	35
GRANDIN						22	30	54	20	40	33	35
FORTUNA	23	15	10	9	35	15	27	44	24	35	24	29
RAMBO					39	21	34	43	23	39	33	36
LEW	26	18	12	12	36	18	34	46	20	36	26	29
NEWANA	25	17	14	15	42	19	35	48	25	47	29	--
HI-LINE					39	19	29	49	21	39	33	36
MCNEAL							39	52	22	45	39	39
BORDER									21	33	27	36
Mean	24.2	16.8	12.9	12.6	39.6	20.4	31.1	48.1	22.4	40.4		

* Recrop
** No-till

1990 Variety trial on fallow.
1991 Variety trial on no-till barley stubble experienced severe hail damage.

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Table 7 1995 CARC Recrop Oat Variety Trial
Exp. 0407 Central Agricultural Research Center, Moccasin, MT.

ID#	Variety	Plant Ht.	Head Date	Grain ----Yield----		Test Wt.
		"	day	bu/a	lbs/a	lbs/bu
W 82056	Robert	35	199	114.7	3670	32.5
CI467882	Border	33	200	106.8	3418	33.0
81AB5792	Rio Grande	32	195	106.4	3405	35.8
CI 9252	Otana	39	199	106.3	3402	35.5
NEWDAK	Newdak	39	193	105.6	3379	34.0
ND870258	Whitestone	35	199	105.4	3373	34.9
90AB1322	80Ab988/Monida	30	198	105.2	3366	34.8
CI483126	Monida	34	199	105.0	3360	33.1
82AB1142	Ajay	27	198	103.8	3322	36.6
CI 8263	Cayuse	34	198	103.2	3302	34.9
83AB3250	Cayuse/Monida	30	201	96.9	3101	32.1
CI 9401	Ogle	34	193	94.8	3034	34.3
CI 9297	Appaloosa	33	200	94.5	3024	32.4
ND820603	Valley	33	199	91.6	2931	33.3
CI 6611	Park	39	196	86.5	2768	34.3
86AB1616	86Ab1616	33	203	72.5	2320	34.9
ND862915	Paul	37	200	62.8	2010	35.9
88AB3073	Pennlo/PI447276	34	200	48.4	1549	35.4
EXPERIMENTAL MEANS		34.06	198.44	95.02		34.35
TOTAL OBSERVATIONS		54	54	54		36
NO. OF REPLICATIONS		3	3	3		2
ERROR DEGREES OF FREEDOM		34	34	34		17
F TEST FOR REPS.		14.28	1.70	6.88		5.08
F TEST FOR VAR.		13.36	49.90	12.28		1.94
C.V. 1: (S/MEAN)*100		4.36	.32	9.06		3.92
LSD (0.05)		2.46	1.04	14.29		2.84

Oat grain yield (bu/a) based on 32 lb/bu as standard test weight.
Planted: 5-15-1995 no-till on barley stubble.
Fertilizer: 50# 18-46-0 w/seed, 60 units N broadcast.
Harvested: 8-24-1995.
Growing Season Precipitation (April-July): 13.39 inches.

File: AR040795.OAD

Table 8 CARC Off-Station Recrop Oats Multi-Year Summary
Central Agricultural Research Center, Moccasin, MT.

Variety	1992	1993	1994	1995	Ave.
	---------- Grain Yield - lbs/ac ----------				
Appaloosa	3657	2747	1776	3024	2801
Border	3595	2662	1951	3418	2906
Cayuse *	3447	2875	2324	3302	2987
Monida *	3728	3251	1809	3360	3037
Newdak	3432	2892	2155	3379	2964
Ogle	2886	2609	2142	3034	2668
Otana *	3521	2917	1838	3402	2919
Park *	3346	2484	1933	2768	2633
Rio Grande	3318	3098	1860	3405	2920
Robert	3603	3591	2313	3670	3294
Valley	3072	2596	2010	2931	2652
Ajay	3295	2378	1483	3322	2619
Mean	3426.1	2800.3	1926.4	3040.8	

*Recommended Variety

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