

PROJECT TITLE: Evaluation of barley, spring wheat, triticale and oats variety performance under no-till recrop environment at Moccasin. MC

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OBJECTIVES:
To evaluate the performance of spring cereal grain varieties in no-till recrop environment at Moccasin. To provide yield potential of barley, spring wheat, oats and triticale under recrop environment.

RESULTS:
Spring cereals had good to excellent yield levels under recrop at Moccasin. The trials escaped some Russian wheat aphid damage due to its advanced maturity when the aphid populations peaked in mid-June. This fact is demonstrated by Clark barley. Clark barley planted April 28 around the nursery yielded 28 bu/a compared to the 49 bu/a for the Clark in the variety trial on planted April 3. The aphids were sprayed June 27, too late to benefit the early seeded barley. The spring wheat and triticale had some ergot due to the cool humid conditions during flowering. Incidence of ergot was counted for one rep of each of the spring wheat and triticale. Oat yields were extremely high due to above average precipitation levels and cool temperatures in July. The RWA attacked the oats, but only an occasional plant exhibited symptoms of the RWA toxin. An additional oat variety trial was also established no-till on buckwheat stubble near Grass Range. The top yielding varieties at both locations were Derby, Monida, Appaloosa, and Border.

SUMMARY:
At Moccasin, spring cereal varieties which perform well under crop-fallow systems tend to perform well under recrop systems. The performance of a particular 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:
The current plan is to continue the spring cereal variety no-till trials on station. The triticale trial may be eliminated, because we have sufficient information on the varieties available. We have added a no-till winter wheat variety trial. We hope to continue the recrop oat trial near Grass Range along with some annual legume species trials.

Table 1 1992 CARC Off-Station Recrop Spring Barley Trial
Exp.3659 Central Agricultural Research Center, Moccasin, MT.

VARIETY	Plant Ht	Heading Date	-----Grain-----			Plump *	Thin @
	"		bu/a	lb/bu	%	%	%
Baronesse	23	171	59.2	50.9	10.3	89	3
Stark	25	169	58.1	51.3	11.4	93	2
Hector	26	172	57.9	50.6	10.8	85	5
Bowman	25	168	55.8	49.5	11.8	86	4
Lewis	26	173	55.5	51.7	10.6	86	4
MT81161	23	174	54.1	49.4	9.8	84	6
Gallatin	26	172	53.1	51.4	9.6	83	6
Piroline	24	169	52.4	50.2	11.5	81	5
Steptoe	23	170	51.8	45.5	10.2	93	2
MT860756	25	173	50.3	52.2	9.3	88	5
Excel	27	169	49.4	48.2	10.8	94	3
Clark	25	174	49.0	49.6	11.0	80	6
Bearpaw	25	174	48.8	50.6	10.1	84	6
MT140523	24	173	48.3	49.3	11.7	84	5
Harrington	24	173	45.5	50.5	9.8	82	6
EXPERIMENTAL MEANS	24.67	171.62	52.61	50.06			
F TEST FOR VAR. df=28	.96	43.33	.71	9.70			
C.V. 1: (S/MEAN)*100	8.40	.31	16.05	1.82			
C.V. 2: (S MN/MN)*100	4.85	.18	9.27	1.05			
LSD (0.05)	3.47	.90	14.13	1.53			

*Plump>6/64

@Thin<5.5/64

Planted: 4-3-92 on No-till barley stubble.

Harvested: 8-12-92

Fertilizer: 50 lbs/ac 18-46-0 applied with seed, 45 units of N/ac
as Urea broadcast prior to seeding.

Growing season precipitation (April-July): 8.85 inches.

Cooperator: D. Wichman, J. Vavrovsky, T. Blake, P. Hensleigh.

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Table 2 Moccasin Off-Station Barley Multi-Year Summary
Central Agricultural Research Center, Moccasin, MT.

VARIETY	1983 *	1984 *	1985 *	1985 **	1989 **	1990	1992 **	AVE. HECTOR SAME YRS.	
	----- bu/a -----								
HECTOR	42.5	26.9	26.2	18.5	47.9	31.1	57.9	35.9	----
PIROLINE	42.8	26.9	22.1	18.1	44.8	30.5	52.4	33.9	35.9
HARRINGTON	38.7	26.3	8.0	5.8	45.0	24.8	45.5	27.7	35.9
CLARK	44.6	25.0	16.7	12.3	40.5	32.4	49.0	31.5	35.9
LEWIS	43.1	25.7	19.9	15.6	40.6	33.7	55.5	33.4	35.9
BOWMAN			26.2	25.9	40.3	28.6	55.8	35.4	36.3
STEPTOE			25.3	23.1	46.1	33.0	51.8	35.9	36.3
GALLATIN		30.3	18.2	14.6	38.6	33.9	53.1	31.4	34.7
BEARPAW					44.5	33.8	48.8	42.4	45.6
MT 81161					52.7		54.1		
MT 140523					42.7	37.9	48.3		
STARK						34.6	58.1		
BARONESSE							59.2		
EXCEL							49.4		
Mean	39.3	26.2	17.6	14.6	44.1	31.9	52.6		

* Recrop

** No-Till

1991 Variety trial on no-till barley stubble was hailed out.

Table 3 1992 CARC Off-Station Recrop Spring Wheat Variety Trial
 Exp.9907 Central Agricultural Research Center, Moccasin, MT

Variety	Ergot	Heading	Plant	Grain		
	Sclerotia #/200g ¹	Date d	Height "	Yield bu/a	TestWt lbs/bu	Protein %
PENAWAWA	0	173	24.3	39.5	61.8	
MT8849	2	173	27.6	38.6	60.4	
GLENMAN	0	175	26.6	35.7	59.8	
NEWANA	0	173	25.6	35.0	61.9	
AMIDON	0	173	27.0	34.9	60.4	
RAMBO	0	173	26.6	34.4	61.5	
LEW	0	176	29.3	33.7	60.8	
OWENS	7	173	24.6	32.5	60.6	
LANCER	0	174	28.6	31.6	61.0	
STOA	0	173	29.3	31.4	59.3	
PONDERA	0	172	25.6	30.9	61.1	
GRANDIN	1	172	28.6	30.4	61.6	
WESTBRED 926	1	171	24.6	29.0	61.9	
HI-LINE	0	172	24.0	28.8	60.4	
LEN	0	174	27.3	27.4	61.5	
FORTUNA	0	174	29.3	27.1	61.5	
KLASIC	0	169	18.0	26.1	61.3	
GUS	0	174	25.0	26.0	59.1	
CUTLESS	0	173	27.0	24.3	60.4	
OLAF	2	172	28.0	24.1	61.3	
EXPERIMENTAL MEANS		172.9	26.38	31.08	60.88	
F TEST VAR. df=38		25.89	7.87	13.30	5.81	
C.V. 1: (S/MN)*100		.29	6.16	6.86	.97	
C.V. 2: (S MN/MN)*100		.17	3.56	3.96	.56	
LSD (0.05)		.84	2.69	3.53	.97	

¹ Ergot sclerotia were counted for the first rep only. They were removed from the protein sample.

Barley content averaged 1.67% by weight across all varieties in the first rep. The high barley content was 4.9 % and 0.3% the low.

Planted: 4-3-92 on No-till barley stubble.

Harvested: 8-18-92

Fertility: 50 lbs/ac 18-46-0 applied with seed. 46 units of N/ac as Urea broadcast prior to seeding.

Growing season precipitation (April- July): 8.85 inches.

Cooperator: D. Wichman, J. Vavrovsky, L. Talbert, S. Lanning.

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

VARIETY	1983 *	1984 *	1985 *	1985 **	1989 **	1990	1992 **	AVG. NEWANA SAME YRS	
-----bu/a-----									
ALEX	23.2		12.2	12.3	39.2	20.5		21.5	23.1
OLAF	21.7	15.4			39.2	17.6	24.1	23.6	27.6
AMIDON					39.2	20.0	34.9	31.4	31.9
PENAWAWA					44.7	23.8	39.5	36.0	31.9
LEN					34.3	19.2	27.4	27.0	31.9
OWENS		15.4			47.7	22.6	32.5	29.5	28.2
STOA		16.8	14.2	13.9	40.0	19.6	31.4	22.6	23.7
WESTBRED 906R					40.2	21.0		30.6	30.3
GLENMAN			15.3	13.0	43.1	20.7	35.7	25.6	25.0
WESTBRED 926R						20.1	29.0	24.5	27.0
GRANDIN						21.6	30.4	26.0	27.0
LANCER					32.8	23.9	31.6	29.4	31.9
FORTUNA	22.6	15.2	9.9	9.5	35.2	14.8	27.1	19.2	23.9
RAMBO					39.0	20.6	34.4	31.3	31.9
LEW	25.9	17.7	12.1	12.2	36.4	17.7	33.7	22.2	23.9
PONDERA	23.0	16.4			39.0	18.6	30.9	25.6	27.6
GUS						24.5	26.0	25.2	27.0
NEWANA	25.4	17.1	14.4	14.9	41.6	19.1	35.0	23.9	23.9
CUTLESS					35.6	23.2	24.3	27.7	31.9
HI-LINE					39.0	19.3	28.8	29.0	31.9
Mean	24.2	16.8	12.9	12.6	39.6	20.4	31.1		

* Recrop
** No-till

1991 variety trial on no-till barley stubble was hailed out.

Table 5 1992 CARC Off-Station Recrop Triticale Variety Trial
Exp.9910 Central Agricultural Research Center, Moccasin, MT.

Variety	Ergot Sclerotia #/200g	Heading Date d	Plant Height "	Yield bu/a	Grain TestWt lbs/bu	Protein %
NEWANA	0	173	25.3	35.9	62.1	
JUAN	18	172	30.7	34.8	51.0	
CARMAN	42	171	31.3	34.1	48.4	
MARVAL	4	172	33.7	34.1	49.7	
WELSH	24	172	30.3	33.7	48.3	
KRAMER	30	170	28.7	31.8	50.5	
WAPITI	30	170	31.3	31.4	50.8	
BEAGLE 82	56	171	30.7	30.6	48.3	
KARL	286	170	24.0	26.7	49.4	
SUNLAND	55	171	24.7	22.1	52.4	
EXPERIMENTAL MEANS		171.3	29.1	31.52	51.08	
F TEST FOR VAR. df=18		11.29	9.55	13.05	108.21	
C.V. 1: (S/MEAN)*100		.25	6.34	6.44	1.33	
C.V. 2: (S MN/MN)*100		.15	3.66	3.72	.77	
LSD (0.05)		.75	3.16	3.48	1.17	

Planted: 4-3-1992 No-till into barley stubble.

Harvested: 8-18-92

Fertilizer: Preplant 46 lbs N as urea. 50 Lbs 18-46-0 w/seed.

Pest Control: Preplant Roundup at 10 oz material / acre.

2,4-D + Tordon (8 + 1 ozai/a).

Lorsban June 27. Aphid damage already inflicted.

Growing season precipitation (April-July): 8.85 inches.

Table 6 Moccasin Spring Triticale Multi-Year Summary
Central Agricultural Research Center, Moccasin, MT.

VARIETY	1988	1989 *	1990	1992 *	AVG.	NEWANA SAME YRS.
	-----lbs/a-----					
NEWANA	1892	1460	1271	2154	1694	1694
JUAN	1904	2500	1183	2088	1919	1694
SUNLAND		2465	1390	1326	1727	1628
WAPITI	1638	2455	1473	1884	1862	1694
BEAGLE 82		2120	1171	1836	1709	1628
CARMAN	1098	2140	1129	2046	1603	1694
KARL	1249	2260	1153	1602	1566	1694
KRAMER	1788	2040	1171	1908	1727	1694
MARVAL	1779	2045	1216	2044	1771	1694
WELSH	1343	2145	1175	2022	1671	1694

* Planted no-till
1991 Variety trial on no-till barley stubble was hailed out.

Table 7 Oat Variety Trials on Recrop in Central Montana.
Exp.0407 Central Agricultural Research Center, Moccasin, Montana

Variety	----- Moccasin Recrop -----				Grass Range Recrop	
	Height	Headed	Yield	TestWt	Yield	TestWt
	"	d	lbs/a	lbs/bu	lbs/a	lbs/bu
Calibre	33.0	177	3938	39.0	1773	36.8
Derby	30.3	175	3746	38.2	2081	34.8
Monida	31.7	177	3728	36.0	1799	34.4
Appaloosa	26.7	176	3657	35.1	1796	32.8
Robert	30.3	176	3603	34.7	1773	33.7
Border	28.3	176	3595	35.7	1857	33.2
Otana	32.3	174	3521	36.8	1786	33.6
Cayuse	26.0	174	3447	35.8	1543	33.9
Newdak	29.3	170	3432	32.9	1415	31.7
Riel	31.0	173	3378	34.0	1671	33.7
Park	32.7	174	3346	36.6	1597	30.8
Rio Grande	24.7	172	3318	38.0	1600	34.7
Agay	23.7	175	3295	37.8	1389	35.1
Valley	26.3	173	3072	36.9	1472	33.9
Ogle	27.3	170	2886	32.8	1466	31.6
Trucker	31.3	171	2855	37.4	1303	37.5
MEANS	29.1	173.9	3426		1645.1	
F df=30	7.5	26.7	3		5.5	
C.V. 1:	6.4	.4	8		9.3	
C.V. 2:	3.7	.2	5		5.4	
LSD (0.05)	3.1	1.3	502		255.4	

Planted: CARC-Moccasin 4-3-1992 Deeshemaeker-Grass Range 4-21-92
Fertilizer: 45 lbs N preplant as urea. 50 lbs 18-46-0 w/seed.