

PROJECT TITLE: 2003 Evaluation of barley variety performance in recrop systems
Following oilseeds near Moccasin, Denton and Fort Benton.

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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 Fort Benton was frosted on the 26 June 03. The nursery was just at heading stage. The frost damaged heads, already had a white appearance by 01-July-03, occurred in streaks across the nursery. Heads in portions of some plots were totally sterile while others were nearly undamaged. The site was abandoned. The Denton location, seeded no-till into lentil stubble, started the season with decent soil moisture. However, scarce precipitation was received through June and July resulting in low grain yield and low test weights.

Conlin and Haxby were the high yielding barley in the 2003 Moccasin no-till recrop nursery with yields of 31.9 and 30.6 bushels per acre, respectively (Table 1). Conlin and Haxby also had the highest test weights at 49.6 and 49.6 lbs per bushel, respectively compared to the nursery mean of 46.3 lbs/bu. These two entries provide dryland farmers with barley varieties capable of producing decent test weights under quite stressful drought conditions. Hays, a hooded hay barley, produced grain yields above the mean of the sixteen entries. Over four harvest period, 2000 to 2003, Hays had a mean yield greater than Harrington and Gallatin on dryland recrop at Moccasin (Table 2).

Haxby and Xena, 30.2 and 27.6 bu/a, respectively, were the top producing barley varieties at Denton along with test line MT 970229 and Conlin. Haxby had the high test weight at 48.7 lbs/bu with Conlin and test line MT 970229 both producing 48.2 lbs/bu test weights.

SUMMARY:
Drought conditions contributed to low yields and test weights and above normal grain protein levels. Haxby and Conlin exhibited the ability produce well and to produce decent test weights in droughty conditions. Xena exhibited good yield potential in droughty conditions, also.

FUTURE PLANS:
Barley variety evaluations on recrop will continue at Moccasin, Denton, and Geraldine.

Table 1 2003 No-Till recrop barley after yellow mustard.
Exp 3670 Central Ag Research Center, Moccasin, Montana.

ID	Pedigree	Plant Ht		Yield	Test Wt	Protein
		"		bu/a	lbs/bu	%
ND13299	Conlon	4	26	31.9	49.6	19.1
MT950186	Haxby	7	25	30.6	49.6	19.5
MT970116	MT970116	11	28	30.6	49.5	20.1
MT970229	MT970229	14	25	26.9	47.9	21.5
MT981060	Hays	16	21	26.7	43.0	20.5
MT970148	MT970148	12	23	26.6	44.4	19.9
MT960228	Eslick	10	24	24.1	46.7	20.7
SK 76333	Harrington	2	25	23.6	42.9	21.4
MT970155	MT970155	13	25	23.3	46.9	21.5
PI610264	Valier	6	24	22.5	48.1	21.3
PI491534	Gallatin	1	26	22.5	46.0	20.9
BZ594-19	WPB Xena	5	24	21.4	45.2	22.3
MT960099	MT960099	8	21	21.1	46.1	22.0
PI568246	Baronesse	3	24	20.8	45.9	21.6
MT960101	MT960101	9	22	18.3	47.9	21.7
PI533600	Haybet	15	24	16.6	41.1	20.8
Mean		24.19		24.23	46.29	20.9
CV (S/MEAN) %		0		9.301	2.17	
LSD(0.05 by t)		0		3.758	1.675	

Seed date: 21-Apr-03 Herbicide: post plant glyphosate and bromoxynil + 2,4-D
 Fertilizer: 10-10-10-5 w/seed. 45 N top dress N as urea.
 Harvest date: 29-Jul-03 Precip: Crop Yr: 12.41 Grow Sea: 8.17"

Table 2 Moccasin recrop barley multi-year yield summary of selected varieties, 1993-2003
Exp. 3670 Central Agricultural Research Center, Moccasin, MT

Selected Varieties	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Ave.	Gallatin Same Yrs
	----- bu/a -----												
Gallatin	58	48	56	30	67	39	60	49	52	45	23	47.9	
Harrington	62	44	65	31	71	36	50	51	57	44	24	48.6	47.9
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	51.7	47.9
Xena							53	57	60	54	21	49.1	45.9
Valier							56	50	53	43	23	44.9	45.9
Haxby							53	57	50	48	31	47.9	45.9
Eslick	MT 960228						57	60	50	53	24	48.9	45.9
MT 960099								52	50	49	21	42.8	42.4
Hays	MT96010	<i>Seed available to seed growers in 2003.</i>											
								52	52	51	27	45.3	42.4
Mean	64.3	42.1	63.5	30.6	71.7	41.8	54.9	53.2	52.6	52.6	24.2	45.3	

¹⁷ Bowman experienced animal damage in the 1994 trial.

Table 3 2003 Denton no-till recrop barley after lentils.
Exp 3671 Central Agricultural Research Center. Moccasin Montana

ID	Pedigree	Trt	Plant Ht	Yield	Test Wt	Protein
			"	bu/a	lbs/bu	%
MT950186	Haxby	7	21	30.2	48.7	19.5
MT970229	MT970229	14	20	28.8	48.2	21.3
BZ594-19	WPB Xena	5	21	27.6	45.0	19.0
ND13299	Conlon	4	21	26.6	48.2	18.7
PI610264	Valier	6	20	25.4	45.7	19.2
MT970116	MT970116	11	20	24.4	47.5	20.5
PI533600	Haybet	15	20	24.2	42.0	21.5
PI568246	Baronesse	3	20	23.5	45.2	18.3
MT960099	MT960099	8	19	22.5	45.4	19.6
MT970148	MT970148	12	20	22.4	43.7	20.8
PI491534	Gallatin	1	21	21.4	44.8	17.8
MT970155	MT970155	13	22	21.3	45.8	21.0
SK 76333	Harrington	2	20	20.3	42.4	18.4
MT981060	Hays	16	19	19.5	41.8	21.8
MT960101	MT960101	9	18	16.2	45.4	20.0
MT960228	MT960228	10	22	15.8	45.9	20.2
OVERALL MEAN =			20.25	23.13	45.35	19.8
CV (S/MEAN) % =			0	19.32	1.847	
LSD(0.05 by t)=			0	7.453	1.397	

Seed Date: 28-Apr-03 Seeded no till into lentil stubble.
Fertilizer: 10-10-10-5 w/ seed No top dress N
Harvest Date: 30-Jul-03

Table 4 Denton recrop barley multi-year yield summary of selected varieties, 1993-2003
Exp. 3671 Central Agricultural Research Center, Moccasin, MT

Selected Varieties	1993	1994	1995	1996	1997	1998	1999	2000	2002	2003	Ave.	Gallatin Same Yrs
	bu/a											
Gallatin	100	40	68	31	78	38	31	55	39	21	50.1	
Harrington	102	33	70	25	68	40	33	47	40	20	47.8	50.1
Baronesse	121	38	73	31	73	41	27	52	39	24	51.8	50.1
Xena							34	56	42	28	39.8	36.5
Valier							27	48	40	25	35.2	36.5
Haxby							34	56	36	30	39.3	36.5
Eslick	MT 960228						27	51	42	16	33.9	36.5
MT 960099								52	40	23	38.1	38.3
Hays	MT960100							49	42	20	36.9	38.3
Mean	104	38	67.9	29.8	72.3	39.3	31.6	51.8	40.4	23.1	49.8	

* 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.