

2008 Barley variety performance in central Montana trials.
By Dave Wichman

2008 Central Montana crop growing conditions were generally less than ideal, particularly for spring crops. Droughty conditions of late 2007 persisted through early May and commenced again in mid-June following above average precipitation in May. Frequent windy days coupled with cold dry air through most of March and early April dried and powdered the surface soil layer. The mean air temperatures for March and April were 3 and 4 degrees F, respectively, below average. Severe cold weather in late April stressed emerging seedlings and caused some seedling leaf freezing. Late April wind driven snow accumulated in undulating fashion across research nurseries resulting in variable soil moisture accumulation and variable seedling growth. A bottom line result was crop performance research results that are weak for variety selection purposes.

The Moccasin and Denton barley variety trials were seeded into no-till continuous crops environments using Acura-plant serrated double openers. The Moccasin location was on winter wheat ground and the Denton location followed spring lentils. Barley grain yields were below average at both locations (Tables 1 & 3). Boulder, Challenger, and Hockett were the top three producers at Moccasin with mean yields >45 bu/a. Baronesse, Merit and Hockett had mean yields >38 bu/a to lead the barley production at Denton. Test weights were above average with nursery means of 49.0 lbs/bu at Moccasin and 50.9 lb/bu at Denton. A reduced yield potential due to stressful conditions during the early growth stages may have contributed to the above average test weights in spite of the dry conditions in late June and July. Grain protein content was determined from a single sample collected from rep1. Variety rankings were not consistent across the two locations. Haxby is used as the nursery yield standard and generally has multi-year mean yields greater than the other entries for the same year (Tables 2 and 4). At the Moccasin location, Boulder's mean yield is just slightly lower than Haxby's mean yield. For the Denton location, Westbred varieties Boulder and Xena have mean yields greater than Haxby for the same test years.

To access a Montana developed tool for crop variety selection and determining fertilizer use rates go to the web page: <http://www.sarc.montana.edu/php/varieties.php>
Dr Greg Kushnak, WTARC-Conrad, has assembled an document with barley variety descriptions. This document is accessible electronic pdf file at:
<http://ag.montana.edu/wtarc/Web2005/Agronomy/Barley/Barley%20notes.pdf>

This research was funded by the Montana Ag Experiment Station and the Montana Wheat and Barley Committee and done in conjunction with MSU barley breeder Tom Blake and associate plant breeder Stan Bates.

Table 1 2008 Moccasin no-till recrop spring barley variety performance evaluations.
Exp 3670 Central Agricultural Research Center. Moccasin, Montana.

ID code	Pedigree	Entry	Head Date	Plant Height	Grain Yield	Test Weight	Protein Content
		#	d of y	cm	bu/a	lbs/bu	%
MT950186	Haxby	1	182	63	42.5	52.2	12.6
BZ596117	Boulder	2	179	74	46.8	50.5	13.3
MT960228	Eslick	3	183	63	39.9	48.8	13.8
BZ594-19	WPB Xena	4	181	69	39.5	49.1	13.2
SK 76333	Harrington	5	180	66	40.9	47.7	14.0
2B965057	Conrad	6	183	66	41.0	49.2	14.2
2B914947	Merit	7	183	61	29.9	46.9	15.2
TR232	Metcalfe	8	182	71	30.2	49.7	15.2
MT910189	Hockett	9	179	64	45.2	49.4	13.2
MT960101	Geraldine	10	183	64	43.7	49.0	13.7
MT970116	Craft	11	179	74	37.3	51.9	12.8
ND 15477	Drummond	12	176	80	42.5	48.1	13.1
6B932978	Legacy	13	179	72	39.3	44.9	13.0
6B952482	Tradition	14	179	76	45.3	49.1	12.9
PI639694	Stellar-ND	15	176	68	35.8	46.9	12.3
PI568246	Baronesse	16	181	66	38.7	47.1	12.9
MT010158	MT920041/Harrington	17	181	68	36.9	48.9	13.3
YU501385	Challenger	18	181	74	45.3	51.7	13.0
MT020155	MT960225/H1851195	19	176	79	48.8	49.3	13.2
MT020204	MTLB 32/H1851195	20	179	73	50.1	50.5	13.3
Mean			180.1	69.43	40.97	49.02	13.4
P-value			0.000	0.000	0.000	0.003	
CV 1			0.6868	5.81	11.7	2.725	
LSD(0.05)			2.04	6.67	7.92	2.80	

Seed date: 07-Apr-08 in no-till CC winter wheat stubble. Continuous no-till recrop since 1996.

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

Harvest: 20-Aug-08 Soil: 2inch temp: 4C Moist probe depth: 12"

Comment: The growing season started cold and dry and ended hot and dry with a wetter than average May. The nursery received significant hail on 10-June which beat down the near jointing plants. Variable snow drifting from an 22-April storm contributed to variable plant available water.

Table 2 2008 Denton spring barley variety performance evaluations.
Exp 3671 Central Agricultural Research Center. Moccasin, Montana.

ID code	Pedigree	Entry	Plant Height	Grain Yield	Test Weight	Protein Content
		#	cm	bu/a	lbs/bu	%
MT950186	Haxby	1	63	36.1	53.4	13.4
BZ596117	Boulder	2	72	37.6	50.6	13.7
MT960228	Eslick	3	64	37.0	51.1	13.6
BZ594-19	WPB Xena	4	67	36.3	52.0	12.4
SK 76333	Harrington	5	65	33.0	52.3	13.6
2B965057	Conrad	6	66	34.9	49.9	13.7
2B914947	Merit	7	60	38.5	49.4	13.7
TR232	Metcalfe	8	69	35.5	51.2	14.0
MT910189	Hockett	9	64	38.0	51.5	13.2
MT960101	Geraldine	10	63	36.9	51.1	14.2
MT970116	Craft	11	72	35.0	53.2	14.1
ND 15477	Drummond	12	75	34.2	50.8	13.7
6B932978	Legacy	13	72	36.3	49.1	13.1
6B952482	Tradition	14	75	33.3	50.3	13.8
PI639694	Stellar-ND	15	67	33.3	48.6	12.7
PI568246	Baronesse	16	65	38.7	50.0	13.7
MT010158	MT920041/Harrington	17	67	34.2	51.8	14.5
YU501385	Challenger	18	73	38.1	52.4	13.3
MT020155	MT960225/H1851195	19	77	36.9	50.1	13.5
MT020204	MTLB 32/H1851195	20	72	35.1	49.1	13.9
Mean			68	35.94	50.87	13.59
P-value				0.6369	0.0041	
CV 1				9.362	2.02	
LSD(0.05)				ns	2.151	

Seed Date: 29-April-08 no-till recrop into lentil stubble with double disk drill

Fertilizer: NPKS 10-10-10-5 w/seed Preplant topdress N:

Harvest: 26-August 08 Soil: 2 inch temp 12 C Moist.probe depth: 14"

Comment: Dry growing season preceding and after a wet May. March -April cool to cold.

Table 4 Multi-year spring barley variety grain yields on no-till continuous crop near **Moccasin**
Exp 3670 Cental Agricultural Research Center. Moccasin, Montana

Selected entries	2002	2003	2004	2005	2006	2007	2008	average	Haxby Same Yrs
	bu/a								
Haxby	48	31	60	50	no	48	42.5	46.6	46.6
Boulder				46	harvest	46	46.8	46.3	46.7
Eslick	53	24	60	42		47	39.9	44.4	46.6
Xena	54	21		47		51	39.5	42.7	43.8
Harrington	44	24	55	36		38	40.9	39.6	46.6
Conrad				42		39	41.0	40.7	46.7
Merit				36		33	29.9	32.8	46.7
Metcalfe			51	37		34	30.2	38.0	50.2
Hockett			54	39		34	45.2	43.1	50.2
Geraldine	50	18		41		45	43.7	39.5	43.8
Craft	52	31	62	43		47	37.3	45.2	46.6
Drummond			52	43		38	42.5	43.8	50.2
Legacy				44		35	39.3	39.3	46.7
Tradition			61	50		41	45.3	49.4	50.2
Stellar						39	35.8	37.6	45.1
Means	48.4	24	56.6	41.8	no harv	40.8	41.0		

Varieties with multi-year mean yields > than Haxby for the same years are in **bold**.

Table 4 Multi-year spring barley variety grain yields in no-till CC near **Denton**.
Exp 36701 Cental Agricultural Research Center. Moccasin, Montana

Selected entries	2002	2003	2004	2005	2006	2007	2008	average	Haxby Same Yrs
	bu/a								
Haxby	36	30	48	55	40	28	36	39.0	39.0
Boulder				54	41	38	38	42.6	39.8
Eslick	42	16	39	53	36	29	37	36.0	39.0
Xena	42	28	55		36	28	36	37.3	36.4
Harrington	40	20	36	56	29	27	33	34.4	39.0
Conrad				50	34	29	35	37.2	39.8
Merit				43	34	25	39	35.0	39.8
Metcalfe			43	44	35	29	36	37.3	41.4
Hockett			41	33	38	28	38	35.4	41.4
Geraldine	37	16		44	38	31	37	33.9	37.6
Craft	42	24	45	51	32	28	35	36.8	39.0
Drummond				50	38	33	34	38.7	39.8
Legacy				52	32	36	36	39.3	39.8
Tradition			46	50	35	33	33	39.3	41.4
Stellar					29	34	33	32.1	34.8
Mean	40.4	23.1	42.4	49.4	34.5	30.0	35.9		

Varieties with multi-year mean yields > than Haxby for the same years are in **bold**.

