

TITLE: Off-Station Spring Barley Variety Investigations.

YEAR: 1991

LOCATION: Central Agricultural Research Center, Moccasin

PERSONNEL:

Project Leader: David M. Wichman

Cooperators: Tom Blake, MSU. and Landowners

Off-station spring barley trials were grown at Highwood, Denton, Geraldine, and Moccasin. The Moccasin location was hailed 7-14-1991. The Highwood Geraldine locations were recropped on barley. Denton was on fallow.

Barley yields at Highwood and Geraldine were below average and above average at Denton. Baronesse, a German feed barley, had overall high average yield followed by Steptoe, Hector, Stark, Bearpaw, and Lewis. Harrington and Clark had overall low yields. Clark was observed to have poor stand establishment at Geraldine. Therefore, seed quality may have been a factor. The variety Bowman was attacked by an un-identified pest at the Denton location. The pest caused stems to break over in all directions. Hessian Fly was suspected, but no "flaxseeds" were found. Stark, a variety with a pedigree similar to Bowman, exhibited similar symptoms in one rep. Bowman had the lowest yields at the Denton location.

TABLE 1991 SPRING BARLEY OFFSTATION RECROP at CARC
Exp.#3660 Central Agricultural Research Center - Moccasin, MT.

VARIETY	HEADING DATE
Baronesse	186.67
Harrington	187.33
Bearpaw	188.00
Stark	183.00
MT140523	184.67
Excel	183.33
Hector	186.33
Shonkin	187.00
Steptoe	181.33
Lewis	186.00
Pirolina	185.00
Clark	186.33
Bowman	181.33
Gallatin	184.67
EXPERIMENTAL MEANS	185.07
TOTAL OBSERVATIONS	42.00
NO. OF REPLICATIONS	3.00
NO. OF VARIETIES	14.00
REP. MEAN SQUARE	2.79
VAR. MEAN SQUARE	13.75
ERROR MEAN SQUARE	.17
ERROR DEGREES OF FREEDOM	26.00
F TEST FOR REPS.	16.36
F TEST FOR VAR.	80.74
STANDARD ERROR	.41
STANDARD ERROR OF THE MEAN	.24
C.V. 1: (S/MEAN)*100	.22
C.V. 2: (S OF MEAN/MEAN)*100	.13
LSD (0.05)	.69

Planting date: 4-22-1991
Soil Probe Depth: 2 feet
Growing Season Precipitation (April-July): 11.59 inches
Fertilizer: 50 lbs/ac 18-46-0 applied with seed, broadcast 60
units of N/ac as Urea.

TABLE 1991 SPRING BARLEY PERFORMANCE TRIAL AT HIGHWOOD.
Exp.#3659 Central Agricultural Research Center - Moccasin, MT.

VARIETY	GRAIN YIELD	TEST WEIGHT	PLUMP >6/64	THIN <5.5/64	PLANT HEIGHT
	Bu/A.	Lb/Bu.	%	%	Inches
Hector	42.0	46.0	9	46	30
MT140523	38.2	45.5	6	51	29
Bearpaw	40.1	42.6	12	40	30
Steptoe	51.8	39.5	15	36	32
Harrington	35.8	43.3	19	35	31
Gallatin	39.5	45.0	8	48	31
Bowman	41.2	47.4	34	20	31
Shonkin	39.0	49.7	1	79	32
Excel	39.8	41.5	9	48	33
Baronesse	40.8	44.4	9	40	26
Lewis	43.5	46.0	11	45	31
Clark	30.9	43.5	7	50	30
Pirolina	38.9	45.7	4	45	31
Stark	37.7	45.9	22	36	31
EXPERIMENTAL MEANS	39.95	44.71			
F TEST FOR VAR. df=26	3.89	11.20			
C.V. 1: (S/MEAN)*100	9.97	2.94			
C.V. 2: (S OF MEAN/MEAN)*100	5.75	1.70			
LSD (0.05)	6.68	2.21			

Planted: 5-17-1991 on tilled barley stubble, moist surface soil.
Soil probe depth 20", 2" soil temp. 57 degrees F.
Harvested: 8-20-1991
Fertility: Broadcast 100 units N/ac as ammonium nitrate.
50 lbs/ac 18-46-0 applied with seed.
Soil Test: NO3-N=17.4 mg/kg Olsen P = 55.3 mg/kg
Growing Season Precip.: 10.6 inches
Cooperator: D. Wichman, J. Vavrovsky, T. Blake, P. Hensleigh
Producer: Ron Long, Shonkin
Comments: High temperatures in late July contributed to low test weights.

TABLE . . 1991 SPRING BARLEY VARIETY PERFORMANCE AT DENTON.
Exp.#3657 Central Agricultural Research Center - Moccasin, MT.

VARIETY	GRAIN YIELD	TEST WEIGHT	PLUMP >7/64	THIN <5.5/64	PLANT HEIGHT
	Bu/A.	Lb/Bu.	%	%	Inches
Baronesse	71.4	46.8	34	14	25
MT140523	71.9	45.4	34	22	29
Stark	70.4	49.4	59	8	32
Excel	69.7	42.9	13	45	31
Bearpaw	67.8	44.3	40	18	27
Hector	68.1	46.8	28	20	29
Lewis	68.5	47.6	42	18	28
Steptoe	67.5	41.5	38	17	31
Gallatin	65.2	47.2	27	20	29
Piroline	63.4	48.3	11	32	30
Clark	60.7	45.1	25	20	26
Shonkin	58.9	48.4	7	54	29
Harrington	58.6	44.6	40	14	28
Bowman	51.2	47.6	62	9	30
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EXPERIMENTAL MEANS	65.23	46.14			
F TEST FOR VAR. df26	2.05	15.47			
C.V. 1: (S/MEAN)*100	11.12	2.15			
C.V. 2: (S MEAN/MEAN)*100	6.42	1.24			
LSD (0.05)	12.17	1.66			

Planted: 5-9-1991 on fallow, pre-plant Fargo, very moist. Seed depth 1/2 inch.
 Harvested: 8-6-1991
 Fertility: Preplant anhydrous 50 units N. 50 lbs/ac of 18-46-0 with seed.
 Soil Test: NO3-N = 15.9 mg/kg Olsen P = 29.4 mg/kg
 Growing Season Prec.:
 Cooperator: D. Wichman, J. Vavrovsky, T. Blake, P. Hensleigh
 Producer: Richard Barber
 Comments: High temperatures in late July appears to have reduced test weights.

There was some Russian Wheat Aphid damage to the barley. Bowman had some severe insect damage. Rep two had about 60% of the stems broken over. Broken stems went down in all directions. The stems had more than one break point. Stark had similar symptoms in one rep. No "flaxseeds" were found to indicate Hessian Fly.

TABLE 1991 SPRING BARLEY VARIETY PERFORMANCE AT GERALDINE.
Exp.#3658 Central Agricultural Research Center - Moccasin, MT.

VARIETY	GRAIN YIELD	TEST WEIGHT	PLUMP >6/64	THIN <5.5/64	PLANT HEIGHT
	Bu/A.	Lb/Bu.	%	%	Inches
Stark	50.8	50.3	10	9	29
Bowman	48.2	49.9	9	8	28
Baronesse	48.0	46.2	6	23	19
Steptoe	47.4	42.7	7	14	22
Gallatin	45.1	48.7	8	27	25
Bearpaw	42.9	44.1	7	29	22
Hector	42.3	47.2	10	24	29
Lewis	42.2	49.8	8	26	25
Pirolina	41.5	47.9	8	33	25
MT140523	40.0	46.9	9	37	27
Excel	36.4	43.5	9	41	28
Shonkin	32.1	48.8	8	77	25
Harrington	31.9	43.7	8	34	24
Clark	31.8	45.5	8	36	25
EXPERIMENTAL MEANS	41.46	46.80	8.40		
F TEST FOR VAR. df 26	6.77	15.32	1.00		
C.V. 1: (S/MEAN)*100	10.22	2.44	19.83		
C.V. 2: (S OF MEAN/MEAN)*100	5.90	1.41	11.45		
LSD (0.05)	7.11	1.92	2.80		

Planted: 4-25-1991 on tilled burnt off winter wheat stubble,
surface soil moist, soil probe depth 15".

Harvested: 8-5-1991

Fertility: 50 lbs N anhydrous. 50 lbs/ac of 18-46-0 with seed.

Soil Test: NO₃-N=12.0 mg/kg Olsen P = 48.7 mg/kg

Growing Season Precip.: 8.5"

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

Producer: Buck Goldhahn - Ft. Benton

Comments: High temperatures in late July contributed to low test
weights. Clark barley had poor seed.
Recrop on burnt winter wheat stubble.

TABLE MOCCASIN OFF-STATION BARLEY MULTIYEAR SUMMARY
Central Ag. Research Center, Moccasin, MT.

VARIETY	1983 *	1984 *	1985 *	1985 **	1985 ***	1989 **	1990	AVG.	HECTOR SAME YRS.
	----- bu/a -----								
HECTOR	42.5	26.9	26.2	18.5	11.8	47.9	31.1	29.3	29.3
PIROLINE	42.8	26.9	22.1	18.1	19.8	44.8	30.5	29.3	29.3
HARRINGTON	38.7	26.3	8.0	5.8	11.9	45.0	24.8	22.9	29.3
CLARK	44.6	25.0	16.7	12.3	21.1	40.5	32.4	27.5	29.3
LEWIS	43.1	25.7	19.9	15.6	15.2	40.6	33.7	27.7	29.3
BOWMAN			26.2	25.9	17.5	40.3	28.6	27.7	27.1
STEPTOE			25.3	23.1	17.7	46.1	33.0	29.0	27.1
GALLATIN		30.3	18.2	14.6	19.2	38.6	33.9	25.8	27.1
BEARPAW						44.5	33.8		
MT 81161						52.7			
KIMBERLY			5.4	2.5	11.3				
HAZEN		25.9	21.4	18.5	15.8				
MT 140523						42.7	37.9		
BA 1202						46.0			
STARK							34.6		
CRYSTAL							28.2		
MOREX	36.7		22.6	18.8	16.6				
KARLA	39.4	27.1	21.3	17.5	22.6				
SUMMIT	40.2	25.7	10.9	8.7	11.7				
ROBUST	44.6	26.3	17.9	18.0	15.4				
ANDRE			11.9	8.0	21.1				
PREMIER			8.3	7.3	14.5				

* Recrop

** No-Till

*** Chemical Fallow

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

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TABLE . HIGHWOOD OFF-STATION BARLEY MULTI-YEAR SUMMARY
Central Ag. Research Center, Moccasin, MT.

VARIETY	1982	1983	1990	1991
	-----bu/a-----			
HARRINGTON	59.8	66.6	68.3	35.8
SUMMIT	52.5	65.7		
PIROLINE	51.4	62.5	64.3	38.9
KARLA	50.4	60.1		
SHABET	48.8			
NORBERT	47.8			
CLARK	47.1	65.1	59.3	30.9
HECTOR	46.9	69.7	64.7	42.0
KLAGES	46.6	50.1		
KRIS	44.0			
GLENN	44.0	60.2		
MOREX	42.3	36.3		
BEARPAW			62.1	40.1
GALLATIN			61.7	39.5
MT 140523			58.2	38.2
CRYSTAL			57.5	
BOWMAN			56.7	41.2
LEWIS			55.0	43.5
STARK			54.8	37.7
STEPTOE			43.4	51.8
SHONKIN				39.0
EXCEL				39.8
BARONESSE				40.8

Variety trials were located at Ron Long farm from 1989-1991.
The 1989 trial was hailed out.

Variety trials were located at Barry Wharram farm in 1982 and 1983

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TABLE . DENTON OFF-STATION BARLEY MULTI-YEAR SUMMARY
Central Ag. Research Center, Moccasin, MT.

VARIETY	1987	1988	1989	1990	1991	AVE.	HECTOR SAME YRS.
	----- bu/a -----						
HECTOR	40.1	35.4	68.0	38.3	68.1	50.0	--
PIROLINE	46.7	33.8	72.8	43.2	63.4	52.0	50.0
HARRINGTON	56.4	27.9	52.8	37.4	58.6	46.6	50.0
CLARK	59.7	33.8	52.0	38.2	60.7	48.9	50.0
LEWIS	65.7	23.8	59.3	46.5	68.5	52.8	50.0
BOWMAN	53.2	26.4	55.7	42.4	51.2*	45.8	50.0
STEPTOE	62.0	28.6	74.0	44.2	67.5	55.3	50.0
GALLATIN	67.0	35.5	59.1	42.3	65.2	53.8	50.0
BEARPAW	72.7	34.5	58.9	39.0	67.8	54.6	50.0
MT 81161	70.4	33.1	68.5				
KIMBERLY	49.2	27.7					
HAZEN	44.3						
MT 140523		32.5	61.5	40.9	71.9		
BA 1202			60.9				
ND 9866				49.1			
CRYSTAL				27.5			
BARONESSE					71.4		
STARK					70.4		
EXCEL					69.7		
SHONKIN					58.9		

*Bowman suffered unidentified insect damage in 1991. Stark also showed some damage in one rep.
Variety trials were located on Richard Barber farm.

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TABLE . GERALDINE OFF-STATION BARLEY MULTI-YEAR SUMMARY
Central Ag. Research Center, Moccasin, MT.

VARIETY	1985	1986 **	1986 ****	1987 ****	1989 ****	1991 ****	AVE. HECTOR SAME YRS.
	----- bu/a -----						
HECTOR	14.0	50.1	90.7	63.4	62.9	42.3	53.9
PIROLINE	17.2	53.4	76.8	68.8	67.3	41.5	53.9
HARRINGTON	5.1	60.6	85.1	80.9	64.7	31.9	53.9
CLARK	10.8	64.0	86.1	84.0	62.0	31.8	53.9
LEWIS	15.3	63.6	78.9	87.8	68.4	42.2	53.9
BOWMAN	19.2	39.6	72.1	73.7	68.5	48.2	53.9
STEPTOE	17.2	73.8	78.8	94.3	74.1	47.4	53.9
GALLATIN	12.4	67.5	90.7	81.0	70.5	45.1	53.9
BEARPAW		72.7	86.9	94.5	66.4	42.9	61.9
MOREX	9.7	42.6	60.9				
KIMBERLY	2.4	58.5	74.2	72.9			
MT 140523					69.5	40.0	
STARK						50.8	
BARONESSE						48.0	
EXCEL						36.4	
SHONKIN						32.1	
KARLA	10.5	40.9	59.9				
SUMMIT	5.8						
ROBUST	9.6	55.4	73.9				
HAZEN	8.4	47.6	62.7	63.9			
ANDRE	6.8						
PREMIER	5.4						
MT 81619		68.4	78.9				
UNITAN		64.3	84.0				
MT 81161				83.6	62.0		
BA 1202					66.6		

** - Seeded on fallow
 **** - Seeded on recrop
 1988 - Did not harvest due to drought
 1990 - Did not harvest due to hail
 Variety trials were located at Buck Goldhahn farm.