RESULTS OF AGRONOMIC AND WEED SCIENCE RESEARCH CONDUCTED IN SOUTH CENTRAL MONTANA - 2000

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PROJECT TITLE:

Dryland and Irrigated Spring Barley Performance Trials near Bridger, Hysham, Molt and Ryegate, Montana. (Exps. 003691, 003692, 003794 & 003795).

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OBJECTIVES:

To provide barley growers in south central Montana with a reliable, unbiased, up-to-date source of information that will permit valid comparisons among improved barley varieties. This information should help barley producers in south central Montana select varieties best suited to their particular area and growing conditions.

METHODS:

Off-station spring barley trials were established under dryland conditions near Molt and Ryegate, and under irrigation near Bridger and Hysham, Montana (Fig. 1). Nineteen spring barley entries were planted at each location, however, the dryland sites were oriented towards feed-type cultivars whereas malt-types dominated the entries tested on irrigated sites. Consequently, only eight of the spring barley cultivars tested were grown under both dryland and irrigated conditions.

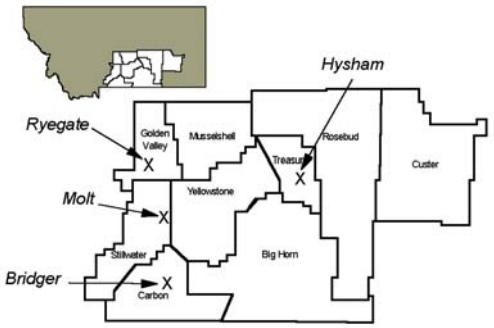

Figure 1. 2000 off-station spring barley trial locations in south central Montana.

All studies were planted using a randomized complete block design with three replications. Dryland test plots consisted of a 15-foot, 4-row plot with 12-inch row spacing. Irrigated test plots consisted of a 15-foot, 7-row plot with 6-inch row spacing. All rows of each test plot were trimmed 36 inches and harvested using

an experimental-plot combine. Recorded grain yields were adjusted to 13% grain moisture content, and are reported in bushels per acre based on a 48 pound standard bushel weight. Test weight (pounds per bushel) and percent grain moisture content were obtained for each plot using a Dickey-john GAC 2100 grain analyzer. Grain protein (%) was determined for each entry bulked across replications and is reported on a 100% dry matter basis. Plant height was measured in inches from the soil surface to the top of the head, excluding the awns if present. Reported plant height values have been rounded to the nearest inch. Lodging of some entries was noted at the irrigated locations. Lodging severity was recorded on a 0 to 9 scale representing no lodging to all stems lying flat on the ground, respectively. Percent plump and thin kernels were determined by measuring the amount of a 100g subsample retained above a 6/64" slotted screen and passing through a 5½/64" slotted screen, respectively, following 30 oscillations on a sieve shaker.

RESULTS and SUMMARY:

Severe drought stress, Russian wheat aphid (*Diuraphis noxia* Mord.) and wheat stem sawfly (*Cephus cinctus* Norton) were evident at the Molt dryland location in 2000. Spring wheat cultivars grown in a separate test at Molt experienced significant stem cutting from sawfly, but no stem cutting was evident among the spring barley entries at this site. Molt dryland spring barley yields averaged 37.2 bu/ac in 2000 (Table 1). No differences in yield between the 19 spring barleys were observed. Test weights averaged 48.4 lb/bu, more than 3 pounds heavier than the average test weight produced in 1999. Test weights varied from 51.7 lb/bu for 'MT950186' to 43.5 lb/bu for 'Merit'. The dry condition elevated grain protein levels, averaging 15.4 percent and ranging from 17.3 percent for 'Lewis' to 14.0 percent for 'MT960228'. The amount of plump kernels in the harvested grain averaged 74 percent, which was higher than expected given the drought conditions that occurred during the grain filling period. Only 'Bowman' and 'Stark' spring barley produced grain with greater than 90 percent plump kernels.

Severe drought stress and Russian wheat aphid also limited spring barley yield potential and crop quality at the Ryegate location in 2000 (Table 2). The presence of wheat stem sawfly was not evident at Ryegate. Ryegate dryland spring barley yields averaged 10.5 bu/ac in 2000, and ranged from 18.2 bu/ac for 'Baronesse' to 3.0 bu/ac for Stark. 'Gallatin', Merit, MT960099, 'MT960100', MT960228, 'Valier' and 'Xena' produced grain yields between 15.0 and 12.5 bu/ac, which was equal to the yield of Baronesse. Baronesse also has averaged the highest yield (45.3 bu/ac) among barleys tested at this location for the past two years. Test weights averaged 48.6 lb/bu, with only Baronesse, Gallatin, Merit, MT960099, MT960100, MT960228 and Valier averaging more than 50.0 lb/bu. The dry environment elevated grain protein levels, which averaged 18.8 percent and ranged from 20.3 percent for 'Busch Agr 1202' to 16.7 percent for Stark. The amount of plump kernels in the harvested grain averaged 66 percent. No entry exceeded 80 percent plump kernels.

Agronomic performance of the spring barley cultivars and experimental lines tested under dryland conditions for the past two years is summarized in Table 3. Across locations, Baronesse was the highest yielding cultivar in 2000 (29.2 bu/ac) and for the past two years (41.7 bu/ac). In 2000, 12 of the remaining 18 entries averaged yields from 28.3 to 22.9 bu/ac and were not statistically different from the yield of Baronesse. Based on two year averages, MT950186, Valier, Xena, 'MTLB 5', 'Harrington', 'Gallatin' and 'MT960228' yielded between 40.4 and 38.8 bu/ac and also were equal to Baronesse's two year average. Test weights for all 19 entries averaged 48.3 lb/bu. Grain protein averaged 17.1 percent and ranged from 18.5 percent for Busch Agr 1202 to 15.8 percent for Stark. Baronesse, Bowman and Stark grain possessed 81.3, 80.9 and 81.4 percent plump kernels, respectively.

Spring barley yields, test weights and the percentage of plump kernels were substantially improved by the availability of water at the irrigated sites (Tables 4

and 5). Irrigated spring barley plots at Bridger were treated for control of Russian wheat aphid on May 23rd. Russian wheat aphid damage was minimal and did not appear to affect subsequent crop development. Spring barley protein levels of the grain harvested from both the Bridger and Hysham locations continued to be elevated above expected values. Among the malt-type cultivars, these protein levels would be considered unacceptably high. Both sites were managed for high-protein hard red spring wheat production, and likely possessed excessive soil nitrogen (from both applied and residual sources) for the production of lower protein malt barley. Significant lodging also was observed at the irrigated sites compared to none observed at the dryland locations.

Merit was the highest yielding spring barley tested at the Bridger location in 2000, averaging 180.6 bu/ac (Table 4). Baronesse, 'Coors 37', MTLB 5, 'Moravian 22', 'Excel', 'Busch Agr 2978', 'MT910189' and Chinook averaged yields from 176.0 to 163.0 bu/ac, statistically equal to the yield of Merit. Average test weight for the trial at Bridger was 53.4 lb/bu. All entries tested produced test weights heavier than 50.0 lb/bu. The average plump kernel content was 89.0 percent, with most entries averaging greater than 85 percent plump kernels in their grain samples. Grain protein content averaged 15.1 percent and ranged from 16.8 percent for Busch Agr 2978 to 13.6 percent for Coors 37. Busch Agr 1202, Harrington and Moravian 22 lodged significantly more than most of the remaining entries grown under the conditions experienced at Bridger in 2000.

The spring barley cultivars tested at the Hysham site during 2000 averaged 89.4 bu/ac (Table 5), a little more than half the yield obtained by the barleys grown under irrigation at Bridger. All entries experienced substantial lodging at the Hysham location, no doubt limiting the yield potential at this site. Moravian 22 was the highest yielding spring barley tested at the Hysham location in 2000, averaging 118.1 bu/ac. Coors 37, 'Galena' and 'Stander' produced yields from 108.8 to 101.5 bu/ac, equal to the yield of Moravian 22 in this study. Average test weight at Hysham was 49.7 lb/bu, or nearly 4 pounds lighter than the test weights measured at Bridger. Grain protein content at Hysham averaged 15.0 percent, and varied from 17.1 percent for 'Klages' to 13.4 percent for 'Foster'. Average plump kernel content of the grain harvested at Hysham was 73.8 percent. Thin kernel content was 3 times greater than that of barley harvested at Bridger. Only two of the entries tested at Hysham (Foster and Stander) possessed more than 85 percent plump kernels in their grain.

Multi-location agronomic performance of the spring barley cultivars and experimental lines tested under irrigated conditions at Bridger and Hysham during 2000 is summarized in Table 6. Across locations, Moravian 22 was the highest yielding cultivar in 2000, averaging 143.6 bu/ac. Coors 37, Baronesse and Excel averaged 141.8, 132.6 and 131.9 bu/ac, respectively, statistically equal to the yield of Moravian 22. Test weights for all 19 entries across both irrigated locations averaged 51.1 lb/bu. Grain protein averaged 15.1 percent and ranged from 14.3 percent for Coors 37 and MT910189 to 16.3 percent for Chinook. Foster and Stark produced grain averaging 91.9 and 92.1 percent plump kernels, respectively.

FUTURE PLANS:

Off-station spring barley variety evaluations will continue in 2001 at Molt, Ryegate, Bridger and Hysham.

Table 1. Performance of 19 spring barley cultivars and experimental lines tested under dryland conditions near Molt, Montana during 2000. Cultivars listed alphabetically. (Exp. 003691).

Cultivar	Grain Yield 1/ 2000	Grain Yield 1/ 1999-2000	Test Weight	Grain Moisture	Plant Height	Grain Protein 2/	Plump Kernels	Thin Kernels
	bushels/acre		lb/bu	%	inches	%	%	%
Baronesse	40.2	38.1	48.0	5.6	16	14.7	83.3	4.1
Bowman	43.7	38.1	50.6	5.5	19	15.3	93.4	1.8
Busch Agr 1202	29.3		46.5	4.9	16	16.7	57.0	13.6
Busch Agr 2978	38.7		47.3	5.0	19	14.5	77.4	5.7
Chinook	38.6	35.9	48.1	5.5	17	14.9	74.0	6.1
Gallatin	35.2	38.8	48.9	5.4	15	15.3	72.0	7.2
Harrington	30.9	41.5	47.4	5.1	16	15.7	80.0	4.6
Hector	35.1	36.1	48.2	5.3	17	15.0	82.2	4.0
Lewis	34.8	33.1	48.8	5.4	17	17.3	70.9	6.8
Merit	39.2		43.5	4.9	16	16.8	54.5	18.0
MT950186	40.9	43.3	51.7	5.8	17	14.4	83.1	3.4
MT960099	34.5		46.7	5.4	14	16.5	49.9	15.5
MT960100	40.4		49.1	5.5	15	14.5	74.0	6.3
MT960228	40.3	38.7	49.4	5.3	16	14.0	72.2	5.7
MTLB 5	42.1	42.3	49.3	5.6	15	15.5	70.1	7.7
MTLB 13	37.0	37.7	48.5	5.4	15	14.7	61.1	11.2
Stark	30.2	31.6	51.1	5.2	20	14.8	92.1	2.4
Valier	43.1	42.4	47.3	5.4	18	15.7	73.6	6.6
Xena	33.0	36.5	48.6	5.3	16	16.2	80.9	4.3
Average	37.2	38.1	48.4	5.3	16.4	15.4	73.8	7.1
LSD (p=0.05)	ns	ns	2.5	0.5	1.7	-	8.6	3.5
CV%	19.1	17.7	3.1	5.2	6.2	-	7.1	29.6

1/ Yields are based on a 48 pound standard bushel weight and adjusted to 13.0 percent moisture content.
2/ Grain protein values adjusted to a 100 percent dry matter basis.
3/ Insufficient sample size to accurately estimate test weight.
ns Indicates not significant at the 0.05 probability level.

Molt Dryland Spring Barley (Exp. 003691)

Planted:	March 24, 2000
Harvested:	July 27, 2000
Fertility:	11-52-00, 120 lb/a in-furrow, March 24, 2000
	40-20-00, 75 lb/a broadcast, May 17, 2000
Herbicide:	Harmony Extra, 0.5 oz/a; Buctril, 1 pt/a; R-11, 1 pt/a, May 23, 2000
Insecticide:	Malathion 5EC, 1 pt/a; R-11, 1 pt/a, May 23, 2000
Previous Crop:	summer fallow
Precipitation:	not available

Table 2. Performance of 19 spring barley cultivars and experimental lines tested under dryland conditions near Ryegate, Montana during 2000. Cultivars listed alphabetically. (Exp. 003692).

Cultivar	Grain Yield 1/ 2000	Grain Yield 1/ 1999-2000	Test Weight	Grain Moisture	Plant Height	Grain Protein 2/	Plump Kernels	Thin Kernels
	bushels/acre		lb/bu	%	inches	%	%	%
Baronesse	**18.2****	**45.3****	52.0	8.9	17	19.3	79.3	7.1
Bowman	3.6	25.5	-.-3/	9.0	17	18.8	68.4	11.4
Busch Agr 1202	10.6		46.3	8.8	16	20.3	53.3	17.6
Busch Agr 2978	11.8		48.4	8.6	18	17.2	77.4	7.0
Chinook	7.2	35.1	43.0	9.0	16	19.8	65.1	11.0
Gallatin	**12.5***	**39.8***	52.7	8.8	18	17.5	72.2	8.5
Harrington	10.3	37.3	49.7	8.4	16	19.7	62.0	14.2
Hector	7.9	31.5	47.1	9.1	17	18.7	68.5	10.5
Lewis	6.4	31.4	43.5	8.9	18	19.4	73.5	8.4
Merit	**14.0***		50.9	9.0	16	19.2	74.4	9.0
MT950186	5.5	**39.9***	48.5	9.3	18	18.0	67.0	12.6
MT960099	**14.6***		52.2	8.7	15	19.2	50.7	22.0
MT960100	**15.0***		52.6	9.1	16	19.4	57.4	18.7
MT960228	**15.0***	38.9	53.5	8.8	18	17.8	73.3	8.4
MTLB 13	7.3	35.1	47.2	9.0	15	19.2	48.9	20.8
MTLB 5	10.7	36.7	49.7	9.2	16	19.4	49.9	21.9
Stark	3.0	34.9	-.-3/	8.2	19	16.7	70.7	10.7
Valier	**13.4***	38.4	52.1	9.3	16	19.3	62.3	14.5
Xena	**13.2***	**43.0***	47.1	8.9	19	17.9	69.9	11.3
Average	10.5	36.6	48.6	8.9	16.8	18.8	65.6	12.9
LSD (p=0.05)	5.8	5.5	6.2	-	2.2	-	21.3	12.5
CV%	33.1	13.0	7.6	-	7.8	-	19.6	58.4

1/ Yields are based on a 48 pound standard bushel weight and adjusted to 13.0 percent moisture content.
2/ Grain protein values adjusted to a 100 percent dry matter basis.
3/ Insufficient sample size to accurately estimate test weight.
** Indicates highest yielding cultivar within a column.
* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).

Ryegate Dryland Spring Barley (Exp. 003692)

Planted:	March 28, 2000
Harvested:	August 7, 2000
Fertility:	11-52-00, 120 lb/a in-furrow, March 28, 2000
	40-20-00, 75 lb/a broadcast, May 17, 2000
Herbicide:	Harmony Extra, 0.5 oz/a; Buctril, 1 pt/a; R-11, 1 pt/a, May 23, 2000
Insecticide:	Malathion 5EC, 1 pt/a; R-11, 1 pt/a, May 23, 2000
Previous Crop:	summer fallow
Precipitation:	not available

Table 3. Performance of 19 spring barley cultivars and experimental lines tested under dryland conditions at two locations in south central Montana during 2000. Cultivars listed alphabetically. (Exps. 003691 & 003692).

	Grain Yield 1/		Test	Grain	Plant	Grain 2/	Plump	Thin
	2000	1999-2000	Weight	Moisture	Height	Protein	Kernels	Kernels
	bushels/acre		lb/bu	%	inches	%	%	%
Baronesse	**29.2****	**41.7****	50.0	7.3	16	17.0	81.3	5.6
Bowman	**23.6***	31.8	-.-3/	7.2	18	17.1	80.9	6.6
Busch Agr 1202	19.9		46.4	6.9	16	18.5	55.1	15.6
Busch Agr 2978	**25.3***		47.9	6.8	18	15.9	77.4	6.4
Chinook	**22.9***	35.5	45.6	7.2	17	17.4	69.6	8.6
Gallatin	**23.9***	**39.3***	50.8	7.1	17	16.4	72.1	7.9
Harrington	20.6	**39.4***	48.6	6.7	16	17.7	71.0	9.4
Hector	21.5	33.8	47.7	7.2	17	16.9	75.4	7.3
Lewis	20.6	32.2	46.1	7.2	17	18.4	72.2	7.6
Merit	**26.6***		47.2	7.0	16	18.0	64.5	13.5
MT950186	**23.2***	**41.6***	50.1	7.6	17	16.2	75.0	8.0
MT960099	**24.6***		49.4	7.0	15	17.9	50.3	18.7
MT960100	**27.7***		50.9	7.3	15	17.0	65.7	12.5
MT960228	**27.7***	**38.8***	51.5	7.1	17	15.9	72.8	7.1
MTLB 5	**26.4***	**39.5***	49.5	7.4	16	17.4	60.0	14.8
MTLB 13	22.1	36.4	47.8	7.2	15	17.1	55.0	16.0
Stark	16.6	33.2	-.-3/	6.7	19	15.8	81.4	6.6
Valier	**28.3***	**40.4***	49.7	7.3	17	17.5	67.9	10.6
Xena	**23.1***	**39.7***	47.8	7.1	18	17.1	75.4	7.8
Average	23.9	37.4	48.3	7.1	16.6	17.1	69.6	10.0
LSD (p=0.05)	6.5	4.7	3.3	0.2	1.3	2.2	11.3	6.4
CV%	23.5	15.6	5.9	2.8	7.1	11.3	14.1	55.3

1/ Yields are based on a 48 pound standard bushel weight and adjusted to 13.0 percent moisture content.
2/ Grain protein values adjusted to a 100 percent dry matter basis.
3/ Insufficient sample size to accurately estimate test weight at Ryegate during 2000.
** Indicates highest yielding cultivar within a column.
* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).

Table 4. Performance of 19 spring barley cultivars and experimental lines tested under irrigated conditions near Bridger, Montana during 2000. Cultivars listed alphabetically. (Exp. 003794).

Cultivar	Grain Yield 1/	Test Weight	Grain Moisture	Plant Height	Lodging Severity 2/	Grain Protein 3/	Plump Kernels	Thin Kernels
	bu/ac	lb/bu	%	inches	0-9	%	%	%
B2L20-36	148.1	51.5	8.4	32	0.0	15.8	86.8	3.8
B2L20-42	146.1	51.7	8.4	36	2.0	16.2	92.0	3.1
Baronesse	**176.0***	53.6	9.0	30	2.0	14.3	92.8	3.0
Busch Agr 1202	146.7	51.6	8.8	29	6.7	14.3	85.6	7.3
Busch Agr 2978	**166.2***	52.4	8.6	35	2.3	16.8	93.7	2.3
Chinook	**163.0***	53.3	9.1	29	2.3	16.4	88.4	4.3
Coors 37	**174.8***	53.6	8.9	30	3.0	13.6	96.8	1.3
Excel	**168.3***	53.0	9.1	35	2.0	14.9	93.3	1.9
Foster	135.3	52.0	9.0	35	1.0	15.7	93.5	2.5
Galena	158.9	52.3	9.0	28	4.0	14.8	89.0	5.0
Gallatin	161.1	53.4	9.1	28	2.0	15.0	81.7	7.7
Harrington	153.1	51.5	8.9	27	5.7	14.1	83.5	8.0
Klages	156.1	51.5	9.1	31	3.3	15.3	78.3	9.6
Merit	**180.6****	51.4	9.1	32	2.0	14.5	84.1	7.5
Moravian 22	**169.1***	51.4	8.8	29	7.3	14.2	92.2	3.3
Morex	144.8	52.1	8.5	34	2.7	17.4	88.5	3.8
MT910189	**164.0***	53.2	9.1	27	3.0	13.8	85.6	6.4
MTLB 5	**171.5***	53.9	8.9	31	2.3	15.0	90.0	4.0
Stander	160.5	52.8	9.2	34	0.3	15.4	95.0	1.7
Average	160.2	53.4	8.9	31.0	2.8	15.1	89.0	4.6
LSD (p=0.05)	18.5	1.1	0.3	2.6	2.1	-	4.7	2.4
CV%	7.0	1.3	2.0	5.1	45.4	-	3.2	31.4

1/ Yields are based on 48 pound standard bushel weight and adjusted to 13.0 percent moisture content.
2/ Lodging severity scores of 0 to 9 represent no lodging to all stems flat on the ground, respectively.
3/ Grain protein values adjusted to a 100 percent dry matter basis.
** Indicates highest yielding cultivar within a column.
* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).

Bridger Irrigated Spring Barley (Exp. 003794)

Planted:	March 28, 2000
Harvested:	August 14, 2000
Fertility:	11-52-00, 120 lb/a in-furrow, March 28, 2000
	40-20-00, 250 lb/a broadcast, May 23, 2000
Herbicide:	Harmony Extra, 0.5 oz/a; Buctril, 1 pt/a; R-11, 1 pt/a, May 23, 2000
Insecticide:	Malathion 5EC, 1 pt/a; R-11, 1 pt/a, May 23, 2000
Previous Crop:	fallow
Irrigation:	profile flooded, June 6 and 7, 2000
	profile flooded, July 5 and 6, 2000
Precipitation:	4.26 inches

Table 5. Performance of 19 spring barley cultivars and experimental lines tested under irrigated conditions near Hysham, Montana during 2000. Cultivars listed alphabetically. (Exp. 003795).

Cultivar	Grain Yield 1/	Test Weight	Grain Moisture	Plant Height	Lodging Severity 2/	Grain Protein 3/	Plump Kernels	Thin Kernels
	bu/ac	lb/bu	%	inches	0-9	%	%	%
B2L20-36	94.5	50.0	9.9	42	3.0	13.9	81.3	7.7
B2L20-42	95.7	48.9	9.6	40	7.0	13.8	80.2	7.9
Baronesse	89.1	48.7	9.7	38	8.3	16.0	70.5	18.0
Busch Agr 1202	86.6	48.2	9.6	39	6.3	15.3	71.2	15.5
Busch Agr 2978	91.0	47.8	9.9	40	7.3	14.5	55.5	21.6
Chinook	66.3	51.6	10.0	40	7.0	16.1	74.5	13.3
Coors 37	**108.8***	49.9	9.9	37	4.7	14.9	76.6	12.2
Excel	95.4	50.0	10.0	43	7.3	14.0	72.1	9.7
Foster	97.0	50.6	10.1	43	2.3	13.4	90.3	4.1
Galena	**102.5***	49.9	10.0	36	4.3	14.9	64.5	17.9
Gallatin	83.0	52.4	10.2	41	4.7	14.5	74.5	13.1
Harrington	79.6	48.6	9.6	38	8.0	16.2	70.5	15.5
Klages	69.0	47.6	9.9	36	7.7	17.1	67.5	20.2
Merit	78.3	48.3	10.2	39	5.3	16.7	69.5	17.5
Moravian 22	**118.1****	48.3	10.0	35	3.7	15.0	72.1	12.0
Morex	93.0	50.1	9.7	46	5.3	14.3	78.7	9.5
MT910189	68.7	52.8	10.8	40	4.3	14.7	76.3	14.8
MTLB 5	79.8	49.5	9.9	39	7.0	16.2	67.9	19.0
Stander	**101.5***	51.7	10.4	42	4.3	13.5	89.1	4.3
Average	89.4	49.7	10.0	39.5	5.7	15.0	73.8	13.4
LSD (p=0.05)	17.5	2.5	ns	4.0	ns	-	16.8	ns
CV%	11.8	3.0	4.3	6.0	43.5	-	13.8	51.5

1/ Yields are based on 48 pound standard bushel weight and adjusted to 13.0 percent moisture content.
2/ Lodging severity scores of 0 to 9 represent no lodging to all stems flat on the ground, respectively.
3/ Grain protein values adjusted to a 100 percent dry matter basis.
** Indicates highest yielding cultivar within a column.
* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).
ns Indicates not significant at the 0.05 probability level.

Hysham Irrigated Spring Barley (Exp. 003795)

Planted:	March 20, 2000
Harvested:	August 8, 2000
Fertility:	40-20-00, 250 lb/a broadcast, May 18, 2000
Herbicide:	Express, 0.1 oz/a; Bronate, 16 oz/a; Starane, 5 oz/a, May 8, 2000
Insecticide:	none
Irrigation:	profile flooded, May 11, 2000 profile flooded, June 12, 2000
Previous Crop:	sugar beets
Precipitation:	not available

Table 6. Performance of 19 spring barley cultivars and experimental lines tested under irrigated conditions at two locations in south central Montana during 2000. Cultivars listed alphabetically. (Exps. 003794 & 003795).

Cultivar	Grain Yield 1/	Test Weight	Grain Moisture	Plant Height	Lodging Severity 2/	Grain Protein 3/	Plump Kernels	Thin Kernels
	bu/ac	lb/bu	%	inches	0-9	%	%	%
B2L20-36	121.3	50.8	9.2	37	1.5	14.9	84.1	5.8
B2L20-42	120.9	50.3	9.0	38	4.5	15.0	86.1	5.5
Baronesse	**132.6***	51.1	9.4	34	5.2	15.2	81.7	10.5
Busch Agr 1202	116.7	49.9	9.2	34	6.5	14.8	78.4	11.4
Busch Agr 2978	128.6	50.1	9.3	37	4.8	15.7	74.6	11.9
Chinook	114.7	52.5	9.5	34	4.7	16.3	81.4	8.8
Coors 37	**141.8***	51.8	9.4	33	3.8	14.3	86.7	6.8
Excel	**131.9***	51.5	9.5	39	4.7	14.5	82.7	5.8
Foster	116.2	51.3	9.5	39	1.7	14.6	91.9	3.3
Galena	130.7	51.1	9.5	32	4.2	14.9	76.7	11.4
Gallatin	122.1	52.9	9.6	35	3.3	14.8	78.1	10.4
Harrington	116.4	50.1	9.3	33	6.8	15.2	77.0	11.8
Klages	112.5	49.6	9.5	34	5.5	16.2	72.9	14.9
Merit	129.5	49.9	9.7	36	3.7	15.6	76.8	12.5
Moravian 22	**143.6****	49.9	9.4	32	5.5	14.6	82.1	7.7
Morex	118.9	51.1	9.1	40	4.0	15.9	83.6	6.7
MT910189	116.4	53.0	10.0	33	3.7	14.3	81.0	10.6
MTLB 5	125.7	51.7	9.4	35	4.7	15.6	78.9	11.5
Stander	131.0	52.3	9.8	38	2.3	14.5	92.1	3.0
Average	124.8	51.1	9.4	35.3	4.3	15.1	81.4	9.0
LSD (p=0.05)	12.5	1.3	0.4	2.3	2.3	1.1	8.6	5.7
CV%	8.7	2.3	3.5	5.8	46.3	6.2	9.2	55.4

1/ Yields are based on a 48 pound standard bushel weight and adjusted to 13.0 percent moisture content.
2/ Lodging severity scores of 0 to 9 represent no lodging to all stems flat on the ground, respectively.
3/ Grain protein values adjusted to 100 percent dry matter basis.
** Indicates highest yielding cultivar within a column.
* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).