

MAES RECOMMENDED BARLEY VARIETIES FOR MONTANA BY DISTRICT

Variety	Row Type	District					
		1	2	3	4	5	6
FEED							
Baronesse (P) +	2	DI	DI	DI	DI	DI	DI
Boulder (P) +	2	DI	DI	DI	DI	DI	DI
Calgary (P) +	2	IH	I	I	I	I	I
Eslick +	2	DI	DI	DI	DI	DI	DI
Haxby	2	DI	DI	DI	DI	DI	DI
Lewis	2	DI	DI	DI	DI	DI	DI
Valier +	2	DI	DI	DI	DI	DI	DI
WestBred Xena (P) +	2	DI	DI	DI	DI	DI	DI
WestBred Medallion (P) +	6	IH	I	I	I	I	I
HAY							
Haybet	2	DI	DI	DI	DI	DI	DI
Hays	2	DI	DI	DI	DI	DI	DI
Stockford (P) +	6	DI	DI	DI	DI	DI	DI

(P) = Private variety

+ = "Protected" variety under the Plant Variety Protection Act

I = Irrigated

D = Dryland

H = High rainfall

^{1/} = Where early maturity is desired

2006 American Malting Barley Association Approved Malting Barley Varieties.

Two rowed Barleys

AC Metcalfe	Harrington
B1202	Merit
Conlon	

Six rowed Barley

Drummond	Robust
Excel	Stander
Foster	Stellar-ND
Lacey	Tradition
Legacy	

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BARLEY VARIETY PERFORMANCE SUMMARY FOR MONTANA

by

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The agronomic characteristics for barley varieties commonly grown or offered for sale in Montana are described in abbreviated form for quick reference (page 21). Varieties recommended for production in the respective areas are designated by an asterisk (*). A short paragraph on each variety follows the summary with information on development, primary strengths or weaknesses of the variety and its specific areas of adaptation.

VARIETY TESTING PROCEDURES

The 2005 Spring Barley Intrastate Nursery was planted at 6 dryland sites: Havre, Sidney, Huntley, Moccasin, Conrad and Bozeman (high moisture conditions) and 5 irrigated sites; Sidney, Huntley, Conrad, Bozeman and Kalispell (high moisture conditions). Long term and 2005 precipitation and temperature for each location are summarized on pages 18 and 19. The data assembled herein summarize research information from intrastate yield nurseries grown by research personnel at the Montana Agricultural Research Centers. The data presented in this publication was from the years 1999 through 2005.

Experimental Design and Data Collection

Varieties that are either currently recommended, widely grown, recently released, private entries (entered on a fee basis) and MSU experimental breeding lines are evaluated for agronomic performance at all locations. All entries are the same at the six dryland sites and at the five irrigated sites but some entries may not be grown in both the irrigated and dryland nurseries. Nurseries are randomized separately at each location in a lattice design with three replications and sixty-four entries. Agronomic data including heading date, plant height, lodging, disease and insect symptoms is collected throughout the growing season. Experimental plots are trimmed, measured and harvested with small plot combines. Grain from each plot is weighed for yield, then cleaned and test weights and plump percent are measured. Entries are also evaluated for protein at the MSU Cereal Quality Lab. Samples of potential malting varieties are sent to the USDA Cereal Crops Research Unit Malting Lab in Madison, Wisconsin, for malt quality analysis. Data is analyzed for each location, and summaries are made over years to provide data at each location. When sufficient data is collected and analyzed, promising varieties and/or lines may be submitted to the MAES Barley variety release and recommendation committee.

Data collected and units of measurements.

Yield = bushels /acre based on standard 48 lbs/bu
Test Weight = lb/bu actual based on one quart standard.
Plump Percent = seed above 6/64 x 3/4 slotted screen.
Heading Date = days from January 1.
Plant Height = inches
Protein percent = dry weight basis.

Comparable Average

The comparable average for barley is arrived at by using a pre-determined check variety (Haxby) to establish an "average check yield" -- as for example, a 7-year period. By using a comparable average, all varieties are then directly comparable to the 7-year average when three or more years of data are available. All varieties are then directly comparable to each other when in the same nursery. The more years of production data available for any particular variety, the more reliable is the "comparable average figure". Averages using less than three years data may be unreliable in predicting future performance and have been omitted from the tables.

Illustration of Formula: (Hays 4 years at Sidney-Irrigated--page 9)

Check Variety (Haxby) 7 year average = 115.9

Check Variety (Haxby):Average yield for last 4 years = 120.5

Variety (Hays) in question: Average yield for last 4 years = 94.3

$$\frac{\text{Hays yield}}{\text{Check yield}} \times 100\% \text{ or } \frac{94.3}{120.5} = 78.3\%$$

$$\frac{\text{Seven year average check yield}}{100} \times 78.3\% \text{ for Hays or } \frac{115.9 \times 78.3\%}{100} = 90.4 \text{ bu/A comparable average yield for Hays.}$$

P-VALUE (pages20-22) -Denotes level of significance between check variety (Haxby)and variety in question. P-value of .01 = 99/100 probability of means being different from check due to random chance. Only comparisons between Haxby and other varieties are valid, cannot compare other varieties to each other.

BARLEY RECOMMENDATION PROCEDURE FOLLOWED BY THE MAES

Recommendation of spring barley varieties is determined on a yearly basis by the Montana Agricultural Experiment Station (MAES) Barley Variety Release Committee. This committee for feed barleys is chaired by the Plant Science and Plant Pathology Department Head and is composed of one breeder, one cereal or forage quality scientist, one plant pathologist, one manager from the Foundation Seed Program, one manager from the Montana Seed Growers Association, one weed scientist, one cropping system specialist, one entomologist, six Research Center agronomists, one representative from the Montana Agricultural Experiment Advisory Board, one Montana Wheat and Barley Committee member.

For malt barley varieties the president of the American Malting Barley Association replaces the Montana Wheat and Barley Committee Member. A variety is eligible for recommendation when a minimum of 16 location-years of performance data is obtained from the MAES statewide spring barley performance trials. Test results must indicate that the variety is equal to or superior in overall merit to specified check cultivars and has end-use quality equal to or exceeding currently recommended varieties. For varieties originating from private companies, recommendation is considered at the request of the company when adequate data is available.

Recommendations of varieties are considered on a case by case basis. Yield performance of a variety is an important criteria, but test weight, plump percent, maturity, drought tolerance, grain protein content, disease and pest resistance and end-use quality data are also considered. In general, yield needs to be at least equal to currently recommended varieties in a particular district, unless the variety is being recommended for a specific purpose, such as disease resistance. If a serious defect in the variety is identified during performance testing, the variety will not be recommended. Examples of defects resulting in non-recommendation include: low test weight, poor drought tolerance, lodging, etc. Lack of variety recommendation by MAES may occur due to a decision by the originating company not to test the variety in statewide performance trials. In this case the lack of recommendation is due to inadequate or no data rather than a specific varietal defect.

SEEDING RATE AND DATE

The following seeding rates and dates are general guidelines. The heavier seeding rate, where indicated, is applicable to plump seed of high test weight or for seed having a kernel size larger than normal for most other varieties (2-row types such as Stark or Haxby have a larger kernel than most other 2-row or 6-row type barleys). The lighter rates are for the smaller seeded varieties or when test weight is below normal for larger seeded varieties.

		Pounds Per Acre		
Crop	District ^{1/}	Dryland	Irrigation	Seeding Date
Barley - Feed	1	40-60 (11-17 seeds / sq ft)*	45-60 (13-17 seeds / sq ft)*	April or as soon as seedbed can be prepared.
Barley - Feed	2-6	45-60 (13-17 seeds / sq ft)*	80-96 (22-27 seeds / sq ft)*	April or as soon as seedbed can be prepared.
Barley - Malting	2-6	35-45 (10-13 seeds / sq ft)	80-96 (22-27 seeds / sq ft)	April or as soon as seedbed can be prepared.

^{1/} The map which appears on the cover shows the districts in the state for the purposes of reference for specific area of adaptation.

* Based on the average of 12,000 seeds per pound.

Barley seed lots may vary in the number of seeds per pound. This depends on the ratio of large-to-small seed in the seed lot. The average is approximately 12,000 seeds per pound.

Farmers who want to maintain a competitive advantage in the market should grow varieties recommended by the Montana Agricultural Experiment Station.

Plant Quality Seed

Plant only varieties adapted to the area where they have the ability to give the highest production. In areas where diseases are known to occur or cannot be controlled by seed treatments, resistant varieties should be used when available. In these instances genetic purity and variety identity is best assured with Certified classes of seed. Use approved fungicides that will control soil and seed borne diseases. Check labels on the container for control measures and proper application.

Always plant seed that is carefully cleaned and uniformly graded as to seed size. Plant large, plump, high test weight seed. It will give more uniform stands and produce a healthy, strong seedling with the potential to produce a better crop.

1999-2005 SPRING BARLEY OVERALL SUMMARY
 District 1 Kalispell (High Moisture)
 Overall Agronomic Summary

Pedigree	# Yrs	Yield (bu/ac)	# Yrs	Test Wt (lb/bu)	# Yrs	Plump (%)	# Yrs	Heading Date (1)	# Yrs	Plant Ht. inches	# Yrs	Protein %
Haxby * (Check)	7	151.5	7	53.0	7	88.4	7	175.5	7	35.1	6	13.8
Gallatin	7	147.3	7	52.4	7	89.4	7	173.9	7	35.5	6	13.9
Eslick * +	7	150.0	7	51.7	7	90.0	7	176.0	7	33.0	6	13.3
Baronesse * (P) +	7	149.5	7	51.9	7	92.2	7	177.5	7	32.7	6	13.8
WB Xena * (P) +	4	158.7	4	51.2	4	88.3	4	176.3	4	33.9	4	13.9
Boulder * (P) +	4	148.3	4	53.2	4	91.0	4	176.0	4	34.6	3	14.4
Calgary * (P) +	5	152.8	5	50.1	5	80.5	5	177.0	5	30.3	4	14.4
Valier * +	7	145.2	7	51.9	7	85.5	7	177.2	7	34.2	6	15.0
Hays * (Hay Barley)	4	142.8	4	46.8	4	73.7	4	176.2	4	33.5	3	14.2
Harrington	7	148.4	7	50.3	7	84.4	7	176.0	7	34.5	6	13.8
Merit (P) +	7	144.9	7	50.6	7	90.3	7	178.1	7	34.5	6	14.2
Conlon +	4	145.2	4	52.5	4	98.2	4	170.6	4	35.5	3	13.3
Legacy (P) +	6	142.4	6	47.3	6	73.0	6	175.6	6	37.3	5	13.7
Tradition (P) +	4	159.1	4	49.0	4	90.8	4	173.2	4	38.5	3	13.5
Morex	5	131.8	5	49.0	5	81.8	5	171.7	5	40.9	5	14.9

(1) Heading Date = 180 = June 29

Yield in bushels per acre

Pedigree	2000	2001	2002	2003	2004	2005	Comp Avg.	# of Yrs.
Haxby * (Check)	196.9	181.1	151.3	116.9	125.6	128.5	151.5	7
Gallatin	184.5	181.4	139.9	127.2	127.2	130.4	147.3	7
Eslick * +	190.7	147.6	139.2	125.0	139.5	147.6	150.0	7
Baronesse * (P) +	184.6	173.5	144.1	117.4	132.2	142.7	149.5	7
WB Xena * (P) +	0.0	0.0	0.0	109.3	140.4	161.8	158.7	4
Boulder * (P) +	0.0	161.9	151.4	0.0	133.8	127.0	148.3	4
Calgary * (P) +	0.0	187.3	147.2	100.0	138.6	136.8	152.8	5
Valier * +	179.0	173.6	146.4	114.2	124.2	133.8	145.2	7
Hays * (Hay Barley)	0.0	0.0	131.1	105.8	137.0	118.6	142.8	4
Harrington	197.3	178.5	129.6	122.0	132.5	127.2	148.4	7
Merit (P) +	181.5	186.8	120.0	108.9	127.8	148.1	144.9	7
Conlon +	0.0	173.3	142.6	114.6	120.6	0.0	145.2	4
Legacy (P) +	167.6	174.1	140.9	101.6	125.1	137.4	142.4	6
Tradition (P) +	0.0	0.0	161.3	116.7	134.4	136.1	159.1	4
Morex	161.9	146.4	0.0	0.0	115.3	134.0	131.8	5
C.V.	4.98	14.45	7.24	7.72	6.43	5.13	***	***
LSD (.05)	15.03	43.34	17.94	15.62	14.64	12.35	***	***

Check Variety = Haxby, all varieties are directly comparable based on Haxby (see page3)

* Recommended variety (P) Private + Protected variety

1999-2005 SPRING BARLEY VARIETY PERFORMANCE
District 2 Bozeman Irrigated
Overall Agronomic Summary

Pedigree	# Yrs	Yield (bu/ac)	# Yrs	Test Wt (lb/bu)	# Yrs	Plump (%)	# Yrs	Heading Date (1)	# Yrs	Plant Ht. inches	# Yrs	Protein %
Haxby * (Check)	7	124.7	7	54.6	7	80.5	7	181.8	7	34.2	7	12.7
Gallatin	7	119.4	7	54.0	7	72.6	7	181.2	7	34.5	7	13.1
Eslick * +	7	124.3	7	52.2	7	65.0	7	182.9	7	33.1	7	13.0
Baronesse * (P) +	7	125.1	7	52.5	7	73.9	7	183.2	7	31.5	7	13.3
WB Xena * (P) +	4	127.6	4	53.1	4	69.0	4	182.4	4	33.5	4	12.6
Boulder * (P) +	4	138.5	4	54.5	4	82.2	4	182.2	4	33.1	4	13.4
Calgary * (P) +	5	132.8	5	52.9	5	74.8	5	182.8	5	30.4	5	12.9
Valier * +	7	125.0	7	53.0	7	71.1	7	183.1	7	35.0	7	13.5
Hays * (Hay Barley)	4	104.4	4	48.9	4	50.6	4	184.3	4	33.7	4	13.3
Harrington	7	115.2	7	51.1	7	69.5	7	182.8	7	34.4	7	13.3
Merit (P) +	7	120.7	7	50.4	7	70.7	7	183.5	7	34.1	7	13.3
Conlon +	4	122.0	4	53.8	4	81.8	4	177.6	4	32.5	4	13.6
Legacy (P) +	6	107.7	6	49.5	6	70.7	6	181.0	6	38.2	6	13.7
Tradition (P) +	4	109.7	4	51.5	4	88.4	4	180.3	4	38.5	4	13.4
Morex	5	94.1	5	51.1	5	80.9	5	179.1	5	41.9	5	13.4

(1) Heading Date = 180 = June 29

Yield in bushels per acre

Pedigree	2000	2001	2002	2003	2004	2005	Comp Avg.	# of Yrs.
Haxby * (Check)	155.7	131.4	98.3	127.2	144.8	121	124.7	7
Gallatin	137.6	134.6	95.0	119.1	134.8	112.0	119.4	7
Eslick * +	150.1	131.6	100.5	128.0	148.2	115.5	124.3	7
Baronesse * (P) +	163.1	127.3	98.2	126.2	136.1	118.0	125.1	7
WB Xena * (P) +	0.0	0.0	0.0	132.9	147.9	116.8	127.6	4
Boulder * (P) +	0.0	146.6	123.0	0.0	157.1	123.0	138.5	4
Calgary * (P) +	0.0	154.6	113.9	131.4	151.1	111.4	132.8	5
Valier * +	161.8	139.6	98.9	122.2	145.1	111.5	125.0	7
Hays * (Hay Barley)	0.0	0.0	76.5	120.7	104.2	109.2	104.4	4
Harrington	139.6	138.4	90.7	120	125.6	99.4	115.2	7
Merit (P) +	140.0	146.6	105.7	114.8	134.4	108.2	120.7	7
Conlon +	0.0	145.4	104.2	113.7	127.4	0.0	122.0	4
Legacy (P) +	142.2	133.8	76.3	109.3	118.8	91.1	107.7	6
Tradition (P) +	0.0	0.0	75.2	113.8	131.1	111.4	109.7	4
Morex	119.0	105.2	0.0	0.0	100.2	88.1	94.1	5
C.V.	6.87	5.92	8.56	4.81	7.70	5.14	***	***
LSD (.05)	16.61	13.38	15.27	10.39	17.95	1.10	***	***

Check Variety = Haxby, all varieties are directly comparable based on Haxby (see page3)

* Recommended variety (P) Private + Protected variety

1999-2005 SPRING BARLEY VARIETY PERFORMANCE
 District 3 Huntley Irrigated
 Overall Agronomic Summary

Pedigree	# Yrs	Yield (bu/ac)	# Yrs	Test Wt (lb/bu)	# Yrs	Plump (%)	# Yrs	Heading Date (1)	# Yrs	Plant Ht. inches	# Yrs	Protein %
Haxby * (Check)	7	133.2	7	53.1	7	89.5	7	167.0	7	37.5	7	12.3
Gallatin	7	124.7	7	51.9	7	85.2	7	165.6	7	36.8	7	12.6
Eslick * +	7	145.0	7	52.0	7	85.1	7	169.2	7	36.6	7	11.9
Baronesse * (P) +	7	135.4	7	51.5	7	84.8	7	170.0	7	34.2	7	11.9
WB Xena * (P) +	4	145.0	4	52.0	4	88.1	4	167.8	4	37.6	4	12.2
Boulder * (P) +	4	139.9	4	52.4	4	88.3	4	169.2	4	35.5	4	12.7
Calgary * (P) +	5	136.3	5	52.2	5	87.7	5	170.7	5	30.6	5	12.0
Valier * +	7	134.8	7	52.4	7	87.1	7	170.0	7	36.7	7	12.5
Hays * (Hay Barley)	4	108.8	4	47.4	4	72.4	4	171.6	4	34.2	4	12.8
Harrington	7	121.1	7	49.7	7	82.8	7	170.1	7	37.0	7	12.7
Merit (P) +	7	130.0	7	50.0	7	88.6	7	170.2	7	35.0	7	12.2
Conlon +	4	104.2	4	51.2	4	92.3	4	162.2	4	35.8	4	13.4
Legacy (P) +	6	125.8	6	49.3	6	87.1	6	164.5	6	39.3	6	12.6
Tradition (P) +	4	127.8	4	49.9	4	87.9	4	164.0	4	38.1	4	12.8
Morex	5	117.1	5	49.4	5	86.2	5	163.9	5	41.6	5	13.2

(1) Heading Date = 180 = June 29

Yield in bushels per acre

Pedigree	2000	2001	2002	2003	2004	2005	Comp Avg.	# of Yrs.
Haxby * (Check)	120.5	163.3	164.6	133.3	138.0	85.2	133.2	7
Gallatin	132.6	144.7	131.9	122.1	128.1	94.3	124.7	7
Eslick * +	152.4	172.6	163.7	144.5	157.4	98.8	145.0	7
Baronesse * (P) +	135.3	158.4	141.6	137.4	153.7	94.0	135.4	7
WB Xena * (P) +	0.0	0.0	0.0	133.2	157.7	107.3	145.0	4
Boulder * (P) +	0.0	157.6	166.1	0.0	162.3	92.7	139.9	4
Calgary * (P) +	0.0	164.3	158.5	133.1	145.2	99.3	136.3	5
Valier * +	124.8	166.7	151.8	124.7	139.9	92.7	134.8	7
Hays * (Hay Barley)	0.0	0.0	120.2	97.4	125.8	82.0	108.8	4
Harrington	130.7	131.5	135.9	124.2	129.0	85.8	121.1	7
Merit (P) +	129.4	138.2	154.8	125.5	132.9	101.6	130.0	7
Conlon +	0.0	160.3	116.0	111.8	80.5	0.0	104.2	4
Legacy (P) +	105.0	175.7	139.7	111.3	141.4	87.2	125.8	6
Tradition (P) +	0.0	0.0	135.7	119.8	146.0	98.4	127.8	4
Morex	107.8	148.8	0.0	0.0	133.5	73.7	117.1	5
C.V.	12.21	5.54	10.89	8.33	9.52	7.37	***	***
LSD (.05)	26.19	14.07	27.08	18.15	21.41	12.20	***	***

Check Variety = Haxby, all varieties are directly comparable based on Haxby (see page3)

* Recommended variety (P) Private + Protected variety

1999-2005 SPRING BARLEY VARIETY PERFORMANCE
 District 5 Conrad Irrigated
 Overall Agronomic Summary

Pedigree	# Yrs	Yield (bu/ac)	# Yrs	Test Wt (lb/bu)	# Yrs	Plump (%)	# Yrs	Heading Date (1)	# Yrs	Plant Ht. inches	# Yrs	Protein %
Haxby * (Check)	7	108.1	7	54.5	7	95.0	6	181.5	7	32.7	7	11.9
Gallatin	7	102.4	7	53.8	7	93.0	6	179.7	7	34.1	7	11.7
Eslick * +	7	115.9	7	53.5	7	94.7	6	182.5	7	29.9	7	11.2
Baronesse * (P) +	7	113.5	7	52.7	7	93.3	6	181.8	7	30.9	7	11.6
WB Xena * (P) +	4	109.5	4	52.9	4	94.0	4	181.8	4	33.9	4	12.0
Boulder * (P) +	4	104.7	4	54.3	4	94.3	4	180.8	4	32.2	4	12.0
Calgary * (P) +	5	109.0	5	53.0	5	93.0	5	181.9	5	27.8	5	11.8
Valier * +	7	105.5	7	53.6	7	94.9	6	182.7	7	33.0	7	12.5
Hays * (Hay Barley)	3	86.7	3	48.4	3	75.9	3	181.8	3	33.7	3	11.8
Harrington	7	99.3	7	51.7	7	93.7	6	182.2	7	31.3	7	11.6
Merit (P) +	7	109.5	7	50.2	7	94.0	6	183.0	7	32.3	7	11.9
Conlon +	4	97.7	4	52.8	4	95.5	4	178.5	4	31.7	4	12.1
Legacy (P) +	6	92.1	6	48.9	6	82.7	5	180.5	6	35.0	6	12.4
Tradition (P) +	4	100.9	4	50.9	4	93.5	4	179.8	4	33.9	4	11.9
Morex	5	78.1	5	49.7	5	86.7	4	179.7	5	37.1	5	12.6

(1) Heading Date = 180 = June 29

Yield in bushels per acre

Pedigree	2000	2001	2002	2003	2004	2005	Comp Avg.	# of Yrs.
Haxby * (Check)	88.6	76.9	123.9	126.9	105.9	115.4	108.1	7
Gallatin	88.4	70.0	117.1	117.8	95.9	106.6	102.4	7
Eslick * +	111.1	83.0	118.4	133.8	102.6	118.6	115.9	7
Baronesse * (P) +	104.4	85.9	119.9	124.1	123.5	100.5	113.5	7
WB Xena * (P) +	0.0	0.0	0.0	123.1	123.8	113.3	109.5	4
Boulder * (P) +	0.0	81.2	123.0	0.0	101.9	102.8	104.7	4
Calgary * (P) +	0.0	73.8	125.9	120.1	124.3	110.0	109.0	5
Valier * +	113.1	74.7	106.0	121.6	101.3	107.8	105.5	7
Hays * (Hay Barley)	0.0	0.0	103.4	92.7	0.0	97.7	86.7	3
Harrington	80.7	67.7	106.9	118.3	90.5	96.8	99.3	7
Merit (P) +	88.3	73.2	118.1	132.6	124.0	109.8	109.5	7
Conlon +	0.0	74.9	104.4	117.5	95.1	0.0	97.7	4
Legacy (P) +	71.4	70.2	105.3	107.8	91.9	96.9	92.1	6
Tradition (P) +	0.0	0.0	101.3	120.4	105.2	113.8	100.9	4
Morex	59.6	51.0	0.0	0.0	69.8	93.0	78.1	5
C.V	11.55	10.18	6.55	8.51	9.36	6.26	***	***
LSD (.05)	18.23	12.63	12.85	17.92	15.83	11.65	***	***

Check Variety = Haxby, all varieties are directly comparable based on Haxby (see page3)

* Recommended variety (P) Private + Protected variety

1999-2005 SPRING BARLEY VARIETY PERFORMANCE
District 6 Sidney Irrigated
Overall Agronomic Summary

Pedigree	# Yrs	Yield (bu/ac)	# Yrs	Test Wt (lb/bu)	# Yrs	Plump (%)	# Yrs	Heading Date (1)	# Yrs	Plant Ht. inches	# Yrs	Protein %
Haxby * (Check)	7	115.6	7	50.1	7	79.3	7	174.9	7	32.8	7	12.7
Gallatin	7	106.4	7	48.7	7	71.6	7	173.8	7	33.2	7	12.4
Eslick * +	7	110.4	7	47.9	7	69.9	7	176.7	7	31.5	7	12.4
Baronesse * (P) +	7	110.9	7	48.4	7	77.6	7	177.3	7	29.8	7	12.2
WB Xena * (P) +	4	112.4	4	48.3	4	80.2	4	175.9	4	31.6	4	12.3
Boulder * (P) +	4	100.0	4	50.1	4	88.4	4	176.1	4	30.4	4	12.8
Calgary * (P) +	5	109.3	5	46.9	5	75.1	5	176.8	5	25.9	5	12.5
Valier * +	7	106.6	7	48.5	7	71.3	7	177.2	7	31.4	7	12.9
Hays * (Hay Barley)	4	90.4	4	44.6	4	55.7	4	177.2	4	31.9	4	13.3
Harrington	7	97.7	7	46.0	7	76.4	7	177.3	7	31.2	7	12.9
Merit (P) +	7	102.4	7	45.5	7	81.6	7	177.4	7	31.8	7	12.9
Conlon +	4	99.5	4	47.5	4	77.5	4	171.6	4	29.8	4	12.7
Legacy (P) +	6	112.1	6	45.4	6	75.8	6	174.5	6	33.0	6	12.5
Tradition (P) +	4	108.8	4	46.9	4	82.8	4	173.6	4	33.0	4	12.7
Morex	5	106.1	5	45.4	5	72.2	5	171.6	5	37.5	5	13.1

(1) Heading Date = 180 = June 29

Yield in bushels per acre

Pedigree	2000	2001	2002	2003	2004	2005	Comp Avg.	# of Yrs.
Haxby * (Check)	130.6	73.2	87.3	128.3	150.5	115.9	115.6	7
Gallatin	115.4	64.2	85.6	119.4	143.3	98.2	106.4	7
Eslick * +	132.0	60.7	82.9	126.1	139.6	105.0	110.4	7
Baronesse * (P) +	133.3	64.2	77.8	137.3	135.4	95.2	110.9	7
WB Xena * (P) +	0.0	0.0	0.0	130.1	137.6	115.6	112.4	4
Boulder * (P) +	0.0	64.1	81.2	0.0	124.9	99.3	100.0	4
Calgary * (P) +	0.0	61.2	82.1	132.9	134.6	114.3	109.3	5
Valier * +	124.2	63.3	80.0	120.3	138.6	106.3	106.6	7
Hays * (Hay Barley)	0.0	0.0	69.3	112.4	119.6	75.9	90.4	4
Harrington	113.6	61.9	71.0	118.8	126.2	92.3	97.7	7
Merit (P) +	113.5	53.2	77.1	121.6	138.5	99.9	102.4	7
Conlon +	0.0	58.6	77.1	116.7	125.9	0.0	99.5	4
Legacy (P) +	135.6	68.3	81.7	130.5	130.7	118.4	112.1	6
Tradition (P) +	0.0	0.0	88.2	130.8	126.1	108.7	108.8	4
Morex	125.2	79.3	0.0	0.0	121.1	105.1	106.1	5
C.V.	5.61	13.35	5.73	4.96	6.94	8.59	***	***
LSD (.05)	11.57	14.09	7.61	10.04	14.67	15.18	***	***

Check Variety = Haxby, all varieties are directly comparable based on Haxby (see page3)

* Recommended variety (P) Private + Protected variety

1999-2005 SPRING BARLEY VARIETY PERFORMANCE
Irrigated Locations ⁽¹⁾
Overall Agronomic Summary

Pedigree	# Yrs	Yield (bu/ac)	# Yrs	Test Wt (lb/bu)	# Yrs	Plump (%)	# Yrs	Heading Date (2)	# Yrs	Plant Ht. inches	# Yrs	Protein %
Haxby * (Check)	35	126.6	35	53.0	35	86.5	34	176.0	35	34.5	34	12.7
Gallatin	35	120.0	35	52.2	35	82.4	34	174.7	35	34.8	34	12.7
Eslick * +	35	129.1	35	51.5	35	80.9	34	177.3	35	32.8	34	12.3
Baronesse * (P) +	35	126.8	35	51.4	35	84.3	34	177.8	35	31.8	34	12.5
WB Xena * (P) +	20	130.2	20	51.5	20	84.0	20	176.7	20	34.1	20	12.6
Boulder * (P) +	20	126.6	20	52.9	20	88.8	20	176.7	20	33.2	19	13.0
Calgary * (P) +	25	128.1	25	51.0	25	82.2	25	177.7	25	29.0	24	12.7
Valier * +	35	123.4	35	51.9	35	82.0	34	177.9	35	34.1	34	13.2
Hays * (Hay Barley)	19	106.3	19	47.2	19	65.2	19	178.2	19	33.3	18	13.1
Harrington	35	116.3	35	49.8	35	81.4	34	177.6	35	33.7	34	12.8
Merit (P) +	35	121.5	35	49.3	35	85.0	34	178.3	35	33.5	34	12.9
Conlon +	20	113.3	20	51.5	20	89.0	20	171.9	20	33.0	19	13.0
Legacy (P) +	30	116.0	30	48.1	30	77.9	29	175.1	30	36.6	29	13.0
Tradition (P) +	20	120.8	20	49.6	20	88.8	20	174.0	20	36.4	19	12.8
Morex	25	105.6	25	48.9	25	81.5	24	173.0	25	39.8	25	13.4

(1) Irrigated Locations: Kalispell (high moisture), Sidney, Huntley, Conrad and Bozeman.

(2) Heading Date = 180 = June 29

Check Variety = Haxby, all varieties are directly comparable based on Haxby (see page3)

* Recommended variety (P) Private + Protected variety

1999-2005 SPRING BARLEY VARIETY PERFORMANCE
 District 2 Bozeman Dryland
 Overall Agronomic Summary

Pedigree	# Yrs	Yield (bu/ac)	# Yrs	Test Wt (lb/bu)	# Yrs	Plump (%)	# Yrs	Heading Date (1)	# Yrs	Plant Ht. inches	# Yrs	Protein %
Haxby * (Check)	7	103.7	7	53.4	7	61.8	7	178.7	7	32.2	7	14.2
Gallatin	7	93.5	7	52.0	7	53.9	7	177.6	7	32.4	7	15.0
Eslick * +	7	101.5	7	50.4	7	46.1	7	179.7	7	31.5	7	14.6
Baronesse * (P) +	7	100.9	7	50.3	7	51.5	7	179.8	7	30.1	7	14.8
WB Xena * (P) +	6	101.5	6	50.6	6	51.4	6	179.0	6	31.6	6	14.9
Boulder * (P) +	4	109.5	4	53.0	4	67.9	4	179.7	4	31.0	4	14.9
Valier * +	7	97.0	7	51.0	7	45.4	7	180.3	7	32.2	7	15.7
Hays * (Hay Barley)	4	100.4	4	47.6	4	42.2	4	182.3	4	31.1	4	14.6
Harrington	7	90.0	7	48.7	7	50.1	7	179.7	7	32.1	7	15.4
Merit (P) +	7	89.0	7	47.7	7	48.1	7	180.3	7	31.0	7	15.7
Conlon +	4	97.8	4	52.6	4	82.3	4	175.2	4	32.3	4	14.5
Morex	4	84.5	4	49.6	4	37.6	4	176.5	4	38.4	4	15.5
Legacy (P) +	6	85.4	6	47.2	6	32.2	6	178.5	6	35.3	6	15.2
Tradition (P) +	4	96.1	4	49.3	4	42.5	4	177.7	4	35.9	4	14.8

(1) Heading Date = 180 = June 29

Yield in bushels per acre

Pedigree	2000	2001	2002	2003	2004	2005	Comp Avg.	# of Yrs.
Haxby * (Check)	133.3	113.1	76.9	84.1	135.6	99.3	103.7	7
Gallatin	122.7	100.4	57.7	72.3	125.2	92.9	93.5	7
Eslick * +	132.5	120.5	75.9	74.5	133.3	94.8	101.5	7
Baronesse * (P) +	129.7	117.6	68.3	80.8	134.0	88.3	100.9	7
WB Xena * (P) +	122.1	121.5	0.0	76.1	139.1	95.4	101.5	6
Boulder * (P) +	0.0	126.7	89.8	0.0	136.1	96.3	109.5	4
Valier * +	123.9	119.4	63.4	72.0	127.8	93.5	97.0	7
Hays * (Hay Barley)	0.0	0.0	81.1	74.3	133.5	94.5	100.4	4
Harrington	118.7	104.5	52.6	72.1	124.8	78.0	90.0	7
Merit (P) +	112.7	110.7	64.8	61.9	119.1	86.0	89.0	7
Conlon +	0.0	111.5	68.7	80.8	125.3	0.0	97.8	4
Morex	115.6	79.0	0.0	0.0	113.0	0.0	84.5	4
Legacy (P) +	112.9	98.4	53.8	74.9	115.1	73.8	85.4	6
Tradition (P) +	0.0	0.0	65.4	86.0	133.5	81.9	96.1	4
C.V.	4.48	5.97	14.35	5.41	4.96	5.13	***	***
LSD (.05)	9.58	11.61	16.23	7.23	10.94	8.30	***	***

Check Variety = Haxby, all varieties are directly comparable based on Haxby (see page3)

* Recommended variety (P) Private + Protected variety

1999-2005 SPRING BARLEY VARIETY PERFORMANCE
 District 3 Huntley Dryland
 Overall Agronomic Summary

Pedigree	# Yrs	Yield (bu/ac)	# Yrs	Test Wt (lb/bu)	# Yrs	Plump (%)	# Yrs	Heading Date (1)	# Yrs	Plant Ht. inches	# Yrs	Protein %
Haxby * (Check)	7	51.7	6	50.2	7	48.4	6	171.7	7	25.8	7	15.8
Gallatin	7	46.2	6	48.0	7	49.9	6	169.3	7	25.5	7	16.0
Eslick * +	7	49.8	6	47.9	7	45.9	6	174.6	7	24.5	7	15.8
Baronesse * (P) +	7	49.8	6	46.9	7	46.9	6	175.5	7	23.4	7	17.3
WB Xena * (P) +	6	48.6	5	48.0	6	47.8	6	173.3	6	25.5	6	16.5
Boulder * (P) +	4	48.5	4	48.2	4	50.0	3	176.3	4	24.1	4	15.8
Valier * +	7	48.1	6	48.3	7	43.7	6	174.3	7	24.9	6	17.7
Hays * (Hay Barley)	4	40.5	4	45.5	4	42.2	3	176.6	4	23.1	4	15.3
Harrington	7	43.3	6	46.4	7	53.7	6	172.2	7	24.6	7	16.3
Merit (P) +	7	43.7	6	45.2	7	48.5	6	174.9	7	23.9	7	16.7
Conlon +	4	48.8	4	49.6	4	66.3	3	165.0	4	26.6	4	16.3
Morex	4	42.9	3	46.3	4	44.7	4	161.8	4	30.9	4	16.8
Legacy (P) +	6	42.5	5	43.9	6	43.2	5	166.0	6	26.0	6	16.1
Tradition (P) +	4	45.2	4	46.2	4	49.8	3	165.2	4	27.3	4	16.3

(1) Heading Date = 180 = June 29

Yield in bushels per acre

Pedigree	2000	2001	2002	2003	2004	2005	Comp Avg.	# of Yrs.
Haxby * (Check)	33.0	47.2	26.6	61.6	53.3	75.2	51.7	7
Gallatin	38.6	44.3	18.5	49.1	39.8	64.7	46.2	7
Eslick * +	42.5	45.3	15.4	58.0	51.1	67.3	49.8	7
Baronesse * (P) +	34.4	48.2	23.1	61.7	48.0	65.3	49.8	7
WB Xena * (P) +	27.8	50.6	0.0	60.5	48.8	67.4	48.6	6
Boulder * (P) +	0.0	46.8	21.7	0.0	51.0	70.5	48.5	4
Valier * +	38.9	49.0	13.6	60.8	41.5	70	48.1	7
Hays * (Hay Barley)	0.0	0.0	6.2	53.0	45.6	64.9	40.5	4
Harrington	35.3	39.3	11.6	53.5	37.2	62.3	43.3	7
Merit (P) +	41.6	44.4	8.7	55.4	42.4	59.4	43.7	7
Conlon +	0.0	45.5	37.4	51.9	43.2	0.0	48.8	4
Morex	17.9	36.1	0.0	0.0	48.0	0.0	42.9	4
Legacy (P) +	40.2	29.5	19.4	58.9	42.0	54.4	42.5	6
Tradition (P) +	0.0	0.0	23.9	52.4	45.2	67.9	45.2	4
C.V.	20.40	10.93	21.76	10.99	8.59	7.50	***	***
LSD (.05)	13.35	8.59	7.53	10.08	6.88	8.95	***	***

Check Variety = Haxby, all varieties are directly comparable based on Haxby (see page3)

* Recommended variety (P) Private + Protected variety

1999-2005 SPRING BARLEY VARIETY PERFORMANCE
District 4 Moccasin Dryland
Overall Agronomic Summary

Pedigree	# Yrs	Yield (bu/ac)	# Yrs	Test Wt (lb/bu)	# Yrs	Plump (%)	# Yrs	Heading Date (1)	# Yrs	Plant Ht. inches	# Yrs	Protein %
Haxby * (Check)	6	61.3	6	51.1	5	54.7	6	181.1	5	28.2	6	15.6
Gallatin	6	57.0	6	48.4	5	43.8	6	180.2	5	28.0	6	16.2
Eslick * +	6	59.8	6	47.9	5	48.8	6	183.5	5	26.6	6	15.7
Baronesse * (P) +	6	60.2	6	46.8	5	50.6	6	184.9	5	26.0	6	16.1
WB Xena * (P) +	5	59.3	5	48.0	4	54.0	5	183.4	4	27.7	5	15.6
Boulder * (P) +	4	63.4	4	49.7	4	51.0	4	184.4	3	26.5	4	15.5
Valier * +	6	53.9	6	48.5	5	47.3	6	184.6	5	26.9	6	16.9
Hays * (Hay Barley)	4	52.5	4	45.6	3	41.8	4	184.6	3	25.6	4	16.6
Harrington	6	51.4	6	46.2	5	56.4	6	183.6	5	26.3	6	17.0
Merit (P) +	6	51.6	6	45.4	5	37.2	6	185.0	5	26.0	6	17.0
Conlon +	4	56.5	4	49.2	3	79.7	4	177.6	3	28.7	4	15.2
Morex	3	48.4	3	44.8	3	50.2	3	179.5	2	32.3	3	16.5
Legacy (P) +	5	44.2	5	43.4	4	26.9	5	181.3	4	27.7	5	16.2
Tradition (P) +	4	50.8	4	46.9	3	41.9	4	181.5	3	27.2	4	15.6

(1) Heading Date = 180 = June 29

Yield in bushels per acre

Pedigree	1999	2001	2002	2003	2004	2005	Comp Avg.	# of Yrs.
Haxby * (Check)	71.1	77.4	56.6	34.8	77.7	50	61.3	6
Gallatin	72.8	71.1	48.1	29.1	70.9	49.7	57.0	6
Eslick * +	75.1	73.4	53.6	32.6	74.9	49.3	59.8	6
Baronesse * (P) +	77.2	71.7	51.8	31.9	72.4	56.2	60.2	6
WB Xena * (P) +	66.7	75.7	0.0	28.0	78.7	51.8	59.3	5
Boulder * (P) +	0.0	81.5	52.9	0.0	79.3	57.0	63.4	4
Valier * +	67.0	69.7	42.7	24.8	71.3	47.6	53.9	6
Hays * (Hay Barley)	0.0	0.0	49.8	20.7	68.7	48.7	52.5	4
Harrington	70.6	62.8	43.3	22.2	63.3	46.1	51.4	6
Merit (P) +	72.2	60.3	41.6	24.7	63.6	47.2	51.6	6
Conlon +	0.0	70.0	46.9	38.7	71.8	0.0	56.5	4
Morex	63.6	53.0	0.0	0.0	61.9	0.0	48.4	3
Legacy (P) +	0.0	48.1	45.1	27.3	58.5	35.1	44.2	5
Tradition (P) +	0.0	0.0	45.0	27.5	66.5	42.9	50.8	4
C.V.	11.41	7.59	7.27	12.40	6.45	6.20	***	***
LSD (.05)	13.66	9.03	6.04	6.21	7.65	5.39	***	***

Check Variety = Haxby, all varieties are directly comparable based on Haxby (see page3)

* Recommended variety (P) Private + Protected variety

1999-2005 SPRING BARLEY VARIETY PERFORMANCE
District 5 Conrad Dryland
Overall Agronomic Summary

Pedigree	# Yrs	Yield (bu/ac)	# Yrs	Test Wt (lb/bu)	# Yrs	Plump (%)	# Yrs	Heading Date (1)	# Yrs	Plant Ht. inches	# Yrs	Protein %
Haxby * (Check)	7	74.9	7	53.4	7	75.6	6	181.0	7	29.1	7	13.2
Gallatin	7	72.0	7	49.8	7	68.0	6	180.7	7	30.3	7	13.9
Eslick * +	7	75.0	7	50.6	7	73.6	6	182.5	7	28.4	7	13.3
Baronesse * (P) +	7	75.2	7	50.2	7	77.7	6	182.2	7	27.0	7	13.5
WB Xena * (P) +	6	71.0	6	50.2	6	73.6	5	182.2	6	29.5	6	13.6
Boulder * (P) +	4	77.9	4	53.0	4	78.7	3	181.0	4	30.5	4	14.2
Valier * +	7	74.5	7	51.3	7	66.3	6	182.7	7	29.6	7	14.0
Hays * (Hay Barley)	3	72.0	3	45.5	3	57.8	3	182.7	3	31.3	3	13.4
Harrington	7	71.1	7	49.3	7	75.1	6	182.7	7	29.1	7	13.8
Merit (P) +	7	67.3	7	47.4	7	75.5	6	182.8	7	28.9	7	13.8
Conlon +	4	65.9	4	50.5	4	88.3	3	178.4	4	28.6	4	13.9
Morex	4	61.2	4	47.6	4	47.1	3	178.6	4	33.9	4	13.6
Legacy (P) +	6	63.6	6	46.8	6	59.4	5	180.2	6	32.9	6	13.5
Tradition (P) +	4	73.2	4	48.5	4	63.4	4	180.5	4	32.6	4	13.7

(1) Heading Date = 180 = June 29

Yield in bushels per acre

Pedigree	2000	2001	2002	2003	2004	2005	Comp Avg.	# of Yrs.
Haxby * (Check)	62.8	22.4	76.2	87.2	91.0	94.5	74.9	7
Gallatin	50.9	23.9	78.7	78.1	94.8	90.4	72.0	7
Eslick * +	58.8	21.4	91.3	83.0	87.2	85.5	75.0	7
Baronesse * (P) +	57.8	27.9	82.6	88.7	90.5	88.0	75.2	7
WB Xena * (P) +	53.1	23.3	0.0	71.7	95.5	92.0	71.0	6
Boulder * (P) +	0.0	23.5	81.8	0.0	96.6	93.5	77.9	4
Valier * +	62.9	22.5	78.9	79.8	93.3	89.1	74.5	7
Hays * (Hay Barley)	0.0	0.0	81.5	81.2	0.0	85.2	72.0	3
Harrington	53.2	20.4	81.7	80.5	80.0	88.2	71.1	7
Merit (P) +	45.5	16.9	72.2	81.6	79.0	83.8	67.3	7
Conlon +	0.0	20.2	60.7	89.2	73.5	0.0	65.9	4
Morex	48.8	18.9	0.0	0.0	77.4	0.0	61.2	4
Legacy (P) +	39.9	16.0	67.2	76.0	81.1	88.7	63.6	6
Tradition (P) +	0.0	0.0	78.2	89.0	86.0	87.7	73.2	4
C.V.	8.38	15.26	8.41	11.97	9.80	6.07	***	***
LSD (.05)	7.92	5.69	11.42	17.22	13.94	9.55	***	***

Check Variety = Haxby, all varieties are directly comparable based on Haxby (see page3)

* Recommended variety (P) Private + Protected variety

1999-2005 SPRING BARLEY VARIETY PERFORMANCE
 District 5 Havre Dryland
 Overall Agronomic Summary

Pedigree	# Yrs	Yield (bu/ac)	# Yrs	Test Wt (lb/bu)	# Yrs	Plump (%)	# Yrs	Heading Date (1)	# Yrs	Plant Ht. inches	# Yrs	Protein %
Haxby * (Check)	6	51.9	6	50.7	6	68.0	6	182.9	6	24.9	6	15.8
Gallatin	6	51.6	6	49.1	6	63.0	6	182.0	6	24.6	6	16.6
Eslick * +	6	53.6	6	48.6	6	56.2	6	186.7	6	24.2	6	15.8
Baronesse * (P) +	6	55.6	6	48.0	6	64.2	6	187.3	6	23.3	6	16.3
WB Xena * (P) +	5	49.1	5	48.0	5	60.4	5	187.6	5	23.6	5	16.4
Boulder * (P) +	3	57.4	3	49.6	3	73.2	3	186.4	3	23.2	3	15.8
Valier * +	6	51.5	6	49.0	6	55.7	6	186.9	6	23.6	6	16.9
Hays * (Hay Barley)	3	51.5	3	44.8	3	56.4	3	186.5	3	23.2	3	16.5
Harrington	6	48.9	6	46.9	6	61.5	6	184.9	6	24.6	6	16.5
Merit (P) +	6	46.5	6	46.0	6	56.3	6	184.9	6	23.6	6	17.0
Conlon +	3	52.2	3.0	49.9	3	79.2	3	180.9	3	23.3	3	15.4
Morex	3	38.2	3	45.2	3	52.1	3	178.1	3	26.8	3	16.1
Legacy (P) +	5	41.2	5	44.8	5	52.1	5	181.8	5	24.6	5	15.8
Tradition (P) +	3	48.4	3	46.3	3	67.1	3	180.2	3	23.9	3	15.3

(1) Heading Date = 180 = June 29

Yield in bushels per acre

Pedigree	1999	2000	2001	2002	2003	2005	Comp Avg.	# of Yrs.
Haxby * (Check)	65.9	66.0	28.9	54.6	11.6	84.2	51.9	6
Gallatin	63.8	65.5	31.6	54.4	11.6	82.9	51.6	6
Eslick * +	80.6	63.5	28.1	58.6	11.3	79.2	53.6	6
Baronesse * (P) +	85.3	62.5	32.2	56.6	14.1	83.2	55.6	6
WB Xena * (P) +	65.2	61.8	29.0	0.0	11.6	75.3	49.1	5
Boulder * (P) +	0.0	0.0	32.9	61.0	0.0	91.8	57.4	3
Valier * +	71.0	62.4	30.1	53.6	11.8	79.9	51.5	6
Hays * (Hay Barley)	0.0	0.0	0.0	56.3	11.5	81.4	51.5	3
Harrington	71.8	53.5	31.2	53.5	12.4	70.8	48.9	6
Merit (P) +	71.9	54.9	28.5	48	12.0	63.9	46.5	6
Conlon +	0.0	0.0	30.1	55.1	10.6	0.0	52.2	3
Morex	43.1	54.6	20.7	0.0	0.0	0.0	38.2	3
Legacy (P) +	0.0	53.8	21.9	51.6	8.1	59.6	41.2	5
Tradition (P) +	0.0	0.0	0.0	54.9	8.2	77.3	48.4	3
C.V.	6.80	7.69	11.33	8.46	9.43	8.97	***	***
LSD (.05)	7.64	8.10	5.68	7.69	2.16	12.46	***	***

Check Variety = Haxby, all varieties are directly comparable based on Haxby (see page3)

* Recommended variety (P) Private + Protected variety

1999-2005 SPRING BARLEY VARIETY PERFORMANCE
 District 6 Sidney Dryland
 Overall Agronomic Summary

Pedigree	# Yrs	Yield (bu/ac)	# Yrs	Test Wt (lb/bu)	# Yrs	Plump (%)	# Yrs	Heading Date (1)	# Yrs	Plant Ht. inches	# Yrs	Protein %
Haxby * (Check)	7	82.7	7	51.9	7	80.7	7	171.4	7	27.0	7	12.6
Gallatin	7	81.8	7	50.6	7	82.3	7	171.0	7	28.4	7	12.5
Eslick * +	7	85.7	7	49.8	7	81.6	7	172.7	7	25.1	7	12.3
Baronesse * (P) +	7	85.2	7	49.9	7	78.7	7	173.2	7	24.9	7	12.6
WB Xena * (P) +	6	82.2	6	49.4	6	76.8	6	173.8	6	26.4	6	12.2
Boulder * (P) +	4	77.6	4	51.4	4	85.1	4	172.2	4	27.1	4	12.8
Valier * +	7	81.7	7	50.2	7	78.9	7	173.5	7	26.3	7	12.8
Hays * (Hay Barley)	4	74.5	4	46.6	4	71.1	4	173.4	4	25.3	4	13.9
Harrington	7	80.6	7	48.4	7	85.4	7	172.7	7	25.7	7	12.5
Merit (P) +	7	78.7	7	47.5	7	83.4	7	173.9	7	26.5	7	12.8
Conlon +	4	78.9	4	50.2	4	101.0	4	167.9	4	28.6	4	12.8
Morex	4	70.4	4	47.9	4	74.2	4	168.8	4	31.3	4	13.4
Legacy (P) +	6	79.3	6	46.7	6	78.3	6	169.6	6	28.9	6	12.7
Tradition (P) +	4	83.5	4	48.9	4	87.0	4	170.3	4	28.6	4	13.3

(1) Heading Date = 180 = June 29

Yield in bushels per acre

Pedigree	2000	2001	2002	2003	2004	2005	Comp Avg.	# of Yrs.
Haxby * (Check)	86.7	78.2	51.2	86.5	110.5	72.1	82.7	7
Gallatin	87.4	83.4	52.4	89.8	96.1	74.7	81.8	7
Eslick * +	92.5	93.6	54.4	84.2	99.0	78.5	85.7	7
Baronesse * (P) +	93.3	95.5	51.2	84.5	103.0	70.3	85.2	7
WB Xena * (P) +	82.9	96.2	0.0	84.5	100.4	74.5	82.2	6
Boulder * (P) +	0.0	85.7	52.1	0.0	89.3	65.6	77.6	4
Valier * +	79.9	98.1	45.4	80.2	102.7	66.9	81.7	7
Hays * (Hay Barley)	0.0	0.0	41.9	85.5	97.2	64.0	74.5	4
Harrington	84.5	83.5	49.5	74.8	102.5	70.9	80.6	7
Merit (P) +	80.1	82.9	51.1	78.2	92.6	75.9	78.7	7
Conlon +	0.0	85.2	51.0	79.4	95.5	0.0	78.9	4
Morex	70.0	60.8	0.0	0.0	98.8	0.0	70.4	4
Legacy (P) +	78.4	75.6	49.0	78.1	109.7	74.1	79.3	6
Tradition (P) +	0.0	0.0	54.6	91.5	102.5	74.7	83.5	4
C.V	6.31	8.16	10.32	7.38	7.29	6.64	***	***
LSD (.05)	9.34	11.60	8.76	10.63	12.19	8.37	***	***

Check Variety = Haxby, all varieties are directly comparable based on Haxby (see page3)

* Recommended variety (P) Private + Protected variety

1999-2005 SPRING BARLEY VARIETY PERFORMANCE

All Locations ⁽¹⁾

Overall Agronomic Summary

Pedigree	# Yrs	Yield (bu/ac)	# Yrs	Test Wt (lb/bu)	# Yrs	Plump (%)	# Yrs	Heading Date	# Yrs	Plant Ht. inches	# Yrs	Protein %
Haxby * (Check)	75	97.3	74	52.4	74	75.3	72	176.9	74	31.0	74	13.7
Gallatin	75	92.1	74	50.9	74	71.1	72	175.7	74	31.4	74	13.9
Eslick * +	75	98.5	74	50.3	74	69.5	72	178.6	74	29.6	74	13.5
Baronesse * (P) +	75	97.5	74	50.0	74	72.6	72	179.1	74	28.7	74	13.9
WB Xena * (P) +	54	97.1	53	50.1	53	71.7	53	178.4	53	30.6	54	13.8
Boulder * (P) +	43	98.1	43	51.9	43	78.0	41	178.3	42	30.0	42	14.0
Valier * +	75	94.1	74	50.8	74	68.6	72	179.1	74	30.5	73	14.5
Hays * (Hay Barley)	41	84.6	41	46.6	40	58.2	40	179.6	40	29.8	40	14.1
Harrington	75	88.9	74	48.7	74	72.3	72	178.4	74	30.3	74	14.1
Merit (P) +	75	90.5	74	47.9	74	71.5	72	179.3	74	29.9	74	14.2
Conlon +	43	88.6	43	50.9	42	85.6	41	173.1	42	30.4	42	13.9
Morex	47	80.5	46	48.0	47	66.0	45	173.4	46	35.9	47	14.4
Legacy (P) +	64	86.3	63	46.8	63	63.3	61	175.6	63	32.8	63	14.0
Tradition (P) +	43	92.1	43	48.7	42	73.3	42	175.1	42	32.8	42	13.9

⁽¹⁾ Irrigated Locations: Kalispell (high moisture), Sidney, Huntley, Conrad and Bozeman.
 Dryland Locations: Havre, Sidney, Moccasin, Huntley, Conrad, Bozeman.

Low Moisture Locations ⁽²⁾

Pedigree	# Yrs	Yield (bu/ac)	# Yrs	Test Wt (lb/bu)	# Yrs	Plump (%)	# Yrs	Heading Date (3)	# Yrs	Plant Ht. inches	# Yrs	Protein %
Haxby * (Check)	33	67.2	32	51.5	32	66.9	31	176.5	31	26.6	33	14.2
Gallatin	33	63.6	32	49.6	32	62.2	31	175.5	31	27.0	33	14.6
Eslick * +	29	67.1	28	49.0	28	61.6	28	179.1	28	25.1	29	14.2
Baronesse * (P) +	33	67.9	32	48.4	32	61.6	31	180.0	31	24.7	33	14.8
WB Xena * (P) +	29	65.0	28	49.0	28	64.0	28	179.2	27	26.2	29	14.4
Boulder * (P) +	15	66.8	15	50.2	15	69.0	14	179.4	14	25.4	15	14.2
Valier * +	33	64.0	32	49.5	32	59.2	31	179.6	31	25.8	32	15.2
Hays * (Hay Barley)	15	58.9	15	46.1	14	56.5	14	179.9	14	24.4	15	14.8
Harrington	33	60.5	32	47.4	32	65.0	31	178.5	31	25.7	33	14.8
Merit (P) +	33	59.2	32	46.3	32	58.8	31	179.6	31	25.6	33	15.0
Conlon +	15	63.7	15	50.1	14	86.3	14	172.7	14	27.1	15	14.2
Morex	17	54.5	16	46.8	17	58.4	17	171.9	16	30.3	17	14.9
Legacy (P) +	22	56.7	21	45.2	21	55.7	21	174.4	21	27.0	22	14.4
Tradition (P) +	15	61.9	15	47.6	14	66.1	14	174.3	14	27.1	15	14.4

⁽²⁾ Low Moisture Locations: Havre, Sidney, Moccasin and Huntley.

⁽³⁾ Heading Date = 180 = June 29

Check Variety = Haxby, all varieties are directly comparable based on Haxby (see page3)

* Recommended variety (P) Private + Protected variety

1999-2005 Montana Spring Barley Irrigated Summary Test Wt (lb/bu)

	Kalispell High Moisture District 1								Bozeman District 2								
Variety	200	2001	2002	2003	2004	2005	Avg.	Yr	200	2001	2002	200	200	2005	Avg.	Yrs	
Haxby (Check)	55.	5	53.0	51.3	51.7	52.8	52.0	53.0	7	55.6	55.0	55.0	53.4	55.8	53.2	54.6	7
Gallatin	55.	1	53.9	50.2	50.3	52.4	50.9	52.4	7	54.3	53.0	54.5	54.1	54.8	51.9	54.0	7
Eslick	54.	8	52.6	50.8	48.2	52.4	49.5	51.7	7	52.6	52.1	52.6	51.5	53.4	50.4	52.2	7
Baronesse	54.	5	51.9	50.2	51.4	52.1	50.0	51.9	7	54.1	51.9	53.0	52.2	52.1	50.5	52.5	7
WB Xena	0.0	0.0	0.0	49.2	51.6	50.9	51.2	4	0.0	0.0	0.0	52.9	53.8	49.4	53.1	4	
Boulder	0.0	54.3	52.3	0.0	53.1	50.4	53.2	4	0.0	54.9	55.0	0.0	55.3	53.6	54.5	4	
Calgary	0.0	52.7	47.7	45.3	50.6	50.2	50.1	5	0.0	54.8	53.4	52.9	53.8	49.2	52.9	5	
Valier	54.	6	53.3	50.2	48.5	51.4	51.7	51.9	7	55.9	52.6	53.0	52.2	53.1	50.8	53.0	7
Hays	0.0	0.0	44.7	45.9	47.9	44.8	46.8	4	0.0	0.0	49.7	49.5	48.4	47.1	48.9	4	
Harrington	55.	2	52.4	45.2	47.3	49.8	49.2	50.3	7	52.2	50.6	53.4	49.5	51.9	47.1	51.1	7
Merit	53.	7	52.0	49.1	44.7	50.6	51.3	50.6	7	52.0	52.0	52.2	49.1	48.2	45.5	50.4	7
Conlon	0.0	51.7	52.6	50.0	52.0	0.0	52.5	4	0.0	53.4	54.2	53.1	55.5	0.0	53.8	4	
Legacy	52.	6	50.2	44.0	43.1	46.1	46.5	47.3	6	51.9	51.5	49.6	50.0	49.2	45.4	49.5	6
Tradition	0.0	0.0	48.0	47.4	49.1	47.5	49.0	4	0.0	0.0	51.8	52.1	52.6	48.8	51.5	4	
Morex	52.	4	48.7	0.0	0.0	49.1	48.0	49.0	5	52.8	51.2	0.0	0.0	51.2	48.3	51.1	5
		Huntley District 3								Conrad District 4							
Variety	200	2001	2002	2003	2004	2005	Avg.	Yr	200	2001	2002	200	200	2005	Avg.	Yrs	
Haxby (Check)	54.	0	51.2	53.7	56.2	54.8	49.8	53.1	7	58.6	52.9	54.3	54.6	55.7	54.4	54.5	7
Gallatin	52.	9	50.4	50.4	54.6	52.9	50.1	51.9	7	58.6	50.5	52.1	54.6	55.5	54.5	53.8	7
Eslick	53.	0	48.1	51.5	54.1	53.1	49.7	52.0	7	55.6	52.0	52.6	53.6	53.4	53.8	53.5	7
Baronesse	53.	1	49.6	50.0	53.9	52.6	49.1	51.5	7	58.5	51.3	51.8	52.1	52.9	51.6	52.7	7
WB Xena	0.0	0.0	0.0	53.2	53.5	50.0	52.0	4	0.0	0.0	0.0	53.3	55.1	53.6	52.9	4	
Boulder	0.0	50.0	52.5	0.0	53.7	50.5	52.4	4	0.0	53.1	53.1	0.0	55.1	55.2	54.3	4	
Calgary	0.0	50.8	52.5	55.5	53.1	49.3	52.2	5	0.0	51.1	52.8	52.1	55.1	53.5	53.0	5	
Valier	52.	8	50.5	53.0	54.6	53.9	50.1	52.4	7	56.5	50.4	52.3	53.9	54.3	53.8	53.6	7
Hays	0.0	0.0	46.8	50.9	47.5	46.3	47.4	4	0.0	0.0	46.1	48.4	0.0	50.6	48.4	3	
Harrington	51.	6	47.6	49.1	52.1	52.4	46.0	49.7	7	55.8	49.2	51.2	51.6	53.0	51.4	51.7	7
Merit	51.	2	46.9	49.6	52.6	51.8	47.6	50.0	7	53.9	47.3	50.4	53.0	50.3	49.9	50.2	7
Conlon	0.0	50.3	50.6	54.6	52.6	0.0	51.2	4	0.0	50.4	51.4	55.0	53.9	0.0	52.8	4	
Legacy	51.	0	46.7	50.7	52.1	49.4	46.8	49.3	6	52.1	47.6	49.1	50.3	48.8	49.0	48.9	6
Tradition	0.0	0.0	50.9	52.9	50.6	47.2	49.9	4	0.0	0.0	48.7	51.9	51.6	52.3	50.9	4	
Morex	51.	3	47.1	0.0	0.0	49.6	46.6	49.4	5	53.1	48.9	0.0	0.0	48.8	50.4	49.7	5
		Sidney District 6															

Variety	200	2001	2002	2003	2004	2005	Avg.	Yr
	51.							
Haxby (Check)	3	42.1	49.0	52.8	52.9	50.3	50.1	7
	50.							
Gallatin	7	38.8	46.7	52.0	52.2	49.3	48.7	7
	48.							
Eslick	7	37.7	46.0	50.8	51.5	49.1	47.9	7
	51.							
Baronesse	7	38.5	48.1	52.0	49.6	48.2	48.4	7
WB Xena	0.0	0.0	0.0	52.2	49.9	48.8	48.3	4
Boulder	0.0	42.4	49.0	0.0	52.1	50.7	50.1	4
Calgary	0.0	36.9	45.5	51.0	50.9	47.3	46.9	5
	51.							
Valier	3	37.0	48.1	51.7	51.3	49.4	48.5	7
Hays	0.0	0.0	43.5	49.7	46.0	43.9	44.6	4
	49.							
Harrington	5	35.1	45.0	49.7	49.2	45.6	46.0	7
	48.							
Merit	2	34.0	45.6	49.2	48.4	46.0	45.5	7
Conlon	0.0	36.9	45.5	52.8	51.4	0.0	47.5	4
	46.							
Legacy	7	37.7	46.2	48.2	46.1	45.4	45.4	6
Tradition	0.0	0.0	46.3	50.0	48.6	47.1	46.9	4
	45.							
Morex	7	39.2	0.0	0.0	47.5	45.3	45.4	5

1999-2005 Montana Spring Barley Dryland Summary Test Wt (lb/bu)

	Bozeman District 2								Huntley District 3							
Variety	200	2001	2002	2003	2004	2005	Avg.	Yr	199	2001	2002	2003	2004	2005	Avg.	Yr
Haxby (Check)	57.1	53.1	51.8	50.9	55.2	52.8	53.4	7	49.4	52.0	43.0	53.9	54.0	48.9	50.2	6
Gallatin	55.8	51.4	49.6	46.2	56.0	52.1	52.0	7	47.5	51.6	38.6	51.5	52.1	46.6	48.0	6
Eslick	55.5	50.8	48.4	44.5	52.9	49.8	50.4	7	47.9	51.4	38.6	50.8	54.4	44.1	47.9	6
Baronesse	54.4	50.8	48.4	44.6	53.9	48.7	50.3	7	44.4	50.8	37.8	51.2	53.8	43.6	46.9	6
WB Xena	55.9	51.0	0.0	44.3	52.8	49.5	50.6	6	46.4	50.9	0.0	50.4	53.4	45.9	48.0	5
Boulder	0.0	53.2	49.8	0.0	56.5	51.6	53.0	4	0.0	50.7	37.8	0.0	54.4	46.9	48.2	4
Valier	55.5	52.1	50.0	44.9	53.6	50.0	51.0	7	47.9	50.6	40.7	51.8	53.1	45.8	48.3	6
Hays	0.0	0.0	46.7	42.0	51.5	47.5	47.6	4	0.0	0.0	38.9	48.0	51.0	43.0	45.5	4
Harrington	53.2	49.0	47.0	42.5	52.6	46.7	48.7	7	43.1	51.5	37.4	51.1	51.8	43.3	46.4	6
Merit	51.8	48.5	47.0	39.9	52.6	46.2	47.7	7	43.1	50.3	36.4	48.6	50.9	42.1	45.2	6
Conlon	0.0	51.0	51.0	50.1	55.1	0.0	52.6	4	0.0	50.6	43.6	52.8	53.4	0.0	49.6	4
Morex	53.7	50.0	0.0	0.0	50.5	0.0	49.6	4	44.4	48.8	0.0	0.0	50.1	0.0	46.3	3
Legacy	50.8	50.5	45.0	42.9	49.5	44.8	47.2	6	0.0	47.9	34.7	46.6	48.2	42.7	43.9	5
Tradition	0.0	0.0	47.0	46.3	53.5	47.7	49.3	4	0.0	0.0	37.8	51.4	50.3	44.5	46.2	4
	Moccasin District 4								Conrad District 5							
Variety	199	2001	2002	2003	2004	2005	Avg.	Yr	200	2001	2002	2003	2004	2005	Avg.	Yr
Haxby (Check)	52.0	50.9	52.0	46.7	51.8	53.1	51.1	6	53.8	53.6	52.8	50.7	55.2	53.1	53.4	7
Gallatin	50.8	48.4	49.4	41.9	49.1	51.0	48.4	6	48.5	49.4	49.2	46.3	52.7	48.6	49.8	7
Eslick	50.1	47.2	50.9	44.5	47.7	46.8	47.9	6	46.6	52.8	51.9	47.5	52.8	49.1	50.6	7
Baronesse	49.2	45.9	49.9	41.3	47.0	47.1	46.8	6	48.7	51.3	49.6	48.1	51.8	49.3	50.2	7
WB Xena	47.5	48.2	0.0	44.8	49.4	49.4	48.0	5	49.4	51.9	0.0	45.8	51.6	51.1	50.2	6
Boulder	0.0	49.5	50.4	0.0	52.2	50.0	49.7	4	0.0	53.5	52.1	0.0	54.7	52.9	53.0	4
Valier	49.2	48.8	50.2	44.4	47.5	50.7	48.5	6	52.7	51.3	53.1	48.3	49.7	50.4	51.3	7
Hays	0.0	0.0	49.5	41.4	45.5	45.4	45.6	4	0.0	0.0	46.8	42.5	0.0	44.0	45.5	3
Harrington	48.1	44.8	49.8	41.4	45.9	47.5	46.2	6	45.9	49.8	52.6	46.5	52.0	45.9	49.3	7
Merit	48.1	44.0	47.8	40.1	44.8	47.4	45.4	6	48.9	48.5	47.3	45.1	48.6	45.2	47.4	7
Conlon	0.0	45.2	52.4	42.9	53.2	0.0	49.2	4	0.0	50.9	50.4	50.0	50.0	0.0	50.5	4
Morex	47.0	42.3	0.0	0.0	46.5	0.0	44.8	3	45.4	47.4	0.0	0.0	49.9	0.0	47.6	4
Legacy	0.0	41.2	49.0	38.5	43.5	44.2	43.4	5	44.2	48.9	46.6	47.1	48.6	44.4	46.8	6
Tradition	0.0	0.0	50.7	39.6	48.9	47.7	46.9	4	0.0	0.0	49.2	45.8	50.4	47.1	48.5	4
	Havre District 5								Sidney District 6							
Variety	199	2000	2001	2002	2003	2005	Avg.	Yr	200	2001	2002	2003	2004	2005	Avg.	Yr
Haxby (Check)	52.7	51.9	49.4	50.4	48.9	51.1	50.7	6	52.2	50.0	49.7	52.4	53.2	51.0	51.9	7
Gallatin	52.1	49.0	48.0	48.5	47.9	48.9	49.1	6	52.5	47.9	47.0	51.1	51.5	49.5	50.6	7
Eslick	50.9	49.3	47.7	49.6	46.3	47.7	48.6	6	51.3	47.1	46.4	50.0	50.6	49.6	49.8	7
Baronesse	50.9	47.6	48.1	48.9	46.1	46.1	48.0	6	51.5	48.5	48.4	48.2	50.0	48.9	49.9	7
WB Xena	51.1	48.2	48.4	0.0	46.0	46.8	48.0	5	50.2	48.7	0.0	48.7	49.9	48.3	49.4	6
Boulder	0.0	0.0	47.6	49.2	0.0	50.8	49.6	3	0.0	49.4	49.9	0.0	51.9	50.7	51.4	4
Valier	51.2	49.0	48.5	49.8	46.9	48.4	49.0	6	50.7	49.8	48.0	50.4	50.6	49.3	50.2	7
Hays	0.0	0.0	0.0	45.3	43.0	44.5	44.8	3	0.0	0.0	45.9	45.3	47.0	46.9	46.6	4
Harrington	49.4	46.8	46.2	48.4	45.4	45.4	46.9	6	50.8	47.1	45.5	47.3	50.0	45.7	48.4	7
Merit	48.7	46.8	46.6	47.3	44.5	41.9	46.0	6	50.5	45.7	44.7	46.7	47.7	45.7	47.5	7
Conlon	0.0	0.0	48.1	48.5	49.8	0.0	49.9	3	0.0	47.6	47.0	52.2	52.0	0.0	50.2	4
Morex	48.4	45.4	43.5	0.0	0.0	0.0	45.2	3	47.5	45.1	0.0	0.0	49.3	0.0	47.9	4
Legacy	0.0	43.4	44.7	45.2	45.9	42.9	44.8	5	43.8	45.2	47.2	47.3	48.7	45.0	46.7	6
Tradition	0.0	0.0	0.0	46.8	45.0	45.5	46.3	3	0.0	0.0	47.3	49.5	49.5	48.2	48.9	4

1999-2005 T-PAIRED RESULTS vs Haxby All Locations

Yield (bu/ac)

Variety	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE *
Gallatin	92.1	75	-5.2	-5.7	.000
Eslick	98.4	75	1.1	1.0	.336
Baronesse	97.5	75	.1	.1	.885
WB Xena	92.6	54	-.2	-.2	.852
Boulder	96.8	43	.7	.4	.662
Valier	94.1	75	-3.2	-3.6	.001
Hays	83.6	41	-12.6	-6.3	.000
Harrington	88.9	75	-8.4	-7.6	.000
Merit	90.6	75	-6.8	-5.7	.000
Conlon	86.6	43	-8.6	-4.3	.000
Morex	85.5	47	-17.9	-10.6	.000
Legacy	86.0	64	-11.0	-8.6	.000
Tradition	91.1	43	-5.2	-3.6	.001

THE MEAN FOR THE REFERENCE VARIETY (Haxby) IS: 97.3 (N= 75)

Test Weight (lb/bu)

Variety	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE *
Gallatin	50.9	74	-1.6	-9.3	.000
Eslick	50.3	74	-2.1	-11.2	.000
Baronesse	50.0	74	-2.4	-13.0	.000
WB Xena	50.3	53	-2.3	-12.2	.000
Boulder	51.4	43	-.6	-3.2	.003
Valier	50.8	74	-1.7	-10.8	.000
Hays	46.3	41	-5.8	-22.8	.000
Harrington	48.7	74	-3.7	-18.4	.000
Merit	47.9	74	-4.5	-19.3	.000
Conlon	50.6	43	-1.5	-5.9	.000
Morex	48.5	46	-4.5	-21.5	.000
Legacy	46.7	63	-5.7	-22.5	.000
Tradition	48.5	43	-3.8	-19.3	.000

THE MEAN FOR THE REFERENCE VARIETY (Haxby) IS: 52.4 (N= 74)

1999-2005 T-PAIRED RESULTS vs Haxby Irrigated Locations ⁽¹⁾

Yield (bu/ac)

Variety	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE *
Gallatin	120.0	35	-6.6	-4.2	.000
Eslick	129.1	35	2.5	1.2	.241
Baronesse	126.8	35	.2	.1	.901
WB Xena	128.0	20	3.6	1.3	.211
Boulder	124.1	20	-.0	.0	.992
Calgary	126.1	25	1.5	.7	.483
Valier	123.4	35	-3.2	-2.1	.041
Hays	105.2	19	-20.1	-6.1	.000
Harrington	116.3	35	-10.3	-5.4	.000
Merit	121.5	35	-5.1	-2.5	.018
Conlon	114.0	20	-13.4	-3.7	.002
Legacy	116.2	30	-10.7	-4.9	.000
Tradition	118.7	20	-5.7	-2.0	.058
Morex	105.8	25	-21.1	-7.7	.000

THE MEAN FOR THE REFERENCE VARIETY (Haxby) IS: 126.6 (N= 35)

Test Weight (lb/bu)

Variety	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE *
Gallatin	52.2	35	-.9	-5.0	.000
Eslick	51.5	35	-1.6	-6.5	.000
Baronesse	51.4	35	-1.6	-8.5	.000
WB Xena	51.6	20	-1.6	-5.7	.000
Boulder	52.3	20	-.1	-.7	.479
Calgary	50.7	25	-2.0	-6.4	.000
Valier	51.9	35	-1.2	-5.4	.000
Hays	47.2	19	-5.8	-17.4	.000
Harrington	49.8	35	-3.3	-13.2	.000
Merit	49.3	35	-3.7	-11.6	.000
Conlon	51.4	20	-1.5	-4.5	.000
Legacy	48.1	30	-5.0	-16.7	.000
Tradition	49.8	20	-3.4	-15.4	.000
Morex	48.9	25	-4.1	-17.7	.000

THE MEAN FOR THE REFERENCE VARIETY (Haxby) IS: 53.0 (N= 35)

⁽¹⁾ Irrigated locations: Kalispell (high moisture), Sidney, Huntley, Conrad, Bozeman.

1999-2005 T-PAIRED RESULTS vs Haxby Dryland Locations ⁽¹⁾

Yield (bu/ac)

Variety	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE *
Gallatin	63.6	33	-3.5	-3.3	.002
Eslick	64.6	29	-.1	-.1	.951
Baronesse	67.9	33	.8	.6	.540
WB Xena	67.7	29	-2.2	-2.1	.045
Boulder	62.6	15	-.3	-.2	.876
Valier	64.0	33	-3.2	-2.9	.008
Hays	53.0	15	-7.4	-4.8	.000
Harrington	60.5	33	-6.7	-4.5	.000
Merit	59.2	33	-7.9	-4.8	.000
Conrad	69.3	7	-5.4	-2.1	.085
Conlon	54.2	15	-3.0	-1.6	.130
Morex	57.9	17	-13.4	-7.8	.000
Legacy	50.8	22	-9.3	-4.9	.000
Tradition	55.7	15	-4.8	-3.5	.004

THE MEAN FOR THE REFERENCE VARIETY IS: 67.2 (N= 33)

Test Weight (lb/bu)

Variety	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE*
Gallatin	49.6	32	-1.9	-9.6	.000
Eslick	48.6	28	-2.5	-9.2	.000
Baronesse	48.4	32	-3.1	-9.9	.000
WB Xena	49.4	28	-2.5	-10.9	.000
Boulder	49.4	15	-1.3	-3.4	.005
Valier	49.5	32	-2.0	-10.4	.000
Hays	45.4	15	-5.3	-13.6	.000
Harrington	47.4	32	-4.1	-12.8	.000
Merit	46.3	32	-5.2	-14.6	.000
Conrad	48.5	7	-3.3	-8.0	.000
Conlon	49.3	15	-1.3	-2.6	.021
Morex	47.2	16	-4.7	-11.0	.000
Legacy	44.6	21	-6.2	-13.0	.000
Tradition	46.8	15	-3.8	-9.8	.000

THE MEAN FOR THE REFERENCE VARIETY IS: 51.5 (N= 32)

⁽¹⁾ Dryland Locations: Havre, Sidney, Moccasin and Huntley.

***P-VALUE** -Denotes level of significance between check variety (Haxby) and variety in question. P-value of .01 = 99/100 probability of means being different from check due to random chance. Only comparisons between Haxby and other varieties are valid, cannot compare other varieties to each other.

CROP GROWTH INFORMATION FOR 2005 BARLEY INTRASTATE NURSERIES

	BOZEMAN IRR District 2	BOZEMAN DRY District 2	HAVRE DRY District 5	SIDNEY DRY District 6	SIDNEY IRR District 6	KALISPELL HIGH MOISTURE District 1
Location:						
Latitude, N.	45 41'	45 41'	48 30'	47 40'	47 40'	48 10'
Longitude, W.	111 00'	111 00'	109 48'	104 08'	104 08'	114 15'
Elevation, (FT)	4772	4772	2689	2200	1950	2982
Precipitation:						
Average moisture, (IN)(1)	15.93	15.93	12.20	13.81	13.81	20.21
2005 moisture(IN)	14.40	14.40	11.90	11.82	13.43	21.88
Moisture Apr-July-2005	7.55	7.55	7.37	8.25	9.99	12.64
Moisture Apr-July-Avg.	8.24	8.24	6.97	8.03	8.03	9.07
Soil Moisture:						
Avail. water depth (IN)	36	33	8.07"aw	NA	NA	NA
Water applied, (IN)	3.5	none	none	none	June 11	none
Previous Crop:						
2002	Fallow	Fallow	NTFallow	small grains	Potatoes	Alfalfa
2003	Oats	Oats	Wheat	safflower	Safflower	Alfalfa
2004	Fallow	Fallow	NTFallow	fallow	Onions	Alfalfa
Soil Type:						
Series	Amsterdam	Amsterdam	Kevin	Williams	Savage	Creston
Texture 2	SiL	SiL	CL	CL	SiCL	SiL
Fertilization:						
Available N/P/K	197/24/303	113/26/324	184/34/391/13	65/35/0	20/28/	NA
Applied N-P-K(lb/ac)	none	25/10/10	70/40/25	none	80/0/0	80/28/120/24
Planting Date	5/5/05	5/3/05	4/23/05	4/13/05	4/20/05	4/20/05
Harvest Date	8/22/05	8/15/05	8/16/05	7/28/05	8/9/05	8/29/05

1> Moisture September-August

2> C = clay, L = loam, Sa = sand, Si = silt or silty, F = fine, VF = very fine.

CROP GROWTH INFORMATION FOR 2005 BARLEY INTRASTATE NURSERY (Continued)

	MOCCASIN DRY District 4	HUNTLEY DRY District 3	Huntley Irr District 3	CONRAD DRY District 5	CONRAD IRR District 5
Location:					
Latitude, N.	47 03'	45 55'	45 55'	48 18.4	48'18.4
Longitude, W.	109 57'	108 15'	108 15'	111 55.5	111 55.5
Elevation, FT	4300	3200	3200	3700	3700
Precipitation:					
Average moisture, (1)	15.34	13.18	13.18	11.32	11.32
2005 moisture	12.14	10.97	10.97	11.56	11.56
Moisture Apr-July-2005	6.81	6.17	6.17	6.75	6.75
Moisture Apr-July-Avg.	8.58	6.93	6.93	7.02	7.02
Soil Moisture:					
Depth to Moisture(in)	NA	NA	NA	NA	NA
Water applied(IN)	none	none	June 26	none	7
Previous Crop:					
2002	Mustard	ChmFallow	Soybeans	Fallow	Fallow
2003	Barley	ChmFallow	Soybeans	Barley	Barley
2004	Fallow	ChmFallow	Soybeans	Fallow	Fallow
Soil Type:					
Series	Judith-/Danvers	Fort Collins	NA	Scobey	Scobey
Texture 2/	CL	SL	NA	CLL	CLL
Fertilization:					
Available N/P/K	--	NA	NA	NA	NA
Applied N-P-K (LB/AC)	40/10/10/5	11/52/00	14/67/0	11/52/0	11/52/0
Planting Date	4/13/05	4/30/05	4/27/05	4/25/05	4/28/05
Harvest Date	8/10/05	7/29/05	8/5/05	8/8/05	8/11/05

1> Moisture September-August

2> C = clay, L = loam, Sa = sand, Si = silt or silty, F = fine, VF = very fine.

Long term averages and September 2004 to August 2005 monthly precipitation for the Montana Agricultural Research Centers.

Locality Years	Sept '04	Oct '04	Nov '04	Dec '04	Jan '05	Feb '05	Mar '05	Apr '05	May '05	June '05	July '05	Aug '05	Total
Havre 2005	1.51	0.71	0.16	0.18	0.19	0.01	0.89	0.66	0.98	5.16	0.57	0.88	11.90
Havre (1916-2005)	1.16	0.66	0.42	0.45	0.44	0.32	0.56	0.97	1.78	2.65	1.57	1.22	12.20
Sidney Irrigated	1.17	1.44	0.01	0.54	0.42	0.00	0.86	0.00	3.29	4.35	1.55	0.85	14.48
Sidney Dryland	1.19	0.92	0.01	0.54	0.42	0.00	0.83	0.04	3.01	3.81	1.39	0.76	12.85
Sidney (1958-2005)	1.28	0.88	0.49	0.43	0.42	0.35	0.53	1.08	1.98	2.87	2.10	1.42	13.81
Huntley 2005	1.56	1.77	0.04	0.22	0.32	0.10	0.89	4.03	3.25	2.44	1.40	0.54	16.56
Huntley (1911-2005)	1.29	1.02	0.62	0.59	0.55	0.46	0.79	1.32	2.08	2.38	1.14	0.93	13.15
Conrad 2005	1.01	1.13	0.00	0.14	0.18	0.00	0.69	0.89	0.58	5.16	0.12	1.66	11.56
Conrad (1984-2005)	1.08	0.57	0.33	0.16	0.19	0.20	0.45	0.89	1.77	2.96	1.40	1.32	11.32
Moccasin 2005	0.75	1.12	0.06	0.41	0.23	0.07	0.90	1.59	1.52	3.10	0.60	1.79	12.14
Moccasin (1909-2005)	1.41	0.87	0.56	0.56	0.57	0.45	0.73	1.18	2.51	3.17	1.72	1.61	15.34
Bozeman 2005	1.67	1.60	0.18	0.18	0.20	0.29	0.99	2.30	1.16	3.02	1.07	1.74	14.40
Bozeman (1958-2005)	1.50	1.34	0.89	0.56	0.56	0.51	1.05	1.57	2.60	1.69	1.38	1.28	15.93
Kalispell 2005	1.89	1.62	0.81	1.49	1.38	0.01	1.41	2.21	1.94	8.44	0.26	0.60	21.88
Kalispell (1949-2005)	1.65	1.28	1.60	1.49	1.33	1.15	1.41	1.83	2.40	3.16	1.68	1.23	20.21

Long term averages and September 2004 to August 2005 monthly temperatures for the Montana Agricultural Research Centers.

Locality Years	Sept '04	Oct '04	Nov '04	Dec '04	Jan '05	Feb '05	Mar '05	Apr '05	May '05	June '05	July '05	Aug '05	Ave
Havre 2005	57.4	43.3	34.8	27.9	12.0	29.7	35.2	46.7	52.5	61.7	71.2	67.2	45.0
Havre (1916-2005)	56.7	46.3	30.2	19.9	15.3	20.2	30.2	44.1	54.7	62.5	70.7	68.8	43.3
Sidney 2005	61.2	46.8	35.9	26.0	10.5	29.1	35.8	51.7	54.4	66.5	73.3	69.8	46.79
Sidney (1949-2005)	57.6	45.9	29.8	18.2	12.0	19.9	30.0	44.5	56.0	64.4	69.7	68.6	43.05
Huntley 2005	57.6	46.7	37.3	31.3	17.9	33.0	38.8	45.4	52.1	62.5	71.3	67.1	46.8
Huntley (1911-2005)	57.8	46.8	33.4	24.0	20.4	25.7	33.8	45.4	54.9	63.3	70.6	68.7	45.5
Conrad 2005	55.3	43.8	36.9	30.4	18.2	31.8	34.5	43.5	50.7	57.4	68.6	64.6	44.6
Conrad (1984-2005)	57.3	45.3	32.1	25.2	22.8	25.1	33.4	43.8	52.3	59.8	66.6	66.3	44.2
Moccasin 2005	54.4	44.7	37.3	30.5	21.5	31.3	34.0	42.1	48.4	57.4	67.8	64.5	44.5
Moccasin (1911-2005)	54.6	44.8	32.7	25.0	21.2	24.6	30.1	40.8	50.1	57.9	65.6	64.7	42.7
Bozeman 2005	55.4	46.6	34.2	20.2	24.0	31.4	37.2	43.7	48.9	53.8	67.6	66.3	44.11
Bozeman (1958-2005)	55.3	45.2	31.4	23.6	22.1	27.0	33.3	42.4	51.2	58.7	65.4	64.6	43.35
Kalispell 2005	52.3	43.4	33.8	29.4	20.6	30.6	36.1	43.9	51.8	55.3	62.6	62.8	43.6
Kalispell (1949-2005)	53.6	42.2	32.4	24.3	24.5	27.2	35.0	43.4	51.5	57.6	63.8	63.4	43.3

2005 AGRONOMIC AND SEED CHARACTERISTICS FOR SPRING BARLEY VARIETIES IN MONTANA

Variety	Released by	Year Released	Plant Height	Maturity	Awn Type	Rachilla Hair	Row Type	P.V.P. Status**
B1202	Busch Agricultural	1988	Medium	Medium	Rough	L	2	PVP-TITLE V
Baronesse	Germany	1988	Medium-Short	Medium	Rough	L	2	PVP
Boulder	WestBred LLC	2005	Medium	Medium	---	---	2	PVP-(Pending)
Calgary	Arizona Plant Breeders	2002	Short	Medium	---	S	2	PVP-(Pending)
Conlon	North Dakota	1996	Medium	Medium	Semi-Smooth	L	2	PVP-TITLE V
Eslick	Montana	2002	Medium	Medium	Rough	S	2	PVP-TITLE V (Pending)
Gallatin	USDA-Montana-Idaho	1987	Medium	Medium	Rough	S	2	None
Harrington	Canada	1981	Medium	Medium	Rough	L	2	None
Haxby	MSU	2002	Medium	Medium	Semi-Smooth	L	2	None
Legacy	Busch Agricultural	---	Medium-Tall	Medium	Smooth	L	6	PVP-TITLE V
Lewis	USDA-Montana	1985	Medium	Medium	Rough	L	2	None
Medallion	WestBred LLC	1990	Medium-Short	Medium-Late	Rough	L	6	PVP
Merit	Busch Agricultural	1998	Medium	Medium-Late	Rough	L	2	PVP-(TITLE V)
Moravian 37	Coors Brewing Company	2000	Medium-Short	Medium-Late	Rough	L	2	PVP-(TITLE V)
Morex	Minnesota	1978	Medium-Tall	Early	Smooth	S	6	None
Tradition	Busch Agricultural	---	Medium	Early	Semi-Smooth	L	6	PVP-(TITLE V)
Valier	Montana	1999	Medium	Medium	Rough	L	2	PVP-(Title V)
Xena	WestBred LLC	1999	Medium	Medium	Semi-Smooth	L	2	PVP
Hay or Forage Barleys								
Hays	MSU	2003	Medium-Short	Medium	Hooded	---	2	None
Haybet	MSU	1989	Medium	Early	Hooded	---	2	None
Stockford	WestBred LLC	2005	Medium	Early	Hooded	---	2	PVP- (Pending)

*S =Short, L = Long

** Variety registration status under U. S. Plant Variety Protection Act.

ADDITIONAL DESCRIPTIVE INFORMATION FOR BARLEY VARIETIES

B1202 - Developed from the cross of RPB70-268/2B75-1223//Klages by Busch Agricultural Resources, Inc. It is a two-rowed spring barley. The awn on the lemma is long and rough. Rachilla, rachis and glume hairs are all long. The glume awns are equal in length to the glume and glumes are completely covered with hair. The hull is adhered and slightly to semi-wrinkled. Aleurone is colorless. B1202 has been accepted for malting by the American Malting Barley Association. B1202 is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

BARONESSE - Developed in Germany from the cross of 5238.8/74 X 754465 and tested in cooperation with Montana State University. Baronesse is a two-rowed, rough-awned spring barley that is medium-short in height and medium in maturity. This variety is merchandised in the western United States by WestBred, LLC. Baronesse is protected under the Plant Variety Protection Act.

BOULDER - "Boulder" is a two-rowed, spring feed barley developed by WestBred, LLC. from crossing Baronesse onto a composite cross for diverse cytoplasm's. This initial composite cross was developed by crossing 400 diverse accessions from the World Collection of Barley's, as the female parents, with F1 plants that were heterozygous for the male sterile genes, msg1 and/or msg2. Boulder is a high yielding barley with excellent test weight. Boulder is approximately one day later than Haxby and one day earlier than Baronesse. Plant Variety Protection is being applied for.

CALGARY - A two rowed feed barley developed by Serasem in France. The pedigree is (Dominique x Blenheim) x (Barleta x Chapka). Calgary has short rachilla hairs, white aleurone with semi-erect heads. Calgary will be marketed in the U.S. by Arizona Plant Breeders. Calgary has good yields and lodging tolerance under irrigated conditions in Montana trials. Plant Variety Protection is being applied for.

CONLON - A two-rowed malting barley developed by North Dakota Agricultural Experiment Station and released in 1996. Conlon was selected from the cross Bowman*2/Brigitta mutant//ND10232 made in 1988. F3 selection was made in 1990 and was tested as ND 13299. Conlon has been accepted for malting by the American Malting Barley Association. Conlon is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

ESLICK- A two-rowed rough awned feed barley developed by Montana State University and released in 2006. Eslick was developed from the cross of Stark x Baronesse, Eslick yields comparable to Haxby and Baronesse under dryland, irrigated and over all locations. Test weights are lower than Haxby but higher than Baronesse. Eslick is later in heading than Haxby and Gallatin but earlier than Valier and Baronesse. It is shorter than Haxby, Gallatin, Harrington and Valier but taller than Baronesse. Plant Variety Protection is being applied for. Foundation seed should be available in 2007.

GALLATIN - Developed from the cross of Summit/Hector cooperatively by the Agricultural Research Service, USDA, and the Montana Agricultural Experiment Station. It was released jointly by the Agricultural Research Service, USDA, and the Montana and Idaho Agricultural Experiment Stations. Gallatin is a two-rowed, rough-awned, spring barley. The spike is mid-long, mid-lax and semi-nodding prior to maturity, but nodding at maturity. The awn glumes are equal to the length of the hair-covered glume. The rachis is edged with hairs. The kernels are mid-sized, with short rachilla hairs.

ADDITIONAL DESCRIPTIVE INFORMATION FOR BARLEY VARIETIES (continued)

HARRINGTON - A two-rowed malting barley variety developed by the University of Saskatchewan from the cross of Klages/3/Gazelle/Betzes//Centennial selection. It was released through the SeCan Association. It is susceptible to leaf diseases (net blotch, scald), stem rust, and loose smut. It has a long, rough awn and a white aleurone. It has a tendency for kernel skinning unless carefully threshed. This variety has been accepted for malting by the American Malting Barley Association.

HAXBY - Haxby is a two-rowed feed barley developed by Montana State University and released in 2003. Haxby is a cross between MT860756 (Gallatin / Bellona) and MT83533 (Clark / Lamont) made in 1990 and tested as MT950186 in Montana trials from 1995-2002. Test weights for Haxby under dryland and irrigated trials in Montana have been very high. Yields are equal to Baronesse and Eslick and higher than Gallatin and Valier. It is later heading than Gallatin but earlier than Baronesse, Eslick, Harrington and Valier. Haxby is taller than Baronesse, Eslick, Harrington and similar to Gallatin. It should be adapted to dryland and higher moisture areas in Montana and the Northern Great Plains.

HAYBET- Haybet is a two-rowed, white-kerneled barley developed and released by USDA-ARS and Montana Agricultural Research Center in 1989. The initial cross of 'Betzes*7/Stripe Tease' was made in 1960 and hooded progeny were utilized in all backcrosses to Betzes. Haybet is taller than and Similar to Gallatin in maturity.

HAYS - Hays is a two-rowed barley developed by Montana State University and released and in 2003 as a hay barley. Hays is a hooded barley from a cross of Haybet / Baronesse made in 1993. Hays was tested in grain and forage trials from 1998 to 2004 as MT981060. Forage yields were similar to Haybet and higher than Westford over 17 forage trials. Grain yields were higher than Haybet and similar to Harrington while test weights have been similar to Haybet. Hays is approximately three inches shorter and two days later in heading than Haybet.

LEGACY - Legacy is a six rowed malting barley developed by Busch Agricultural Resources, Inc. In 1989 the cross of 6B86-3517/Excel was made and selection as an F4 head row was made in 1992. Legacy is moderately susceptible to leaf and stem rust and moderately resistant to net blotch. Legacy was similar in maturity and slightly taller than Gallatin over all Montana intrastate locations. Legacy has been accepted for malt by the American Malting Barley Association. Legacy is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

MEDALLION - Medallion was developed by Western Plant Breeders. Medallion is a short semi-dwarf six rowed awned barley with blue aleurone. It has very good straw strength and is best suited to irrigated and high moisture conditions. Medallion is protected under the Plant Variety Protection Act.

MERIT- Developed by Busch Agricultural Resources and released for malt production in 1998. Merit is medium in plant height and medium late in maturity. It has a nodding head type with rough awns. Glume length is one half the length of the kernel with glume hairs confined to a band. Seed is finely wrinkled with wax present. The aleurone is colorless. Merit is resistant to net blotch and moderately resistant to scald. It has not been tested for any other plant disease, or insect resistance. Merit has been accepted as a malting barley by the American Malting Barley Association. Merit is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

ADDITIONAL DESCRIPTIVE INFORMATION FOR BARLEY VARIETIES (continued)

MOREX - Developed from the cross of Cree/Bonanza by the Minnesota Agricultural Experiment Station and released in 1978. Morex is a six-rowed, smooth awned variety. The spike is semi-erect and medium long. Under some conditions the straw of Morex tends to break off prior to maturity, and kernel shattering and rachis breaking occur; therefore, Morex probably should be swathed prior to harvest. It is resistant to stem rust and loose smut, and moderately resistant to spot blotch. Morex has been dropped from the 2006 American Malting Barley Association recommended list .

TRADITION -'Tradition' is a six-rowed malt barley developed by Busch Agricultural Resources Inc. from the cross of 6B89-2126/ND10981 made in 1992. Tradition was evaluated in Montana trials from 2002 to 2004 under the line designation 6B95-2482. Tradition is approximately one day later than Morex and two days earlier than Robust in maturity. Tradition has been accepted as a malting barley for production by the American Malting Barley Association. Tradition is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

VALIER - Developed by Montana State University from a cross of Lewis / Baronesse and released in 1999. Valier is a two-rowed, white aleurone, mid-season maturity, feed barley. The spike has long rough awns equal to the length of the hair-covered glume. Kernels have adhering, finely wrinkled hulls and long rachilla hairs. Valier retains sterile lateral florets. Valier is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

XENA - Developed from a Stark/ Baronesse cross by WestBred, LLC. Xena is a two rowed standard height hulled spring feed barley, with mid-season maturity. Stem has waxy coating, closed collar, and the neck is straight. The head is semi-erect, strapped shaped, slightly waxy, and semi-nodding at maturity. Glume length is more than half the length of lemma and is covered with short hairs. The lemma has long rough awns and the rachilla hairs are long. Seed is mid-long, wrinkled with white aleurone. Lateral florets are extremely reduced in size. Xena is protected under the Plant Variety Protection Act.

PLANT VARIETY PROTECTION (PVP)

The developer of a new distinct variety may obtain protection (essentially a patent) for that variety if he/she chooses to do so, provided the variety meets the requirements of the Plant Variety Protection Act of 1970. This Act permits the owner or developer of a variety to prohibit others from selling, sexually multiplying, using for propagation for seed, or using to produce a hybrid, seed of his variety.

Two options, for plant variety protection, are available to the developer of the variety. Under the first option, the developer of the variety or his/her agent may sell either certified or uncertified seed of the variety. If the developer of the variety has reason to believe that anyone is infringing on his/her rights, he/she may resort to civil action.

The other option ("certification option") for protecting a variety utilizes the provision of Title V of the Federal Seed Act. A variety protected in this manner may be sold by variety name only as a class of certified seed.

It is the responsibility of the seller to inform the buyer if the variety is protected. Each container of seed sold should be labeled with a tag indicating the type of protection which the owner has. Under the first option, the label will state: "Unauthorized Propagation Prohibited - U.S. Protected Variety."

If the owner of the variety has chosen the other option for variety protection, the label will state, "Unauthorized Propagation Prohibited - To be Sold by Variety Name Only as a Class of Certified Seed - U.S. Protected Variety."

PLEASE NOTE: Varieties protected under the 1994 PVP act no longer can be sold without permission of the variety owner (the farmer exemption has been excluded)'

A complete listing of all protected varieties is available in the "Official Journal of the Plant Variety Protection Office" which may be obtained upon request from:

**Plant Variety Protection Office
Warehouse Division, AMS
U.S. Dept. of Agriculture
National Agricultural Library
Beltsville, MD 20705
Phone: (301) 504-5518**

Internet: <http://www/ams.usda.gov/science/pvpo/pvpindex.htm>

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