PROJECT TITLE: Long-Term Small Grain Variety Performance Evaluation Under Mechanical or Chemical Fallow Conditions Off-Station in Northern Montana Counties.

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Cooperating Landowners

OBJECTIVES:

Diverse cropping environments exist within that five-county area most closely served by this Research Center (Blaine, Chouteau, Hill, Liberty, and Phillips counties). Winter and spring wheat, barley, and oat production together in the five counties represents 28% of the 1999-2003 statewide total (36% and 29% for winter and spring wheat alone, respectively). Producers are keenly interested in variety performance data generated under local conditions. It is our objective, within budget and other resource limitations, to evaluate small grain variety performance, over time, under conditions representative of specific areas of Northern Montana yet differing from those of the Research Center.

It is also our objective to develop and maintain databases which are not only specific to differing major crop environments, but which are further augmented by as much associated climatic and production management information as is practical and feasible to collect. Since 1982 we have recorded and reported supportive information of this nature along with the crop performance data for each investigation. A new, standardized system was initiated in 1995 for better management and dissemination of such `base data' in more detail than that provided previously. An abridged version of such `base data' is included in this report for each trial at each location.

RESULTS:

Data details for individual trials conducted from 1982-2003 were included in respective previous annual reports, but long-term yield and test weight data from the past ten years are presented in abridged form for summary purposes here as applicable. For winter and spring wheat, selected variety performance comparisons on the basis of gross dollar return for these off-station locations as well as the principal statewide trials conducted on-station at Havre are included in a separate report.

Cropping environments in 2004 ranged from fair to excellent across North Central Montana. At Havre, total annual growing season precipitation (9/1/03 through 8/31/04) was 14.43 inches, 19.3 percent greater than the average for all years since 1916. April 1 through July 31 precipitation was 8.64 inches or 126 percent of the 89-year average. Heat units expressed as "Growing Degree Days" (GDD, base 50) were 86 percent of the average for the last 54 years (1951-2004). The last spring frost was 9 days late with the first fall frost 11 days late resulting in 130 frost-free days, 2 days longer than the 89-year average. September 2003 through March 2004 precipitation was 103 percent of the long-term average. The April through July growing season saw an average daily temperature at 56.5 degrees F, approximately 1 degree below normal. July and August average temperatures were 1.7 percent lower than normal with the high for 2004 recorded on July 18 at 102 degrees F. There were only 13 days 90 degrees F or above, 50 percent of the 26-day average. There was only 1 day with temperatures over 100 degrees F. Early growing season conditions were generally excellent, but June and July were drier than normal. Although the entire growing season was cooler than normal, heat stress coinciding with critical growth stages in spring grains resulted in reduced test weights and abnormally high grain protein. Minimum winter temperature was -28 degrees F on January 4. Although crop outlook was initially very good with adequate fallow-stored soil moisture and generally favorable conditions, spring crop performance in some areas was poorer than expected whereas winter wheat performance varied from good to excellent depending upon location. Yield and test weight comparisons with long-term averages varied according to crop and location. On-Station WW at Havre had increased yields (131% of the 10-year average) and reduced test weights (1.8 lbs less than the 10-year average), SW had slightly increased yields (113% of the 10-year average) and

slightly reduced test weights (1.3 lbs less than the 10-year average), and OATS had reduced yields (91 percent of the 10-year average) and test weights (2.4 lbs less than the 10-year average).

Off-station cropping environments were somewhat variable in 2004. The Loma location had adequate precipitation, but suffered substantial heat stress during periods critical to the production of cereal crops. Winter wheat yields were excellent with reduced test weights. Spring grain yields at Loma were relatively good with sharply reduced test weights. The Turner and Loring locations had well above average precipitation and generally favorable conditions overall which resulted in excellent yields and test weights. Sawfly damage was moderate to severe at Turner, and was very severe at Loring. Both locations saw differential stem cutting by variety with only resistant or tolerant lines escaping severe cutting. Most locations recorded yields commensurate with moisture. Protein levels for appropriately fertilized wheat and barley were generally excellent, but protein values were abnormally high in those areas most seriously affected by heat stress.

Stand percent, plant height, yield, moisture, test weight, protein, and sawfly cutting data for the 2004 McKeever (Loma) dryland winter wheat trial is summarized in Table 1. The Peterson (North Havre) dryland winter wheat trial was abandoned due to extreme stand variability not associated with varietal differences. Multi-year yield and test weight summary data for selected winter wheat entries at the McKeever location for 1999-2004 are presented in Table 2.

Stand percent, plant height, yield, moisture, test weight, protein, and sawfly cutting data for the 2004 Cederberg (Turner), Flansaas/Lumsden (Loring) and McKeever (Loma) dryland spring wheat trials are summarized in Tables 3, 5 and 7, respectively. The Cederberg location, in place since 1982, further featured “fertilized vs. unfertilized” spring wheat variety performance evaluations (1994-1998). The Flansaas/Lumsden location replaced the 10-year Solberg location at Dodson (1986-1995). The McKeever location replaces the former, long-term Myers location (Big Sandy, 1988-1997). Multi-year yield and test weight summaries for selected spring wheat entries at the Cederberg, Flansaas/Lumsden and McKeever locations are presented in Tables 4, 6 and 8, respectively.

Stand percent, plant height, yield, moisture, test weight, protein, and sawfly cutting data for the 2004 Cederberg (Turner) and McKeever (Loma) dryland durum trials are summarized in Tables 9 and 11, respectively. The evaluation of durum varieties was added at the Cederberg location in 2002, and at the McKeever location in 2003. Multi-year yield and test weight summaries for selected durum entries at the Cederberg location are presented in Table 10. After three years of data are in place at the McKeever location, multi-year year and test weight summaries will be reported.

Stand percent, plant height, yield, moisture, test weight, plump/thin and protein data for the 2004 Cederberg (Turner), Flansaas/Lumsden (Loring) and McKeever (Loma) dryland spring barley trials are summarized in Tables 12, 14 and 16, respectively. The Cederberg location, in place since 1982, further featured “fertilized vs. unfertilized” barley variety performance evaluations (1994-1998). The Flansaas/Lumsden location replaces the 10-year Solberg location at Dodson (1986-1995). The McKeever location replaces the former long-term Myers location (Big Sandy, 1988-1997), but barley variety evaluation was not initiated there until 1999. Multi-year yield and test weight summaries for selected spring barley entries at the Cederberg, Flansaas/Lumsden, and McKeever locations are presented in Tables 13, 15 and 17, respectively.

SUMMARY:

Ten, standard, off-station variety performance trials were conducted in 2004 on mechanical or chemical fallow at four locations in four northern Montana counties.

Dryland Winter Wheat Trials:

1. Mark Peterson Grain & Cattle, Inc., Hill County	(35NW Havre)	17-35N-13E
2. McKeever Farm & Seed, Inc., Chouteau County	(12N Loma)	16-27N-10E

Dryland Spring Wheat Trials:

1. Leon Cederberg Farm, Blaine County	(3NE Turner)	13-36N-25E
2. Flansaas/Lumsden Farm, Phillips County	(1SW Loring)	24-35N-29E
3. McKeever Farm & Seed, Inc., Chouteau County	(12N Loma)	16-27N-10E

Dryland Spring Durum Trials:

1. Leon Cederberg Farm, Blaine County (3NE Turner) 13-36N-25E
2. McKeever Farm & Seed, Inc., Chouteau County (12N Loma) 16-27N-10E

Dryland Spring Barley Trials:

1. Leon Cederberg Farm, Blaine County (3NE Turner) 13-36N-25E
2. Flansaas/Lumsden Farm, Phillips County (1SW Loring) 24-35N-29E
3. McKeever Farm & Seed, Inc., Chouteau County (12N Loma) 16-27N-10E

All trials were seeded in replicated, 3-row, 20-foot plots on a 12-inch row spacing utilizing a self-propelled cone seeder. Trials (1988-1991) were planted with hoe openers fitted with `Acra-Plant' or JD 3" shovels. Beginning with spring planting in 1992, all off-station trials were planted with modified `Haybuster' openers. A randomized complete block design was standard for all trials with three replications. Beginning in 1997, a `Wintersteiger 1541-21' plot combine, funded in part by MWBC was used to harvest each 3-row plot after end-trimming to 16'. Prior to 1997, a `Hege 125C' plot combine, also funded in part by MWBC in 1984, was used. Some 1991 plots were harvested via the former binder/thresher method due to breakdown of the Hege plot combine. Other variables specific to each individual trial are listed with the current year data tables.

FUTURE PLANS:

It is planned, with drought, budget and other resources allowing, to continue off-station cereal variety investigations in the five-county area. This work has been strongly supported by producers near each of the locations, and by the Northern Ag Research Center Advisory Committee. Budgets aside, expanded overall workload suggested that the number of replicated, off-station variety trial locations needed to be reduced - at least for the time being. Spring grains were dropped in 1997 (after 10 years of data) at the Myers (Big Sandy) location. This was an excellent location with outstanding producer cooperation and support. However, sawfly-resistant variety development efforts were initiated in 1997 involving establishment and maintenance of 2,000-3,000 plots on the McKeever Farm (Loma) only a few miles away where conditions (other than sawfly pressure) were quite similar. Thus, the Big Sandy location was put on hold; and standard off-station winter wheat, spring wheat, durum and barley variety trials were established at the Loma site. A steady reduction in sawfly pressure at the Loma location has resulted in relocation of the sawfly-resistant variety development work to northern Hill County as of the 2005 crop year. However, it is our intent to continue standard off-station variety evaluation work at Loma until at least until ten years of performance data are collected there. This has also been an excellent location with outstanding producer cooperation and support. In addition, spring grains were dropped from the North Havre location when it was relocated from the Peterson Farm to other sites for winter wheat variety evaluation only, in the fall of 1997. And, although the cooperating producer interest and support at the former Graff location north of Joplin (spring wheat and barley varieties) was excellent, a need to reduce overall workload made it necessary to discontinue this location after collecting ten years of data.

It is planned to continue off-station spring wheat and barley variety evaluations at the Cederberg (Turner) and Flansaas/Lumsden (Loring) locations and durum evaluation at the Cederberg location. The Loring location is entering its' tenth year, and the cooperator and area producer interest and support has been outstanding. The Turner location is only 32 miles from the Loring site, but conditions there are quite different; and it is our opinion that the Turner location should be continued at least until 2007 which will mark 20 years at the present site (plus 5 years on a different soil series at a site nearby). However, the double plantings at Turner comparing fertilized vs. unfertilized plots were terminated following the 1998 crop year as originally planned. Cooperating producer and general community interest and support at Turner is outstanding.

Data processed by the Center will normally be limited to trials where the Center performs all field functions from planting to harvest. Special arrangements may be made with Extension Agents desiring to conduct additional replicated trials on their own. Packaged seed can likely again be provided to the County Extension Agents as per their needs for non-replicated demonstration locations. Such demonstrations will be for display and discussion use by the County Extension Agent; and performance data will not be collected or processed by the Research Center for any such demonstration plantings.

It is our current opinion that effort put forth to generate quality multi-year data at a few sites, carefully chosen to represent principal differences in average growing season conditions, is superior to an approach involving less concentrated work at greater numbers of locations. This is particularly true when critical season workload would otherwise result in less than timely planting and maintenance of certain sites.

TABLE 1. Dryland Fallow Winter Wheat Cultivar Evaluation Nursery Grown Off-Station at McKeever Farm & Seed, Inc., Loma. Northern Agricultural Research Center. Havre, Montana. 2004. (Exp# 04-3853-WW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	2/ PROTEIN %	SAWFLY % Cut
JAGALENE	JAGALENE	97.8	31.9	93.0	9.4	61.7	14.4	1.7
MTW01133	NuWest/SD88191 (hard white)	98.5	30.5	91.4	9.0	58.7	14.5	0.0
CI 17879	ROCKY	97.2	36.2	91.1	9.8	60.7	14.0	0.0
PI613099	MILLENIUM	98.1	36.6	90.7	9.8	60.8	13.9	0.0
MT00159	Promontory/Judith	100.0	36.4	89.2	9.2	57.5	14.3	0.0
PI619098	WAHOO	98.2	31.8	88.8	9.3	58.3	13.4	0.0
ND9257	JERRY	100.0	39.5	88.2	9.2	57.1	14.7	1.7
MT01148	Judith/Blizzard	97.8	37.1	87.1	9.2	57.2	14.4	1.7
MT0177	ND8895//ND8892/KS87H6	98.4	35.9	85.8	9.3	58.0	14.0	3.3
MT9426	PAUL	97.8	33.7	83.8	9.1	54.5	15.4	0.0
CI 17860	NEELEY	97.8	36.4	82.3	9.1	56.4	15.5	0.0
BZ96-919	PRYOR	96.9	35.1	81.8	8.6	56.0	15.5	0.0
MT0097	Erhardt//Judith/Kestrel	100.0	37.1	81.6	9.2	56.8	14.8	0.0
S94-4	CDC FALCON	99.7	34.5	81.4	9.1	57.0	14.6	0.0
PI555458	PROMONTORY	98.4	34.5	81.0	9.4	59.7	14.1	3.3
PI599336	MORGAN	99.7	35.3	79.1	9.0	54.1	14.7	0.0
MTW9441	NUSKY (hard white)	99.7	36.4	79.1	9.0	57.1	15.5	1.7
MTI01159	Fidel/NuWest	95.4	34.3	77.7	8.9	56.7	14.4	0.0
PI586806	NUWEST (hard white)	99.7	36.3	77.6	9.2	58.4	14.5	1.7
PI593891	VANGUARD (hard white)	99.1	35.2	74.4	9.0	57.3	15.5	0.0
PI517194	TIBER	99.1	39.7	74.2	9.2	57.6	15.3	0.0
MT 9432	BIGSKY	99.1	39.2	73.7	8.9	54.7	16.2	0.0
MTS0031	GENOU (hard white)	98.1	36.1	73.5	9.2	58.2	15.6	0.0
PI593889	RAMPART (sawfly resistant)	98.7	37.0	70.5	9.0	56.9	16.0	0.0
EXPERIMENTAL MEANS		98.6	35.7	82.4	9.2	57.6	14.8	0.6
LSD (0.05)		2.9	2.5	12.1	0.3	2.3	.	2.6
C.V.2: (S of MEAN / MEAN)*100		1.0	2.5	5.2	1.1	1.4	.	145.8

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight fo wheat.

2/ Protein values are adjusted to 12 percent grain moisture.

Site Resource & Management Data: (Exp# 04-3853-WW)							
Field			SaltHaz(MMHOS/cm)6-24"	1.32		2" Soil Temp (°F) @ Plnt'g	72
Quarter	SE		Soil Texture 0-6"	CL		4" Soil Temp (°F) @ Plnt'g	68
Section	16		Soil Texture 6-24"	CL		Fertilizer Formulation	Gran.Blend
Township	27N		Soil Texture 24-36"	CL		Fertilizer Placement	Bnd at Plntg
Range	10E		Soil Texture 36-48"	CL		Fert. Rate (lbs/ac) N	70
Latitude	N48 05.814'		Init Zn (ppm) 0-6"	0.5		Fert. Rate (lbs/ac) P2O5	40
Longitude	W110 27.491'		Init Mn (ppm) 0-6"	16		Fert. Rate (lbs/ac) K2O	25
Soil Series			Init Cu (ppm) 0-6"	1.2		Herbicide App. Date	n/a
pH 0-6"	5.4		Init Fe (ppm) 0-6"	35.6		Herbicide Product	n/a
Org.Matter (%) 0-6"	1.3		CEC 0-6"	21.8		Herbicide Rate (/ac)	n/a
Init N (lbs/ac) 0-6"	34		Init PAW (in.) 0-6"	0.82		Precip (in.) Plnt'g-Harvest	7.54
Init N (lbs/ac) 6-24"	114		Init PAW (in.) 6-24"	2.75		Precip (>.1) Plnt'g-Harvest	7.11
Init N (lbs/ac) 24-36"	60		Init PAW (in.) 24-36"	1.42		Harvest Date	8/10
Init N (lbs/ac) 36-48"	32		Init PAW (in.) 36-48"	1.59		Rooting Depth (in.)	n/a
Init P (ppm) Olsen 0-6"	27		Cropping System	NT-ChmFlw		Post PAW (in.) 0-6"	0.30
Init K (ppm) 0-6"	297		Planting Date	9/25		Post PAW (in.) 6-24"	n/a
Init S (ppm) 0-24"	68		Planting Depth (in.)	1.3		Post PAW (in.) 24-36"	n/a
Init Na (MEQ/100g) 0-6"	0.23		Moist Soil Depth @Plnt'g	48+		Post PAW (in.) 36-48"	n/a
SaltHaz (MMHOS/cm) 0-6"	0.64		Dry Surf Soil (in.) @Plnt'g	0.50		Precip (>.1) Hvst-Post	0.00

TABLE 2. Five-Year Yield and Test Weight Summary of Selected Entries from Dryland Fallow Winter Wheat Variety Nurseries Grown Off-Station in a Wheat Stem Sawfly Environment at McKeever Farm & Seed, Inc., Loma. Northern Agricultural Research Center. Havre, Montana. 1999-2004.

2/ VARIETY or SELECTION		No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre) 2000	2001	2002 6/	2003	2004	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	**5-YR COMP. AVE. YIELD 5/**	TEST WEIGHT (Pounds Per Bushel) 2000	2001	2002 6/	2003	2004	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	**5-YR COMP. AVE. TEST WT 5/**
CI 17879	ROCKY	5	47.0	13.3		48.1	91.1	46.5	112.0	**46.5**	63.6	54.6		58.5	60.7	60.1	104.4	**60.1**
PI517194	TIBER	5	44.9	13.1		45.4	74.2	42.9	103.2	**42.9**	62.7	54.3		59.5	57.6	59.3	103.1	**59.3**
PI584505	HALT	3	46.9	8.9				29.6	102.6	**42.6**	62.8	54.9				60.1	102.9	**59.2**
PI555458	PROMONTORY	5	39.7	9.3		46.7	81.0	42.5	102.3	**42.5**	63.5	55.2		56.2	59.7	59.6	103.7	**59.6**
PI584526	JUDITH	4	36.1	12.4		35.9		32.0	102.1	**42.4**	60.6	51.9		52.8		56.7	98.1	**56.4**
PI599336	MORGAN (P+)	5	37.2	10.9		40.6	79.1	41.7	100.3	**41.7**	61.9	53.1		54.4	54.1	57.1	99.3	**57.1**
CI 17860	NEELEY	5	39.5	12.3		38.8	82.3	41.6	100.0	**41.6**	61.9	51.7		55.9	56.4	57.5	100.0	**57.5**
PI593891	VANGUARD (sawfly res.)	5	41.4	15.7		40.8	74.4	41.0	98.7	**41.0**	62.3	54.6		59.1	57.3	59.1	102.8	**59.1**
RH78W296	BIGHORN (P+)	4	34.2	10.7		41.2		30.9	98.3	**40.9**	62.6	54.9		58.5		59.7	103.3	**59.4**
PI593889	RAMPART (sawfly resis.)	5	42.7	16.4		37.0	70.5	40.5	97.5	**40.5**	62.2	55.0		59.2	56.9	59.0	102.6	**59.0**
PI593890	McGUIRE	3	37.3	11.5				27.8	96.2	**40.0**	61.9	55.6				60.0	102.7	**59.0**
MT 9432	BIGSKY (++)	5	38.5	11.4		35.8	73.7	39.8	95.8	**39.8**	62.6	55.0		55.6	54.7	58.2	101.2	**58.2**
PI564761	ERHARDT	3	34.3	10.2				27.6	95.6	**39.7**	62.7	54.9				60.0	102.7	**59.0**
MT 9426	PAUL	4	33.5	8.5		37.8	83.8	40.9	94.6	**39.3**	61.2	53.0		53.0	54.5	55.5	98.2	**56.5**
MTW 9441	NUSKY (hard white)	5	27.5	13.2		40.7	79.1	39.2	94.5	**39.2**	61.1	55.0		57.6	57.1	58.5	101.8	**58.5**
CI 17735	NORSTAR	4	36.5	9.2		36.1		29.4	93.7	**38.9**	62.2	54.0		58.7		59.0	102.1	**58.7**
PI586806	NUWEST (hard white)	5	34.0	8.8		39.8	77.6	38.6	92.9	**38.6**	61.7	55.3		57.0	58.4	58.7	102.0	**58.7**
PI596352	ELKHORN (+)	3	36.7	9.4				23.7	82.2	**34.1**	62.3	53.2				58.5	100.1	**57.6**
MEANS (For Entries Listed)			38.2	11.4		40.3	78.8			40.7	62.2	54.2		56.9	57.0			58.5
7/ Growing Season Precipitation (in.)			Pndg	Pndg		4.03	7.38	4.03										
Soil PAW (in.) to SD @ Planting			Pndg	Pndg		7.99	5.70	7.99										
Total Plant Available Water (in.)			Pndg	Pndg		12.02	13.08	12.02										
Soil NO3 (lbs.) to SD at Planting			Pndg	Pndg		170.0	286.0	170.00										
Fertilizer Applied	(# N)		65.0	70.0		70.0	70.0	68.75										
	(# P_2O_5)		40.0	40.0		40.0	40.0	40.00										
	(# K_2O)		25.0	25.0		25.0	25.0	25.00										

Check Variety is Neeley

1/ See MCES Bulletin 1098 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/ for evaluation of other important variety performance characteristics to include protein, quality, winter hardiness, disease resistance, etc. before making cultivar selecton decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 Pending

3/ Only the most recent 5 years shown, but summary calculations include all years noted.

4/ Percent of Neeley yield or test weight for the same data years as those in which a given entry was tested.

5/ 5-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Neeley for the same years, and z = 5-Yr average yield or test weight for the check variety Neeley.

6/ Nursery abandoned due to extreme drought stress at this location.

7/ April 1 to 14 days prior to harvest maturity.

TABLE 3. Dryland Fallow Spring Wheat Cultivar Evaluation Nursery Grown Off-Station at the Leon Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, Montana. 2004. (Exp# 04-9951-SW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	TKW grams	2/ PROTEIN %	SAWFLY % cut
MT 0245	MT9433/ND695	100.0	29.7	64.0	13.3	60.8	32.1	13.3	18.3
RQS-SATU	SATURN	100.0	30.5	63.4	13.3	61.3	35.8	14.8	21.7
MT 0249	ND695/MT9433	100.0	28.5	59.4	13.3	60.5	29.4	13.7	23.3
PI574642	McNEAL	100.0	29.2	58.4	13.2	61.3	35.9	14.5	43.3
C982-324	RAMBO (mod. sawfly resistant)	100.0	27.7	57.1	13.3	61.2	34.2	13.8	13.3
RQS-POLA	POLARIS	100.0	29.7	56.9	13.9	62.4	36.0	14.2	30.0
ND 695	REEDER	100.0	30.0	56.0	13.4	61.7	32.2	14.8	28.3
CI 17430	NEWANA	100.0	28.5	55.7	13.4	61.4	32.2	13.2	28.3
MT 9929	CHOTEAU (sawfly resistant)	99.7	27.6	55.2	13.2	60.3	32.9	14.3	15.0
PI549275	HI-LINE	100.0	30.3	55.2	13.5	61.3	34.1	14.0	30.0
PI632252	OUTLOOK (RWA resistant)	100.0	30.5	54.6	13.4	60.8	32.2	13.5	31.7
PI592761	ERNEST (sawfly resistant)	100.0	33.1	54.5	12.9	60.3	33.9	14.9	20.0
PI615543	ALSEN	100.0	30.0	54.4	13.2	61.7	34.6	14.6	33.3
BZ992588	CONAN (sawfly tolerant)	99.7	28.7	53.0	13.5	61.6	36.8	14.8	15.0
PI607557	SCHOLAR (mod. sawfly resistant)	100.0	33.4	52.9	13.5	61.5	34.9	14.8	36.7
RQS-MERC	MERCURY	100.0	27.7	52.4	13.4	61.3	35.3	13.8	28.3
BZ992322	HANK	97.6	27.3	51.8	13.1	60.1	38.2	13.8	36.7
MTHW0202	ID377S/MTHW9701 (hard white)	100.0	27.1	51.0	13.8	60.7	35.8	13.2	65.0
CI 13596	FORTUNA (sawfly resistant)	100.0	36.3	49.7	13.7	61.2	39.6	14.8	11.7
AC ABBEY	AC ABBEY	100.0	30.6	49.5	13.1	60.0	32.5	14.4	21.7
WB 936	WESTBRED 936	100.0	26.5	48.8	13.3	59.0	35.7	14.3	46.7
PI527682	AMIDON (mod. sawfly resistant)	100.0	35.4	48.3	13.4	60.0	32.4	14.4	40.0
PI619086	EXPLORER (hard white)	100.0	26.3	47.6	13.3	60.8	29.0	14.0	40.0
WB 926	WESTBRED 926	100.0	27.9	47.0	12.9	60.2	36.7	14.4	36.7
MTHW9420	MT8182/MT8289 (hard white)	98.3	25.0	46.1	13.2	60.4	34.5	12.4	51.7
MT 0266	ND695/MT9755	100.0	29.5	46.1	12.6	58.6	33.3	14.2	55.0
EXPERIMENTAL MEANS		99.8	29.5	53.4	13.3	60.8	34.2	14.1	31.6
LSD (0.05)		1.7	2.3	4.8	0.6	0.6	1.5	.	13.1
C.V.2: (S of MEAN / MEAN)*100		0.6	2.8	3.2	1.5	0.4	1.5	.	14.6

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight for wheat.
2/ Protein values are adjusted to 12 percent grain moisture.

Site Resource & Management Data: (Exp# 04-9951-SW)							
Field			SaltHaz(MMHOS/cm)6-24"	0.72		2" Soil Temp (^{o}F) @ Plnt'g	84
Quarter			Soil Texture 0-6"	CL		4" Soil Temp (^{o}F) @ Plnt'g	62
Section	13		Soil Texture 6-24"	CL		Fertilizer Formulation	Gran.Blend
Township	36N		Soil Texture 24-36"	CL+		Fertilizer Placement	Bnd at Plntg
Range	25E		Soil Texture 36-48"	CL+		Fert. Rate (lbs/ac) N	70
Latitude	N48 52.587'		Init Zn (ppm) 0-6"	0.4		Fert. Rate (lbs/ac) P2O5	40
Longitude	W108 23.539'		Init Mn (ppm) 0-6"	7.4		Fert. Rate (lbs/ac) K2O	25
Soil Series			Init Cu (ppm) 0-6"	0.7		Herbicide App. Date	6/16
pH 0-6"	6.3		Init Fe (ppm) 0-6"	15.7		Herbicide Product	Achieve/MCPE
Org.Matter (%) 0-6"	0.9		CEC 0-6"	21.8		Herbicide Rate (/ac)	1/2 lb / 1 pt
Init N (lbs/ac) 0-6"	18		Init PAW (in.) 0-6"	0.88		Precip (in.) Plnt'g-Harvest	13.73
Init N (lbs/ac) 6-24"	42		Init PAW (in.) 6-24"	2.62		Precip (>.1) Plnt'g-Harvest	12.45
Init N (lbs/ac) 24-36"	24		Init PAW (in.) 24-36"	2.00		Harvest Date	9/16
Init N (lbs/ac) 36-48"	20		Init PAW (in.) 36-48"	1.90		Rooting Depth (in.)	n/a
Init P (ppm) Olsen 0-6"	7		Cropping System	CT-MechFlw		Post PAW (in.) 0-6"	soil too hard
Init K (ppm) 0-6"	232		Planting Date	5/7		Post PAW (in.) 6-24"	to sample
Init S (ppm) 0-24"	32		Planting Depth (in.)	1.5		Post PAW (in.) 24-36"	
Init Na (MEQ/100g) 0-6"	0.08		Moist Soil Depth @Plnt'g	48+		Post PAW (in.) 36-48"	
SaltHaz (MMHOS/cm) 0-6"	0.44		Dry Surf Soil (in.) @Plnt'g	2.0		Precip (>.1) Hvst-Post	n/a

TABLE 4. Ten-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Spring Wheat Variety Nurseries Grown Off-Station at the Leon Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, Montana. 1995-2004.

2/ VARIETY or SELECTION		No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre) 1999 7/	2000	2001	2002	2003	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	**10-YR COMP. AVE. YIELD 5/**	TEST WEIGHT (Pounds Per Bushel) 1999 7/	2000	2001	2002	2003	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	**10-YR COMP. AVE. TEST WT 5/**
PI574642	McNEAL	9		52.7	42.6	44.2	22.3	44.9	127.1	**44.9**		59.9	60.6	58.4	58.0	59.1	98.4	**59.1**
MT9929	CHOTEAU (++)(sawfly resis.)	4			36.4	40.9	24.5	39.3	124.6	**44.0**			61.8	57.6	57.7	59.4	99.0	**59.4**
ND695	REEDER (+)	5		49.9	40.1	38.7	23.6	41.7	123.3	**43.5**		61.9	62.4	59.1	58.3	60.7	100.9	**60.6**
PI549275	HI-LINE	9		49.0	42.6	37.4	21.9	43.2	122.2	**43.2**		60.5	61.2	58.3	58.1	59.2	98.5	**59.2**
CI17430	NEWANA	9		48.5	41.6	32.6	21.0	42.3	119.7	**42.3**		61.1	61.9	58.4	60.4	59.9	99.7	**59.9**
MT9874	OUTLOOK	4			37.3	34.2	24.7	37.7	119.6	**42.2**			60.3	58.7	57.9	59.4	99.1	**59.5**
WBEXPRES	WB EXPRESS (P+)	8		48.6	37.7	36.5	20.1	39.8	118.7	**41.9**		60.3	60.9	58.2	58.5	59.0	98.4	**59.1**
PI607557	SCHOLAR(+)(mod.sf res)	8		47.3	38.8	39.3	22.8	40.8	118.7	**41.9**		61.8	62.0	58.2	59.5	60.2	100.3	**60.3**
PI592761	ERNEST (+) (sawfly res.)	9		45.2	41.0	38.2	25.6	41.8	118.5	**41.8**		61.5	62.4	57.2	58.7	59.6	99.3	**59.6**
PI531005	GRANDIN	6		48.0	42.9			42.9	118.5	**41.8**		61.5	62.5			59.4	98.3	**59.0**
PI527682	AMIDON (mod.swfly res.)	9		46.1	39.5	37.5	22.5	41.4	117.2	**41.4**		61.1	61.6	57.0	57.9	59.3	98.6	**59.3**
WB936	WB 936 (P+)	9		50.0	35.2	36.5	22.7	41.1	116.3	**41.1**		60.6	61.8	57.3	58.7	58.8	97.9	**58.8**
BZ992588	CONAN (P+) (sawfly tol)	5		43.0	36.0	37.5	23.6	38.6	114.3	**40.4**		60.5	62.0	59.1	60.0	60.6	100.9	**60.6**
C982-324	WB RAMBO (P+)(mod sf)	9		43.4	36.8	36.9	22.7	39.5	111.9	**39.5**		61.0	62.3	58.5	59.6	60.1	100.0	**60.1**
PI619086	EXPLORER (hard white)	5		51.4	33.9	32.6	23.3	37.8	111.8	**39.5**		60.4	60.9	57.4	58.5	59.6	99.1	**59.5**
MTHW9420	MTHW9420 (hrd wht)	8		49.6	36.3	32.4	18.6	38.0	110.4	**39.0**		60.3	61.4	56.8	57.9	58.8	97.9	**58.8**
WPB926	WB 926 (P)	9		46.5	35.5	31.8	20.7	38.9	110.2	**38.9**		60.2	61.1	57.5	58.7	58.8	97.8	**58.8**
BZ992322	HANK	3				35.7	22.2	36.6	109.3	**38.6**				57.7	58.4	58.7	99.0	**59.5**
CI17429	LEW (sawfly resistant)	8		41.0	36.9	36.3	21.1	36.0	107.5	**38.0**		60.9	62.2	58.9	59.3	60.2	100.4	**60.3**
CI13596	FORTUNA (sawfly resis.)	9		43.0	25.6	30.3	20.4	35.3	100.0	**35.3**		60.7	61.9	58.1	58.8	60.1	100.0	**60.1**
MEANS (For Entries Listed)				47.2	37.7	36.3	22.3			41.0		60.8	61.6	58.0	58.7			59.6
6/ Growing Season Precipitation (in.)				Pndg	Pndg	Pndg	3.12	7.93										
Soil PAW (in.) to SD @ Planting				Pndg	Pndg	5.65	6.96	6.00										
Total Plant Available Water (in.)				Pndg	Pndg	5.65	10.08	12.61										
Soil NO3 (lbs.) to SD at Planting				Pndg	Pndg	36	160	87.33										
SD (Sampling Depth in Inches)				48.0	48.0	48.0	48.0	48.00										
Fertilizer Applied	(# N)			70.0	70.0	70.0	70.0	68.22										
	(# P_2O_5)			40.0	40.0	40.0	40.0	36.89										
	(# K_2O)			25.0	25.0	25.0	25.0	13.89										

Check Variety is Fortuna

1/ See MCES Bulletin 1093 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/ for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selecton decisions.

2/ P = Private Variety, + = Protected Variety, ++ PVP Title 5 Pending

3/ Only the most recent 5 years are shown, but summary calculations include all years noted.

4/ Percent of Fortuna yield or test weight for the same data years as those in which a given entry was tested.

5/ 10-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Fortuna for the same years, and z = 10-Yr average yield or test weight for the check variety Fortuna.

6/ Seeding to 14 days prior to harvest maturity.

7/ 1999 Nursery not planted due to wet conditions extending throughout and beyond the normal seeding period for this location.

TABLE 5. Dryland Fallow Spring Wheat Cultivar Evaluation Nursery Grown Off-Station at the Flansaas-Lumsden Farm, Loring. Northern Agricultural Research Center. Havre, Montana. 2004. (Exp# 04-9955-SW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	TKW grams	2/ PROTEIN %	SAWFLY % Cut
MT 0245	MT9433/ND695	100.0	29.0	59.9	11.6	62.8	26.6	13.0	20.0
RQS-SATU	SATURN	99.7	28.3	55.6	11.7	62.3	32.6	13.7	33.3
MT 0249	ND695/MT9433	100.0	27.9	53.1	11.5	62.5	26.0	12.5	23.3
MT 9929	CHOTEAU (sawfly resistant)	100.0	28.5	52.7	11.3	61.7	30.3	13.2	28.3
RQS-POLA	POLARIS	100.0	28.6	50.1	11.7	63.6	29.9	13.1	40.0
C982-324	RAMBO (mod. sawfly resistant)	99.7	28.1	50.0	11.6	62.8	31.2	12.5	16.7
PI632252	OUTLOOK (RWA resistant)	100.0	28.3	49.0	11.4	61.7	28.0	12.6	66.7
PI592761	ERNEST (sawfly resistant)	100.0	32.5	48.2	11.2	62.2	29.3	14.2	45.0
PI574642	McNEAL	99.7	29.9	46.9	11.3	61.6	30.7	13.0	63.3
ND 695	REEDER	100.0	27.9	46.4	11.4	62.4	27.1	13.6	68.3
PI549275	HI-LINE	100.0	29.1	46.2	11.3	62.9	32.3	12.7	53.3
BZ992588	CONAN (sawfly tolerant)	100.0	27.4	45.4	11.7	63.3	35.2	14.1	16.7
CI 13596	FORTUNA (sawfly resistant)	99.7	33.5	45.0	11.4	62.3	33.4	13.3	20.0
RQS-MERC	MERCURY	100.0	24.5	44.7	11.0	61.4	30.0	13.1	68.3
PI615543	ALSEN	100.0	28.7	44.0	11.3	62.5	28.4	14.2	73.3
CI 17430	NEWANA	100.0	27.1	43.4	11.4	61.7	27.5	12.4	81.7
PI607557	SCHOLAR (mod. sawfly resistant)	100.0	33.6	43.0	11.4	62.5	28.9	13.3	78.3
MTHW0202	ID377S/MTHW9701 (hard white)	100.0	28.4	42.4	11.1	61.4	28.4	13.3	90.0
MT 0266	ND695/MT9755	100.0	27.6	41.7	10.7	58.2	28.5	13.6	90.0
BZ992322	HANK	100.0	26.2	41.5	11.0	60.1	28.9	13.4	86.7
AC ABBEY	AC ABBEY	100.0	30.8	41.5	10.9	60.4	26.1	14.2	83.3
WB 936	WESTBRED 936	100.0	28.4	40.9	11.1	59.8	27.7	14.0	76.7
PI619086	EXPLORER (hard white)	100.0	26.0	40.8	11.1	61.0	25.0	13.6	93.3
WB 926	WESTBRED 926	99.3	24.2	38.7	11.0	60.7	30.6	13.3	75.0
PI527682	AMIDON (mod. sawfly resistant)	99.7	30.7	38.2	11.0	61.5	28.3	13.1	90.0
MTHW9420	MT8182/MT8289 (hard white)	100.0	26.9	37.8	10.8	59.4	27.1	12.9	95.0
EXPERIMENTAL MEANS		99.9	28.5	45.7	11.3	61.6	29.2	13.3	60.6
LSD (0.05)		0.6	3.9	4.2	0.3	0.5	2.5	.	15.7
C.V.2: (S of MEAN / MEAN)*100		0.2	4.8	3.2	0.9	0.3	3.0	.	9.1

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight for wheat.
2/ Protein values are adjusted to 12 percent grain moisture.

Site Resource & Management Data: (Exp# 04-9955-SW)							
Field			SaltHaz(MMHOS/cm)6-24"	0.72		2" Soil Temp (°F) @ Plnt'g	78
Quarter			Soil Texture 0-6"	CL-		4" Soil Temp (°F) @ Plnt'g	66
Section	2		Soil Texture 6-24"	CL		Fertilizer Formulation	Gran.Blend
Township	35N		Soil Texture 24-36"	CL		Fertilizer Placement	Bnd at Plntg
Range	29E		Soil Texture 36-48"	SCL		Fert. Rate (lbs/ac) N	70
Latitude	N48 46.602'		Init Zn (ppm) 0-6"	0.5		Fert. Rate (lbs/ac) P2O5	40
Longitude	W107 52.929'		Init Mn (ppm) 0-6"	10.4		Fert. Rate (lbs/ac) K2O	25
Soil Series			Init Cu (ppm) 0-6"	0.5		Herbicide App. Date	6/12
pH 0-6"	5.8		Init Fe (ppm) 0-6"	43.2		Herbicide Product	Bronate
Org.Matter (%) 0-6"	1.4		CEC 0-6"	21.8		Herbicide Rate (/ac)	16 oz
Init N (lbs/ac) 0-6"	10		Init PAW (in.) 0-6"	0.80		Precip (in.) Plnt'g-Harvest	10.88
Init N (lbs/ac) 6-24"	30		Init PAW (in.) 6-24"	2.28		Precip (>.1) Plnt'g-Harvest	9.42
Init N (lbs/ac) 24-36"	12		Init PAW (in.) 24-36"	1.36		Harvest Date	9/9
Init N (lbs/ac) 36-48"	8		Init PAW (in.) 36-48"	1.79		Rooting Depth (in.)	36"
Init P (ppm) Olsen 0-6"	21		Cropping System	NT-ChmFlw		Post PAW (in.) 0-6"	0.89
Init K (ppm) 0-6"	286		Planting Date	5/4		Post PAW (in.) 6-24"	2.57
Init S (ppm) 0-24"	18		Planting Depth (in.)	1.5		Post PAW (in.) 24-36"	0.82
Init Na (MEQ/100g) 0-6"	0.07		Moist Soil Depth @Plnt'g	48+		Post PAW (in.) 36-48"	0.70
SaltHaz (MMHOS/cm) 0-6"	0.28		Dry Surf Soil (in.) @Plnt'g	1.3		Precip (>.1) Hvst-Post	0.00

TABLE 6. Nine-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Spring Wheat Variety Nurseries Grown Off-Station at the Flansaas/Lumsden Farm, Loring. Northern Agricultural Research Center. Havre, Montana. 1996-2004.

2/ VARIETY or SELECTION		No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre) 2000	2001	2002	2003	2004	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	**9-YR COMP. AVE. YIELD 5/**	TEST WEIGHT (Pounds Per Bushel) 2000	2001	2002	2003	2004	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	**9-YR COMP. AVE. TEST WT 5/**
PI531005	GRANDIN	6	41.2	38.6				36.1	121.6	**38.5**	61.3	61.3				58.4	98.6	**58.3**
PI574642	McNEAL	9	42.8	39.3	38.1	25.9	46.9	37.3	117.8	**37.3**	59.7	59.9	58.3	51.4	61.6	57.7	97.7	**57.7**
ND 695	REEDER (+)	6	41.2	42.0	36.3	28.5	46.4	40.6	117.5	**37.2**	62.1	61.7	58.8	55.0	62.4	60.0	100.7	**59.5**
CI 17430	NEWANA	9	41.7	40.6	34.4	27.0	43.4	36.6	115.6	**36.6**	61.3	61.3	59.1	54.1	61.7	58.6	99.2	**58.6**
PI549275	HI-LINE	9	40.0	43.3	35.1	25.0	46.2	36.1	114.2	**36.1**	60.9	60.9	57.5	53.3	62.9	57.9	98.0	**57.9**
WBEXPRES	WB EXPRESS (P+)	8	37.4	38.0	32.9	27.3		34.1	113.8	**36.0**	59.9	60.2	58.2	53.0		57.6	98.1	**58.0**
WB 936	WB 936 (P+)	9	40.4	40.6	35.0	27.0	40.9	35.7	112.9	**35.7**	60.6	60.4	56.7	52.9	59.8	57.6	97.5	**57.6**
PI607557	SCHOLAR (+)(mod.sf res)	9	37.7	36.5	37.0	25.1	43.0	35.6	112.5	**35.6**	61.6	61.6	59.9	56.1	62.5	59.8	101.3	**59.8**
MT9874	OUTLOOK	4		44.0	35.6	28.0	49.0	39.1	112.4	**35.6**		60.0	58.0	52.5	61.7	58.1	97.4	**57.6**
PI592761	ERNEST (+) (sawfly res.)	9	38.1	38.2	34.7	26.7	48.2	35.1	110.8	**35.1**	61.4	61.8	58.2	54.6	62.2	58.8	99.6	**58.8**
PI527682	AMIDON (mod.swfly res.)	9	38.9	40.4	33.7	22.9	38.2	34.6	109.5	**34.6**	61.2	61.1	58.2	54.3	61.5	58.6	99.2	**58.6**
BZ992588	CONAN (P+) (sawfly tol)	6	37.7	39.0	34.1	26.9	45.4	37.7	108.9	**34.5**	61.0	61.4	59.9	55.1	63.3	60.2	101.1	**59.7**
C982-324	WB RAMBO (P+) (mod sf)	9	38.5	37.2	33.4	24.0	50.0	34.3	108.5	**34.3**	61.2	61.5	60.1	54.7	62.8	59.5	100.8	**59.5**
MT 9929	CHOTEAU (++)(sawfly resis.)	4		37.6	33.4	27.3	52.7	37.8	108.4	**34.3**		60.3	57.1	53.6	61.7	58.2	97.7	**57.7**
WPB 926	WB 926 (P)	9	40.4	36.4	35.6	26.7	38.7	33.8	106.8	**33.8**	60.1	60.1	57.5	53.1	60.7	57.8	97.8	**57.8**
MTHW9420	MTHW9420 (hrd wht)	9	39.2	35.7	33.9	25.9	37.8	33.7	106.4	**33.7**	60.4	60.9	57.4	51.4	59.4	57.5	97.4	**57.5**
CI 17429	LEW (sawfly resistant)	8	35.1	35.6	34.5	23.8		31.2	104.2	**33.0**	61.3	61.9	60.0	54.7		59.0	100.6	**59.4**
PI	EXPLORER (hard white)	5	38.2	36.2	34.8	28.6	40.8	35.7	103.1	**32.6**	60.7	60.5	58.2	54.5	61.0	59.0	98.5	**58.2**
CI 13596	FORTUNA (sawfly resis.)	9	33.9	32.8	31.5	30.0	45.0	31.6	100.0	**31.6**	61.1	61.7	59.1	55.2	62.3	59.1	100.0	**59.1**
BZ992322	HANK	3			36.1	28.1	41.5	35.2	99.3	**31.4**			56.2	53.1	60.1	56.5	96.0	**56.7**
MEANS (For Entries Listed)			39.0	38.5	34.7	26.6	44.4			34.9	60.9	61.0	58.3	53.8	61.6			58.4
6/ Growing Season Precipitation (in.)			Pndg	Pndg	Pndg	5.59	10.88	6.44										
Soil PAW (in.) to SD @ Planting			Pndg	Pndg	Pndg	8.25	4.91	6.05										
Total Plant Available Water (in.)			Pndg	Pndg	Pndg	13.84	15.79	12.50										
Soil NO3 (lbs.) to SD at Planting			Pndg	Pndg	80.0	76.0	60.0	71.00										
SD (Sampling Depth in Inches)			48.0	48.0	48.0	48.0	48.0	48.00										
Fertilizer Applied	(# N)		70.0	70.0	70.0	70.0	70.0	70.78										
	(# P_2O_5)		40.0	40.0	40.0	40.0	40.0	39.56										
	(# K_2O)		25.0	25.0	25.0	25.0	25.0	21.78										

Check Variety is Fortuna

1/ See MCES Bulletin 1093 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/ for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selecton decisions.

2/ P = Private Variety, + = Protected Variety, ++ PVP Title 5 Pending

3/ Only the most recent 5 years are shown, but summary calculations include all years noted.

4/ Percent of Fortuna yield or test weight for the same data years as those in which a given entry was tested.

5/ 9-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Fortuna for the same years, and z = 9-Yr average yield or test weight for the check variety Fortuna.

6/ Seeding to 14 days prior to harvest maturity.

TABLE 7. Dryland Fallow Spring Wheat Cultivar Evaluation Nursery Grown Off-Station at McKeever Farm & Seed, Inc., Loma. Northern Agricultural Research Center. Havre, Montana. 2004. (Exp# 04-9957-SW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	TKW grams	2/ PROTEIN %	SAWFLY % Cut
RQS-MERC	MERCURY	99.1	30.0	39.2	11.8	49.0	16.2	19.3	0.0
MT 0266	ND695/MT9755	99.7	34.9	38.4	11.7	45.1	17.2	19.0	3.3
WB 936	WESTBRED 936	99.7	31.7	38.0	11.9	46.1	16.2	20.3	0.0
MTHW0202	ID377S/MTHW9701 (hard white)	100.0	33.2	36.8	11.8	49.3	17.3	19.3	0.0
PI619086	EXPLORER (hard whitet)	99.7	32.5	35.8	11.4	47.4	13.8	20.0	1.7
BZ992588	CONAN (sawfly tolerant)	99.4	33.0	35.8	12.1	50.0	16.1	19.7	0.0
PI632252	OUTLOOK (RWA resistant)	100.0	32.9	35.5	13.1	46.8	15.5	19.6	0.0
MT 0249	ND695/MT9433	99.4	32.6	35.4	12.1	49.0	14.8	19.8	0.0
MT 9929	CHOTEAU (sawfly resistant)	99.7	31.7	34.7	11.9	49.3	14.8	19.3	0.0
MT 0245	MT9433/ND695	100.0	34.1	34.7	12.0	47.7	14.9	19.2	0.0
WB 926	WESTBRED 926	100.0	29.9	34.6	11.7	46.6	16.1	19.9	0.0
BZ992322	HANK	99.4	31.6	33.1	11.9	45.0	15.6	20.2	0.0
MTHW9420	MT8182/MT8289 (hard white)	99.4	31.9	32.4	12.1	45.2	14.2	19.2	3.3
ND 695	REEDER	100.0	34.5	31.8	12.0	47.1	15.6	19.6	1.7
PI574642	McNEAL	100.0	31.9	31.7	12.6	47.1	17.0	19.9	0.0
CI 17430	NEWANA	100.0	31.5	31.6	12.1	47.7	14.2	18.4	0.0
AC ABBEY	AC ABBEY	100.0	37.9	31.4	11.3	49.0	15.5	19.7	1.7
PI615543	ALSEN	100.0	34.3	31.1	12.4	46.6	14.7	19.3	3.3
PI549275	HI-LINE	100.0	29.3	30.9	11.4	44.5	14.7	20.0	0.0
RQS-SATU	SATURN	99.4	34.0	30.8	14.8	46.9	16.2	21.5	0.0
CI 13596	FORTUNA (sawfly resistant)	99.4	37.4	30.1	11.7	51.3	18.2	18.9	0.0
PI607557	SCHOLAR (mod. sawfly resistant)	100.0	35.7	29.1	12.3	50.1	16.4	20.3	0.0
PI592761	ERNEST (sawfly resistant)	99.7	33.2	28.0	11.5	50.0	15.0	19.5	0.0
RQS-POLA	POLARIS	98.8	33.9	27.5	12.8	50.2	15.9	20.1	0.0
C982-324	RAMBO (mod. sawfly resistant)	99.4	29.2	27.4	13.1	47.5	14.6	19.6	0.0
PI527682	AMIDON (mod. sawfly resistant)	99.4	35.8	24.4	11.2	51.1	16.9	18.6	0.0
EXPERIMENTAL MEANS		99.7	33.0	32.7	12.1	47.9	15.7	19.6	0.6
LSD (0.05)		1.1	4.3	5.4	1.0	1.7	1.1	.	2.3
C.V.2: (S of MEAN / MEAN)*100		0.4	4.5	5.8	3.0	1.2	2.6	.	141.5

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight for wheat.
2/ Protein values are adjusted to 12 percent grain moisture.

Site Resource & Management Data: (Exp# 04-9957-SW)							
Field			SaltHaz(MMHOS/cm)6-24"	1.12		2" Soil Temp (°F) @ Plnt'g	72
Quarter	SE		Soil Texture 0-6"	CL-		4" Soil Temp (°F) @ Plnt'g	62
Section	16		Soil Texture 6-24"	CL+		Fertilizer Formulation	Gran.Blend
Township	27N		Soil Texture 24-36"	CL+		Fertilizer Placement	Bnd at Plntg
Range	10E		Soil Texture 36-48"	CL+		Fert. Rate (lbs/ac) N	70
Latitude	N48 05.814'		Init Zn (ppm) 0-6"	0.5		Fert. Rate (lbs/ac) P2O5	40
Longitude	W110 27.491'		Init Mn (ppm) 0-6"	19		Fert. Rate (lbs/ac) K2O	25
Soil Series			Init Cu (ppm) 0-6"	1.2		Herbicide App. Date	n/a
pH 0-6"	5.4		Init Fe (ppm) 0-6"	47.6		Herbicide Product	n/a
Org.Matter (%) 0-6"	1.4		CEC 0-6"	21.8		Herbicide Rate (/ac)	n/a
Init N (lbs/ac) 0-6"	24		Init PAW (in.) 0-6"	0.74		Precip (in.) Plnt'g-Harvest	7.38
Init N (lbs/ac) 6-24"	96		Init PAW (in.) 6-24"	2.76		Precip (>.1) Plnt'g-Harvest	6.96
Init N (lbs/ac) 24-36"	96		Init PAW (in.) 24-36"	1.33		Harvest Date	8/9
Init N (lbs/ac) 36-48"	44		Init PAW (in.) 36-48"	1.33		Rooting Depth (in.)	n/a
Init P (ppm) Olsen 0-6"	35		Cropping System	NT-ChmFlw		Post PAW (in.) 0-6"	0.45
Init K (ppm) 0-6"	409		Planting Date	4/26		Post PAW (in.) 6-24"	n/a
Init S (ppm) 0-24"	44		Planting Depth (in.)	1.5		Post PAW (in.) 24-36"	n/a
Init Na (MEQ/100g) 0-6"	0.13		Moist Soil Depth @Plnt'g	48+		Post PAW (in.) 36-48"	n/a
SaltHaz (MMHOS/cm) 0-6"	0.44		Dry Surf Soil (in.) @Plnt'g	0.25		Precip (>.1) Hvst-Post	0.00

TABLE 8. Seven-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Spring Wheat Variety Nurseries Grown Off-Station in a Wheat Stem Sawfly Environment at McKeever Farm & Seed, Inc., Loma. Northern Agricultural Research Center. Havre, Montana. 1998-2004.

2/ VARIETY or SELECTION		No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre) 2000	2001	2002	2003	2004	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	**7-YR COMP. AVE. YIELD 5/**	TEST WEIGHT (Pounds Per Bushel) 2000	2001	2002	2003	2004	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	**7-YR COMP. AVE. TEST WT 5/**
WB936	WB 936 (P+)	5	27.5	6.6	20.2	28.0	38.0	24.1	113.8	**27.5**	55.8	52.9	50.0	50.2	46.1	51.0	96.1	**51.4**
PI619086	EXPLORER (hard white)	5	30.8	9.2	18.1	26.3	35.8	24.1	113.7	**27.4**	54.9	53.5	50.2	51.3	47.4	51.5	97.0	**51.9**
WPB926	WB 926 (P)	6	32.1	7.6	15.4	27.8	34.6	25.3	110.7	**26.7**	55.3	53.0	50.0	50.5	46.6	50.6	94.8	**50.7**
ND695	REEDER (+)	6	30.4	7.1	22.0	25.2	31.8	25.1	109.7	**26.5**	55.9	53.6	52.4	52.5	47.1	52.8	98.3	**52.6**
MT9874	OUTLOOK	4		9.0	16.1	26.2	35.5	21.7	109.0	**26.3**		53.4	50.4	49.8	46.8	50.1	94.4	**50.5**
WBEXPRES	WB EXPRESS (P+)	4	27.3	6.5	23.8	24.4		20.5	108.4	**26.2**	52.8	54.2	52.7	50.7		52.6	97.1	**51.9**
BZ992588	CONAN (P+) (sawfly tol)	6	26.0	7.1	18.0	24.9	35.8	24.8	108.1	**26.1**	56.7	56.7	52.8	54.2	50.0	54.3	101.0	**54.0**
PI574642	McNEAL	7	29.8	9.2	13.2	28.6	31.7	26.0	107.7	**26.0**	53.1	53.4	50.7	50.2	47.1	50.5	94.5	**50.5**
PI607557	SCHOLAR (+)(mod.sf res)	7	28.5	8.0	19.3	26.7	29.1	25.6	106.3	**25.6**	56.3	55.6	53.8	56.0	50.1	53.9	100.8	**53.9**
BZ992322	HANK	3			14.5	28.5	33.1	25.4	105.8	**25.5**			48.3	50.0	45.0	47.8	90.6	**48.4**
CI17430	NEWANA	7	25.3	8.4	17.2	25.7	31.6	24.6	102.1	**24.6**	55.0	55.7	52.5	50.4	47.7	51.6	96.4	**51.6**
MT9929	CHOTEAU (++)(sawfly resis.)	4		7.4	14.4	24.7	34.7	20.3	101.9	**24.6**		53.4	49.3	52.9	49.3	51.2	96.5	**51.6**
PI549275	HI-LINE	7	27.3	9.1	14.1	26.7	30.9	24.5	101.4	**24.5**	54.2	51.6	49.0	49.2	44.5	49.6	92.7	**49.6**
PI527682	AMIDON (mod.swfly res.)	7	28.5	9.0	15.4	25.9	24.4	24.5	101.4	**24.5**	55.7	54.3	52.3	55.0	51.1	53.3	99.7	**53.3**
CI13596	FORTUNA (sawfly resis.)	7	26.1	7.7	13.8	28.0	30.1	24.1	100.0	**24.1**	55.7	54.0	52.1	54.9	51.3	53.5	100.0	**53.5**
PI592761	ERNEST (+) (sawfly res.)	7	28.3	8.6	16.0	23.7	28.0	23.5	97.6	**23.5**	56.8	54.7	52.6	54.1	50.0	53.1	99.4	**53.1**
MTHW9420	MT8182/MT8289 (hrd wht)	6	25.9	6.7	14.6	23.7	32.4	21.7	94.6	**22.8**	53.8	51.9	49.0	48.9	45.2	50.0	93.1	**49.8**
C982-324	WB RAMBO (P+) (mod sf)	7	27.5	8.9	11.9	23.2	27.4	22.7	94.0	**22.7**	57.0	56.1	53.6	54.6	47.5	53.1	99.3	**53.1**
CI17429	LEW (sawfly resistant)	6	21.8	7.6	13.0	23.9		20.6	89.2	**21.5**	54.6	53.9	52.0	51.4		52.9	98.2	**52.5**
MEANS (For Entries Listed)			27.7	8.0	16.4	25.9	32.1			25.1	55.2	54.0	51.3	51.9	47.8			51.8
6/ Growing Season Precipitation (in.)			Pndg	Pndg	8.75	3.15	7.38	6.43										
Soil PAW (in.) to SD @ Planting			Pndg	Pndg	Pndg	8.43	6.16	7.30										
Total Plant Available Water (in.)			Pndg	Pndg	Pndg	11.58	13.54	12.56										
Soil NO3 (lbs.) to SD at Planting			Pndg	Pndg	Pndg	146.0	260.0	203.0										
SD (Sampling Depth in Inches)			48.0	48.0	48.0	48.0	48.0	48.0										
Fertilizer Applied	(# N)		65.0	65.0	70.0	70.0	70.0	68.6										
	(# P_2O_5)		40.0	40.0	40.0	40.0	40.0	40.0										
	(# K_2O)		25.0	25.0	25.0	25.0	25.0	25.0										

Check Variety is Fortuna

1/ See MCES Bulletin 1093 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/ for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selecton decisions.

2/ P = Private Variety, + = Protected Variety, ++ PVP Title 5 Pending

3/ Only the most recent 5 years are shown, but summary calculations include all years noted.

4/ Percent of Fortuna yield or test weight for the same data years as those in which a given entry was tested.

5/ 7-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Fortuna for the same years, and z = 7-Yr average yield or test weight for the check variety Fortuna.

6/ Seeding to 14 days prior to harvest maturity.

Research is being conducted at this location is to evaluate varieties and breeding materials in the presence of wheat stem sawfly. Sawfly pressure was weak in 1998, but was significant in 1999 and 2000. Hail damage at the location confounded studies in 1999. Heat and/or drought stress was prevalent at critical growth stages during most years since 1999. The plot combine was equipped with pick-up guards similar to those commonly used on full-scale combines for straight-cut harvest under sawfly damage conditions.

TABLE 9. Dryland Fallow Spring Durum Cultivar Evaluation Nursery Grown Off-Station at the Leon Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, Montana. 2004. (Exp# 04-9851-SW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	2/ PROTEIN %	SAWFLY % Cut
D91080	PLAZA	100.0	28.3	58.6	12.2	62.6	13.5	10.0
ACAVONLE	AC AVONLEA	99.0	34.2	54.3	11.7	62.7	15.0	10.0
D89135	MAIER	100.0	31.1	50.5	13.4	61.8	14.5	25.0
PIERCE	PIERCE	99.7	32.1	50.4	13.5	62.7	13.8	25.0
D901313	MOUNTRAIL	99.0	31.2	50.3	13.3	61.8	14.3	31.7
CANKYLE	KYLE	100.0	35.3	50.2	13.2	62.5	14.5	25.0
DILSE	DILSE	99.7	32.1	49.1	12.6	61.8	14.8	30.0
NDMUNICH	MUNICH	99.3	31.5	48.4	12.1	60.9	14.6	26.7
D901442	LEBSOCK	99.7	31.2	48.3	12.8	62.0	14.3	21.7
PI574642	MCNEAL	98.6	31.1	47.8	12.5	61.8	14.3	36.7
D87130	BEN	100.0	32.0	46.3	12.5	62.0	15.1	25.0
CI 17789	VIC	100.0	33.2	45.0	13.2	61.9	14.4	31.7
PI478289	MONROE	99.7	33.8	42.0	13.0	60.9	14.7	40.0
EXPERIMENTAL MEANS		99.6	32.1	49.3	12.8	62.0	18.5	26.0
LSD (0.05)		1.7	2.3	4.1	1.3	0.6	.	11.1
C.V.2: (S of MEAN / MEAN)*100		0.6	2.4	2.9	3.4	0.4	.	14.6

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight for durum.
2/ Protein values are adjusted to 12 percent grain moisture.

Site Resource & Management Data: (Exp# 04-9851-SW)							
Field		SaltHaz(MMHOS/cm)6-24"	0.72	2" Soil Temp (^{o}F) @ Plnt'g	84
Quarter		Soil Texture 0-6"	CL	4" Soil Temp (^{o}F) @ Plnt'g	62
Section	13	Soil Texture 6-24"	CL	Fertilizer Formulation	Gran.Blend
Township	36N	Soil Texture 24-36"	CL+	Fertilizer Placement	Bnd at Plntg
Range	25E	Soil Texture 36-48"	CL+	Fert. Rate (lbs/ac) N	70
Latitude	N48 52.587'	Init Zn (ppm) 0-6"	0.4	Fert. Rate (lbs/ac) P2O5	40
Longitude	W108 23.539'	Init Mn (ppm) 0-6"	7.4	Fert. Rate (lbs/ac) K2O	25
Soil Series		Init Cu (ppm) 0-6"	0.7	Herbicide App. Date	6/16
pH 0-6"	6.3	Init Fe (ppm) 0-6"	15.7	Herbicide Product	Achieve/MCPE
Org.Matter (%) 0-6"	0.9	CEC 0-6"	21.8	Herbicide Rate (/ac)	1/2 lb / 1 pt
Init N (lbs/ac) 0-6"	18	Init PAW (in.) 0-6"	0.88	Precip (in.) Plnt'g-Harvest	13.73
Init N (lbs/ac) 6-24"	42	Init PAW (in.) 6-24"	2.62	Precip (>.1) Plnt'g-Harvest	12.45
Init N (lbs/ac) 24-36"	24	Init PAW (in.) 24-36"	2.00	Harvest Date	9/16
Init N (lbs/ac) 36-48"	20	Init PAW (in.) 36-48"	1.90	Rooting Depth (in.)	n/a
Init P (ppm) Olsen 0-6"	7	Cropping System	CT-MechFlw	Post PAW (in.) 0-6"	soil too hard
Init K (ppm) 0-6"	232	Planting Date	5/7	Post PAW (in.) 6-24"	to sample
Init S (ppm) 0-24"	32	Planting Depth (in.)	1.5	Post PAW (in.) 24-36"	
Init Na (MEQ/100g) 0-6"	0.08	Moist Soil Depth @Plnt'g	48+	Post PAW (in.) 36-48"	
SaltHaz (MMHOS/cm) 0-6"	0.44	Dry Surf Soil (in.) @Plnt'g	2.0	Precip (>.1) Hvst-Post	n/a

TABLE 10. Three-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Spring Durum Variety Nurseries Grown Off-Station at the Leon Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, Montana. 2002-2004.

2/ VARIETY or SELECTION		No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre) 2002	2003	2004	2005	2006	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	**3-YR COMP. AVE. YIELD 5/**	TEST WEIGHT (Pounds Per Bushel) 2002	2003	2004	2005	2006	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	**3-YR COMP. AVE. TEST WT 5/**
D91080	PLAZA	3	49.5	20.9	58.6			43.0	121.9	**43.0**	61.9	58.8	62.6			61.1	100.0	**61.1**
ACAVONLE	AC AVONLEA	3	39.8	21.2	54.3			38.5	109.0	**38.5**	61.2	59.2	62.7			61.0	99.9	**61.0**
D901313	MOUNTRAIL	3	34.5	21.9	50.3			35.6	100.8	**35.6**	61.4	58.4	61.8			60.5	99.1	**60.5**
CANKYLE	KYLE	3	34.2	21.4	50.2			35.3	100.0	**35.3**	60.9	59.8	62.5			61.1	100.0	**61.1**
D89135	MAIER	3	33.3	21.4	50.5			35.1	99.4	**35.1**	60.9	58.7	61.8			60.5	99.0	**60.5**
D901442	LEBSOCK	3	34.6	21.4	48.3			34.8	98.6	**34.8**	61.6	59.7	62.0			61.1	100.0	**61.1**
NDMUNICH	MUNICH	3	32.1	21.9	48.4			34.1	96.7	**34.1**	59.0	58.2	60.9			59.3	97.1	**59.3**
PI574642	McNEAL	3	32.3	22.2	47.8			34.1	96.7	**34.1**	59.5	56.6	61.8			59.3	97.1	**59.3**
D87130	BEN	3	31.1	22.7	46.3			33.3	94.5	**33.3**	60.6	59.9	62.0			60.8	99.6	**60.8**
CI 17789	VIC	3	29.0	22.6	45.0			32.2	91.3	**32.2**	60.3	59.9	61.9			60.7	99.3	**60.7**
PI478289	MONROE	3	27.7	21.8	42.0			30.5	86.4	**30.5**	59.5	58.9	60.9			59.8	97.8	**59.8**
MEANS (For Entries Listed)			34.4	21.8	49.3					35.1	60.6	58.9	61.9					60.5
6/ Growing Season Precipitation (in.)			9.60	3.12	13.73			8.82										
Soil PAW (in.) to SD @ Planting			7.24	6.96	7.39			6.81										
Total Plant Available Water (in.)			16.84	10.08	21.12			13.42										
Soil NO3 (lbs.) to SD at Planting			52	160	104			88.0										
SD (Sampling Depth in Inches)			48	48	48			48.0										
Fertilizer Applied		(# N)	62	70	70			68.0										
		(# P_2O_5)	35	40	40			38.8										
		(# K_2O)	0	25	25			18.8										

Check Variety is Kyle

1/ See MCES Bulletin 1093 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/ for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selecton decisions.

2/ P = Private Variety, + = Protected Variety

3/ Only the most recent 5 years are shown, but summary calculations include all years noted.

4/ Percent of Kyle yield or test weight for the same data years as those in which a given entry was tested.

5/ 3-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Kyle for the same years, and z = 3-Yr average yield or test weight for the check variety Kyle.

6/ Seeding to 14 days prior to harvest maturity.

TABLE 11. Dryland Fallow Spring Durum Cultivar Evaluation Nursery Grown Off-Station at McKeever Farm & Seed, Inc., Loma. Northern Agricultural Research Center. Havre, Montana. 2004. (Exp# 04-9857-SW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	2/ PROTEIN %	SAWFLY % Cut
PI574642	MCNEAL	99.4	32.9	33.5	9.3	48.7	19.6	0.0
D901442	LEBSOCK	99.7	35.7	31.1	9.7	54.3	20.6	0.0
CI 17789	VIC	100.0	38.4	29.4	9.1	53.7	22.0	0.0
D87130	BEN	99.7	37.9	29.0	9.0	51.9	21.1	0.0
NDMUNICH	MUNICH	99.4	35.0	28.8	8.8	50.3	22.4	0.0
PI478289	MONROE	100.0	38.3	28.7	8.8	50.9	21.6	0.0
ACAVONLE	AC AVONLEA	100.0	39.0	27.7	8.9	52.0	22.1	0.0
D89135	MAIER	100.0	34.4	27.3	8.9	50.3	23.3	0.0
DILSE	DILSE	99.7	34.2	27.0	9.0	52.3	23.1	0.0
PIERCE	PIERCE	100.0	36.8	26.6	9.4	52.6	21.7	0.0
CANKYLE	KYLE	99.7	36.9	26.0	9.3	53.0	22.7	0.0
D901313	MOUNTRAIL	100.0	37.6	25.3	8.9	50.2	22.3	0.0
D91080	PLAZA	100.0	28.7	24.5	8.4	50.1	22.5	0.0
EXPERIMENTAL MEANS		99.8	35.8	28.1	9.0	51.6	21.9	0.0
LSD (0.05)		0.9	4.3	5.5	0.5	1.0	.	.
C.V.2: (S of MEAN / MEAN)*100		0.3	4.1	6.7	1.8	0.7	.	.

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight for durum.
2/ Protein values are adjusted to 12 percent grain moisture.

Site Resource & Management Data: (Exp# 04-9857-SW)							
Field		SaltHaz(MMHOS/cm)6-24"	1.12		2" Soil Temp (^{o}F) @ Plnt'g	72
Quarter	SE	Soil Texture 0-6"	CL-		4" Soil Temp (^{o}F) @ Plnt'g	62
Section	16	Soil Texture 6-24"	CL+		Fertilizer Formulation	Gran.Blend
Township	27N	Soil Texture 24-36"	CL+		Fertilizer Placement	Bnd at Plntg
Range	10E	Soil Texture 36-48"	CL+		Fert. Rate (lbs/ac) N	70
Latitude	N48 05.814'	Init Zn (ppm) 0-6"	0.5		Fert. Rate (lbs/ac) P2O5	40
Longitude	W110 27.491'	Init Mn (ppm) 0-6"	19		Fert. Rate (lbs/ac) K2O	25
Soil Series		Init Cu (ppm) 0-6"	1.2		Herbicide App. Date	n/a
pH 0-6"	5.4	Init Fe (ppm) 0-6"	47.6		Herbicide Product	n/a
Org.Matter (%) 0-6"	1.4	CEC 0-6"	21.8		Herbicide Rate (/ac)	n/a
Init N (lbs/ac) 0-6"	24	Init PAW (in.) 0-6"	0.74		Precip (in.) Plnt'g-Harvest	7.38
Init N (lbs/ac) 6-24"	96	Init PAW (in.) 6-24"	2.76		Precip (>.1) Plnt'g-Harvest	6.96
Init N (lbs/ac) 24-36"	96	Init PAW (in.) 24-36"	1.33		Harvest Date	8/9
Init N (lbs/ac) 36-48"	44	Init PAW (in.) 36-48"	1.33		Rooting Depth (in.)	n/a
Init P (ppm) Olsen 0-6"	35	Cropping System	NT-ChmFlw		Post PAW (in.) 0-6"	n/a
Init K (ppm) 0-6"	409	Planting Date	4/26		Post PAW (in.) 6-24"	n/a
Init S (ppm) 0-24"	44	Planting Depth (in.)	1.5		Post PAW (in.) 24-36"	n/a
Init Na (MEQ/100g) 0-6"	0.13	Moist Soil Depth @Plnt'g	48+		Post PAW (in.) 36-48"	n/a
SaltHaz (MMHOS/cm) 0-6"	0.44	Dry Surf Soil (in.) @Plnt'g	0.25		Precip (>.1) Hvst-Post	0.00

TABLE 12. Dryland Fallow Spring Barley Cultivar Evaluation Nursery Grown Off-Station at the Leon Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, Montana. 2004. (Exp# 04-3651-SB)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	PLUMP %	THIN %	2/ PROTEIN %
MT970229	MT970229	98.3	28.7	72.5	12.8	52.9	96.5	1.4	12.8
PI568246	BARONESSE	99.7	25.8	71.9	12.7	50.0	87.6	4.5	12.8
MT960228	MT960228	100.0	27.0	70.1	12.4	50.7	91.7	3.2	12.4
PI610264	VALIER	99.7	28.9	70.1	12.5	51.0	88.7	3.9	13.7
MT950186	HAXBY	97.6	28.0	69.7	12.8	51.9	94.4	2.1	12.7
TR150	COPELAND	99.3	32.0	68.7	12.6	48.3	84.7	6.3	12.9
MT910189	MT910189	99.7	27.9	67.5	12.7	51.9	93.8	3.2	12.4
TR232	METCALFE	97.6	29.3	67.4	12.7	50.4	90.4	3.7	13.1
SK 76333	HARRINGTON	97.9	26.3	65.9	12.5	50.1	91.0	3.6	13.1
MT970116	MT970116	98.3	31.5	65.0	12.7	52.3	94.7	2.6	13.0
PI491534	GALLATIN	99.3	28.5	63.4	12.7	51.5	90.4	3.6	13.3
6B952482	TRADITION	97.2	29.3	58.4	12.0	48.8	89.0	2.7	14.1
PI613703	LACEY	98.6	27.1	56.3	12.1	48.7	85.3	4.4	13.3
ND13299	CONLON	97.9	29.4	51.7	12.8	50.5	96.5	1.6	13.6
MT981060	HAYS	98.6	28.1	14.2	12.3	46.0	64.7	18.0	13.1
PI533600	HAYBET	98.6	30.0	13.8	11.9	45.2	46.7	23.4	13.6
EXPERIMENTAL MEANS		98.6	28.6	59.2	12.5	50.0	86.6	5.5	13.1
LSD (0.05)		3.5	4.0	6.8	0.4	0.9	7.3	3.7	.
C.V.2: (S of MEAN / MEAN)*100		1.2	4.8	4.0	1.1	0.6	2.9	23.1	.

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 48 lbs/bu as the standard test weight for barley.
2/ Protein values are reported on a 100% dry matter basis.

Site Resource & Management Data: (Exp# 04-3651-SB)							
Field		SaltHaz(MMHOS/cm)6-24"	0.72		2" Soil Temp (^{o}F) @ Plnt'g	84
Quarter		Soil Texture 0-6"	CL		4" Soil Temp (^{o}F) @ Plnt'g	62
Section	13	Soil Texture 6-24"	CL		Fertilizer Formulation	Gran.Blend
Township	36N	Soil Texture 24-36"	CL+		Fertilizer Placement	Bnd at Plntg
Range	25E	Soil Texture 36-48"	CL+		Fert. Rate (lbs/ac) N	70
Latitude	N48 52.587'	Init Zn (ppm) 0-6"	0.4		Fert. Rate (lbs/ac) P2O5	40
Longitude	W108 23.539'	Init Mn (ppm) 0-6"	7.4		Fert. Rate (lbs/ac) K2O	25
Soil Series		Init Cu (ppm) 0-6"	0.7		Herbicide App. Date	6/16
pH 0-6"	6.3	Init Fe (ppm) 0-6"	15.7		Herbicide Product	Achieve/MCPE
Org.Matter (%) 0-6"	0.9	CEC 0-6"	21.8		Herbicide Rate (/ac)	1/2 lb / 1 pt
Init N (lbs/ac) 0-6"	18	Init PAW (in.) 0-6"	0.88		Precip (in.) Plnt'g-Harvest	13.73
Init N (lbs/ac) 6-24"	42	Init PAW (in.) 6-24"	2.62		Precip (>.1) Plnt'g-Harvest	12.45
Init N (lbs/ac) 24-36"	24	Init PAW (in.) 24-36"	2.00		Harvest Date	9/16
Init N (lbs/ac) 36-48"	20	Init PAW (in.) 36-48"	1.90		Rooting Depth (in.)	n/a
Init P (ppm) Olsen 0-6"	7	Cropping System	CT-MechFlw		Post PAW (in.) 0-6"	soil too hard
Init K (ppm) 0-6"	232	Planting Date	5/7		Post PAW (in.) 6-24"	to sample
Init S (ppm) 0-24"	32	Planting Depth (in.)	1.5		Post PAW (in.) 24-36"	
Init Na (MEQ/100g) 0-6"	0.08	Moist Soil Depth @Plnt'g	48+		Post PAW (in.) 36-48"	
SaltHaz (MMHOS/cm) 0-6"	0.44	Dry Surf Soil (in.) @Plnt'g	2.0		Precip (>.1) Hvst-Post	n/a

TABLE 13. Ten-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Barley Variety Nurseries Grown Off-Station at the Leon Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, Montana. 1995-2004.

2/ VARIETY or SELECTION		No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre) 2000	2001	2002	2003	2004	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	**10-YR COMP. AVE. YIELD 5/**	TEST WEIGHT (Pounds Per Bushel) 2000	2001	2002	2003	2004	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	**10-YR COMP. AVE. TEST WT 5/**
BZ594-19	WPB XENA (P+)	4	77.7	49.3	60.9	40.2		57.0	117.7	**62.1**	53.5	52.7	50.1	46.4		50.7	101.8	**50.7**
MT960100	MT960100	3	74.7	46.1	54.6			58.5	112.4	**59.3**	53.3	51.4	50.3			51.7	99.9	**49.7**
MT970229	MT970229	3			51.0	36.8	72.5	53.4	111.0	**58.5**			51.1	46.2	52.9	50.1	103.7	**51.7**
MT960099	MT960099	4	80.3	42.2	56.3	35.1		53.5	110.4	**58.2**	53.5	50.4	49.8	45.3		49.7	100.0	**49.8**
MTLB5	MTLB 5	3	74.1	47.0				66.1	108.2	**57.0**	53.5	52.2				52.6	100.6	**50.1**
PI610264	VALIER (+)	5	72.3	40.8	52.9	32.6	70.1	53.7	104.5	**55.1**	53.3	51.7	50.1	46.1	51.0	50.4	100.7	**50.1**
MT960228	ESLICK	5	76.2	44.0	44.0	34.3	70.1	53.7	104.5	**55.1**	54.3	53.3	50.5	45.8	50.7	50.9	101.6	**50.6**
MT950186	HAXBY (+)	5	62.8	33.5	43.7	48.5	69.7	51.7	100.5	**53.0**	54.5	54.1	50.7	48.5	51.9	51.9	103.6	**51.6**
CI11856	LEWIS	7	73.5	38.0	44.9			53.5	100.4	**52.9**	54.9	50.6	50.1			50.7	100.6	**50.1**
PI491134	GALLATIN	9	68.7	43.9	43.3	37.8	63.4	52.7	100.0	**52.7**	53.9	51.8	49.4	43.9	51.5	49.8	100.0	**49.8**
PI568246	BARONESSE (P+)	9	81.2	57.9	55.7	34.3	71.9	52.7	100.0	**52.7**	52.9	52.1	49.3	44.3	50.0	49.8	100.0	**49.8**
SK76333	HARRINGTON	9	68.4	33.9	49.1	33.8	65.9	52.3	99.3	**52.3**	52.9	48.0	49.2	44.5	50.1	48.3	97.0	**48.3**
ND9866	STARK	6	51.6	40.9				52.7	95.9	**50.5**	54.1	52.9				49.8	98.5	**49.0**
ND13299	CONLON	4		47.8	41.2	38.8	51.7	44.9	95.3	**50.2**		45.0	48.9	47.9	50.5	48.1	97.8	**48.7**
MT970116	MT970116	4		38.0	42.9	33.6	65.0	44.9	95.2	**50.2**		51.2	49.4	46.2	52.3	49.8	101.2	**50.4**
MEANS (For Entries Listed)			71.8	43.1	49.3	36.9	66.7			54.7	53.7	51.2	49.9	45.9	51.2			50.0
6/ Growing Season Precipitation (in.)			Pndg	Pndg	Pndg	3.11	13.73	7.16										
Soil PAW (in.) to SD @ Planting			Pndg	Pndg	5.65	6.96	7.39	5.99										
Total Plant Available Water (in.)			Pndg	Pndg	5.65	10.07	21.12	12.13										
Soil NO3 (lbs.) to SD at Planting			Pndg	Pndg	36	160	104	70.86										
SD (Sampling Depth in Inches)			48	48	48	48.0	48.0	48.00										
Fertilizer Applied	(# N)		70	70	62	70.0	70.0	67.20										
	(# P_2O_5)		40	40	35	40.0	40.0	36.00										
	(# K_2O)		25	25	0	25.0	25.0	14.60										

Check Variety is Gallatin

1/ See MCES Bulletin 1094 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/ for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selecton decisions.

2/ P = Private Variety, + = Protected Variety

3/ Only the most recent 5 years are shown, but summary calculations include all years noted.

4/ Percent of Gallatin yield or test weight for the same data years as those in which a given entry was tested.

5/ 10-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Gallatin for the same years, and z = 10-Yr average yield or test weight for the check variety Gallatin.

6/ Seeding to 14 days prior to harvest maturity.

1999 nursery not planted due to wet conditions extending throughout and beyond the normal seeding period for this location.

TABLE 14. Dryland Fallow Spring Barley Cultivar Evaluation Nursery Grown Off-Station at the Flansaas-Lumsden Farm, Loring. Northern Agricultural Research Center. Havre, Montana. 2004. (Exp# 04-3655-SB)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	PLUMP %	THIN %	2/ PROTEIN %
MT970229	MT970229	100.0	26.9	77.7	10.9	51.8	94.8	1.8	12.7
PI568246	BARONESSE	100.0	25.4	73.3	10.8	49.1	89.2	4.2	12.9
MT970116	MT970116	100.0	30.1	72.6	10.9	51.5	93.5	2.6	12.2
MT910189	MT910189	100.0	26.0	72.1	11.0	52.1	95.5	1.8	12.3
PI610264	VALIER	100.0	25.8	71.5	10.9	50.8	89.0	2.6	13.5
MT960228	MT960228	100.0	25.7	70.5	10.8	50.1	90.7	3.4	12.6
TR150	COPELAND	100.0	29.8	70.0	10.7	47.9	85.6	6.4	13.1
MT950186	HAXBY	100.0	26.1	69.9	11.0	51.8	92.3	2.9	12.7
MT981060	HAYS	100.0	27.1	69.1	10.6	47.6	75.9	10.8	13.3
TR232	METCALFE	100.0	27.4	68.1	10.8	49.9	90.4	3.4	13.1
PI491534	GALLATIN	100.0	28.9	67.9	10.9	50.9	90.8	3.4	12.4
SK 76333	HARRINGTON	100.0	28.0	67.2	10.7	49.1	91.2	4.4	13.0
6B952482	TRADITION	100.0	30.3	63.4	10.4	49.2	95.2	1.2	13.3
PI613703	LACEY	100.0	27.7	61.2	10.4	48.2	86.9	3.8	13.6
PI533600	HAYBET	100.0	26.8	59.7	10.5	47.1	66.8	11.8	14.2
ND13299	CONLON	100.0	29.4	59.6	10.9	50.5	96.5	1.2	12.8
EXPERIMENTAL MEANS		100.0	27.6	68.4	10.8	49.9	89.0	4.1	13.0
LSD (0.05)		0.0	3.4	5.7	0.2	0.6	4.6	1.8	.
C.V.2: (S of MEAN / MEAN)*100		0.0	4.3	2.9	0.5	0.4	1.8	15.5	.

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 48 lbs/bu as the standard test weight for barley.
2/ Protein values are reported on a 100% dry matter basis.

Site Resource & Management Data: (Exp# 04-3655-SB)							
Field		SaltHaz(MMHOS/cm)6-24"	0.72		2" Soil Temp (^{o}F) @ Plnt'g	78
Quarter		Soil Texture 0-6"	CL-		4" Soil Temp (^{o}F) @ Plnt'g	66
Section	2	Soil Texture 6-24"	CL		Fertilizer Formulation	Gran.Blend
Township	35N	Soil Texture 24-36"	CL		Fertilizer Placement	Bnd at Plntg
Range	29E	Soil Texture 36-48"	SCL		Fert. Rate (lbs/ac) N	70
Latitude	N48 46.602'	Init Zn (ppm) 0-6"	0.5		Fert. Rate (lbs/ac) P2O5	40
Longitude	W107 52.929'	Init Mn (ppm) 0-6"	10.4		Fert. Rate (lbs/ac) K2O	25
Soil Series		Init Cu (ppm) 0-6"	0.5		Herbicide App. Date	6/12
pH 0-6"	5.8	Init Fe (ppm) 0-6"	43.2		Herbicide Product	Bronate
Org.Matter (%) 0-6"	1.4	CEC 0-6"	21.8		Herbicide Rate (/ac)	16 oz
Init N (lbs/ac) 0-6"	10	Init PAW (in.) 0-6"	0.80		Precip (in.) Plnt'g-Harvest	10.88
Init N (lbs/ac) 6-24"	30	Init PAW (in.) 6-24"	2.28		Precip (>.1) Plnt'g-Harvest	9.42
Init N (lbs/ac) 24-36"	12	Init PAW (in.) 24-36"	1.36		Harvest Date	9/9
Init N (lbs/ac) 36-48"	8	Init PAW (in.) 36-48"	1.79		Rooting Depth (in.)	38"
Init P (ppm) Olsen 0-6"	21	Cropping System	NT-ChmFlw		Post PAW (in.) 0-6"	0.80
Init K (ppm) 0-6"	286	Planting Date	5/4		Post PAW (in.) 6-24"	2.28
Init S (ppm) 0-24"	18	Planting Depth (in.)	1.5		Post PAW (in.) 24-36"	1.36
Init Na (MEQ/100g) 0-6"	0.07	Moist Soil Depth @Plnt'g	48+		Post PAW (in.) 36-48"	1.79
SaltHaz (MMHOS/cm) 0-6"	0.28	Dry Surf Soil (in.) @Plnt'g	1.3		Precip (>.1) Hvst-Post	0.00

TABLE 15. Nine-Year Yield and Test Weight Summary of Selected Entries from Dryland Fallow Barley Variety Nurseries Grown Off-Station at the Flansaas/Lumsden Farm, Loring. Northern Agricultural Research Center. Havre, Montana. 1996-2004.

2/ VARIETY or SELECTION		No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre) 2000	2001	2002	2003	2004	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	**9-YR COMP. AVE. YIELD 5/**	TEST WEIGHT (Pounds Per Bushel) 2000	2001	2002	2003	2004	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	**9-YR COMP. AVE. TEST WT 5/**
MT970229	MT970229	3			60.2	53.0	77.7	63.6	112.1	**59.5**			47.5	45.5	51.8	48.3	101.4	**49.8**
MT960100	MT960100	3	57.0	57.3	57.9			57.4	109.6	**58.2**	51.3	52.1	46.8			50.1	100.2	**49.2**
BZ594-19	WPB XENA (P+)	5	51.4	59.1	56.4	53.1		59.4	107.2	**56.9**	51.1	52.1	44.9	45.7		48.6	98.1	**48.1**
PI568246	BARONESSE (P+)	9	56.7	57.8	57.3	51.0	73.3	56.5	106.4	**56.5**	50.8	51.3	43.4	45.0	49.1	47.6	97.0	**47.6**
MT950186	HAXBY (+)	6	54.8	54.7	56.1	56.2	69.9	61.1	106.2	**56.4**	53.7	53.4	47.6	48.9	51.8	51.3	103.1	**50.6**
MT960099	MT960099	4	57.4	53.5	55.1	51.9		54.5	104.7	**55.6**	52.5	51.0	45.4	46.5		48.8	99.7	**48.9**
MTLB13	MTLB 13	3	52.1	54.9				60.3	103.4	**54.9**	51.2	51.1				50.8	97.8	**48.0**
MTLB5	MTLB 5	4	52.7	57.2				56.8	103.2	**54.8**	52.3	52.5				50.7	100.7	**49.4**
PI610264	VALIER (+)	6	54.8	51.4	56.0	48.6	71.5	59.3	103.0	**54.7**	52.3	52.4	46.2	47.0	50.8	49.9	100.2	**49.2**
MT960228	ESLICK	6	56.1	51.2	52.2	48.6	70.5	58.9	102.3	**54.3**	51.6	51.6	45.3	46.2	50.1	49.3	99.1	**48.6**
PI491534	GALLATIN	9	51.2	54.4	51.5	50.9	67.9	53.1	100.0	**53.1**	51.9	52.2	45.8	46.1	50.9	49.1	100.0	**49.1**
MT970116	MT970116	4		46.3	51.6	53.3	72.6	55.9	99.6	**52.9**		53.7	47.7	47.2	51.5	50.0	102.6	**50.3**
CI15856	LEWIS	7	58.2	51.5	51.8			50.5	98.6	**52.3**	52.4	52.3	45.7			49.6	100.8	**49.5**
ND13299	CONLON	4		55.2	52.7	52.0	59.6	54.9	97.7	**51.8**		51.3	44.0	45.1	50.5	47.7	97.9	**48.1**
SK76333	HARRINGTON	9	52.8	53.0	49.6	47.6	67.2	50.9	95.8	**50.9**	50.9	50.6	44.5	44.4	49.1	47.8	97.4	**47.8**
ND9866	STARK	6	44.2	45.5				44.8	87.5	**46.4**	53.2	53.4				50.6	101.6	**49.9**
MEANS (For Entries Listed)			53.8	53.5	54.5	51.5	70.0			54.3	51.9	52.1	45.8	46.1	50.6			49.0
6/ Growing Season Precipitation (in.)			Pndg	Pndg	Pndg	5.59	10.88	6.33										
Soil PAW (in.) to SD @ Planting			Pndg	Pndg	Pndg	8.25	4.91	6.05										
Total Plant Available Water (in.)			Pndg	Pndg	Pndg	13.84	15.79	10.32										
Soil NO3 (lbs.) to SD at Planting			Pndg	Pndg	Pndg	76.0	60.0	69.20										
SD (Sampling Depth in Inches)			48.0	48.0	48.0	48.0	48.0	48.00										
Fertilizer Applied	(# N)		70.0	70.0	70.0	70.0	70.0	70.70										
	(# P_2O_5)		40.0	40.0	40.0	40.0	40.0	39.60										
	(# K_2O)		25.0	25.0	25.0	25.0	25.0	22.10										

Check Variety is Gallatin

1/ See MCES Bulletin 1094 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/ for evaluation of other important variety performance characteristics to include malting potential, disease resistance, etc. before making cultivar selecton decisions.

2/ P = Private Variety, + = Protected Variety

3/ Only the most recent 5 years are shown, but summary calculations include all years noted.

4/ Percent of Gallatin yield or test weight for the same data years as those in which a given entry was tested.

5/ 9-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Gallatin for the same years, and z = 9-Yr average yield or test weight for the check variety Gallatin.

6/ Seeding to 14 days prior to harvest maturity.

TABLE 16. Dryland Fallow Spring Barley Cultivar Evaluation Nursery Grown Off-Station at McKeever Farm & Seed, Inc., Loma. Northern Agricultural Research Center. Havre, Montana. 2004. (Exp# 04-3657-SB)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	PLUMP %	THIN %	2/ PROTEIN %
ND13299	CONLON	99.7	38.4	72.0	11.7	47.5	54.9	16.2	17.8
MT970229	MT970229	99.1	35.9	69.2	11.3	43.8	7.4	49.8	17.7
MT970116	MT970116	99.7	36.8	62.9	11.9	44.1	9.0	57.1	18.1
PI610264	VALIER	100.0	34.5	62.8	11.5	40.8	1.6	86.0	19.2
PI568246	BARONESSE	100.0	32.1	62.5	11.5	39.7	1.7	85.8	19.1
MT960228	MT960228	100.0	35.3	60.5	11.4	41.8	1.3	83.4	17.6
MT910189	MT910189	100.0	35.5	60.2	11.7	43.0	4.1	68.1	18.5
PI491534	GALLATIN	99.7	34.2	59.4	10.9	42.8	3.6	73.2	20.0
6B952482	TRADITION	97.8	34.8	59.3	11.1	38.6	2.2	89.0	18.6
SK 76333	HARRINGTON	99.4	36.3	58.1	11.4	37.9	4.4	67.5	20.3
MT950186	HAXBY	99.4	34.9	56.3	11.5	46.6	7.2	55.9	19.0
PI613703	LACEY	100.0	34.1	55.0	11.4	36.9	2.2	89.5	17.9
MT981060	HAYS	100.0	31.0	50.8	11.1	38.4	0.5	96.4	19.7
TR232	METCALFE	100.0	32.6	50.4	11.6	39.3	2.8	82.0	20.8
TR150	COPELAND	99.4	32.1	43.7	11.1	37.3	2.1	88.7	21.4
PI533600	HAYBET	100.0	35.1	42.6	11.0	41.0	0.4	95.1	20.5
EXPERIMENTAL MEANS		99.6	34.6	57.9	11.4	41.2	6.6	74.0	19.1
LSD (0.05)		1.3	3.5	8.1	0.7	1.2	5.0	9.3	.
C.V.2: (S of MEAN / MEAN)*100		0.4	3.5	4.9	2.1	1.0	26.5	4.4	.

1/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 48 lbs/bu as the standard test weight for barley.
2/ Protein values are reported on a 100% dry matter basis.

Site Resource & Management Data: (Exp# 04-3657-SB)							
Field		SaltHaz(MMHOS/cm)6-24"	1.12		2" Soil Temp (^{o}F) @ Plnt'g	72
Quarter	SE	Soil Texture 0-6"	CL-		4" Soil Temp (^{o}F) @ Plnt'g	62
Section	16	Soil Texture 6-24"	CL+		Fertilizer Formulation	Gran.Blend
Township	27N	Soil Texture 24-36"	CL+		Fertilizer Placement	Bnd at Plntg
Range	10E	Soil Texture 36-48"	CL+		Fert. Rate (lbs/ac) N	70
Latitude	N48 05.814'	Init Zn (ppm) 0-6"	0.5		Fert. Rate (lbs/ac) P2O5	40
Longitude	W110 27.491'	Init Mn (ppm) 0-6"	19		Fert. Rate (lbs/ac) K2O	25
Soil Series		Init Cu (ppm) 0-6"	1.2		Herbicide App. Date	n/a
pH 0-6"	5.4	Init Fe (ppm) 0-6"	47.6		Herbicide Product	n/a
Org.Matter (%) 0-6"	1.4	CEC 0-6"	21.8		Herbicide Rate (/ac)	n/a
Init N (lbs/ac) 0-6"	24	Init PAW (in.) 0-6"	0.74		Precip (in.) Plnt'g-Harvest	7.38
Init N (lbs/ac) 6-24"	96	Init PAW (in.) 6-24"	2.76		Precip (>.1) Plnt'g-Harvest	6.96
Init N (lbs/ac) 24-36"	96	Init PAW (in.) 24-36"	1.33		Harvest Date	8/9
Init N (lbs/ac) 36-48"	44	Init PAW (in.) 36-48"	1.33		Rooting Depth (in.)	32"
Init P (ppm) Olsen 0-6"	35	Cropping System	NT-ChmFlw		Post PAW (in.) 0-6"	0.63
Init K (ppm) 0-6"	409	Planting Date	4/26		Post PAW (in.) 6-24"	2.11
Init S (ppm) 0-24"	44	Planting Depth (in.)	1.5		Post PAW (in.) 24-36"	1.56
Init Na (MEQ/100g) 0-6"	0.13	Moist Soil Depth @Plnt'g	48+		Post PAW (in.) 36-48"	2.37
SaltHaz (MMHOS/cm) 0-6"	0.44	Dry Surf Soil (in.) @Plnt'g	0.25		Precip (>.1) Hvst-Post	0.00

TABLE 17. Six-Year Yield and Test Weight Summary of Selected Entries from Dryland Fallow Barley Variety Nurseries Grown Off-Station at McKeever Farm & Seed, Inc., Loma. Northern Agricultural Research Center. Havre, Montana. 1999-2004.

2/ VARIETY or SELECTION		No. of YEARS TESTED	1/ YIELD (Bushels Per Acre) 2000	2001	2002	2003	2004	AVE. for YEARS TESTED	% of CHECK YIELD 3/	**6-YR COMP. AVE. YIELD 4/**	TEST WEIGHT (Pounds Per Bushel) 2000	2001	2002	2003	2004	AVE. for YEARS TESTED	% of CHECK TEST WT 3/	**6-YR COMP. AVE. TEST WT 4/**
ND13299	CONLON	4		11.0	41.2	54.1	72.0	44.6	113.2	**47.6**		42.5	48.9	50.1	47.5	47.2	103.0	**48.0**
MT960099	MT960099	4	45.8	9.6	56.3	43.1		38.7	107.4	**45.2**	45.8	44.3	49.8	47.2		46.8	100.6	**46.9**
MT970229	MT970229	3			40.1	42.9	69.2	50.8	105.2	**44.2**			43.4	48.5	43.8	45.2	97.3	**45.3**
PI568246	BARONESSE (P+)	6	46.7	11.3	55.1	42.4	62.5	43.5	103.3	**43.5**	44.9	45.4	49.3	46.9	39.7	46.1	99.0	**46.1**
MT950186	HAXBY (+)	6	44.1	13.1	43.7	47.3	56.3	43.2	102.7	**43.2**	47.7	47.2	50.7	50.8	46.6	49.2	105.7	**49.2**
MT970116	MT970116	4		11.2	42.9	44.1	62.9	40.3	102.3	**43.1**		47.0	51.0	49.4	44.1	47.9	104.3	**48.6**
MT960228	ESLICK	6	43.2	11.3	44.0	42.4	60.5	42.9	102.1	**42.9**	47.2	46.3	50.5	49.2	41.8	47.4	101.7	**47.4**
BZ594-19	WPB XENA (P+)	5	42.4	10.9	60.9	39.6		39.3	101.8	**42.8**	45.9	46.1	50.1	48.0		47.9	101.3	**47.2**
PI491534	GALLATIN	6	46.0	12.7	43.3	42.1	59.4	42.1	100.0	**42.1**	45.4	44.1	49.4	47.3	42.8	46.6	100.0	**46.6**
MT960100	MT960100	3	38.7	7.3	54.6			33.5	98.5	**41.5**	45.3	46.5	50.3			47.3	102.3	**47.6**
ND9866	STARK	3	50.1	14.6				35.2	98.1	**41.3**	49.4	45.8				48.6	104.2	**48.5**
SK76333	HARRINGTON	6	42.1	10.3	49.1	36.0	58.1	40.7	96.6	**40.7**	44.6	44.7	49.2	46.9	37.9	45.3	97.3	**45.3**
PI610264	VALIER (+)	6	33.8	8.3	52.9	34.4	62.8	39.7	94.4	**39.7**	46.1	47.7	50.1	48.5	40.8	47.2	101.2	**47.2**
MTLB13	MTLB 13	3	43.4	10.2				33.6	93.7	**39.4**	44.5	45.2				46.6	99.8	**46.5**
CI15856	LEWIS	4	39.0	12.7	44.9			35.0	92.7	**39.0**	46.3	45.5	50.1			48.3	102.0	**47.5**
MTLB5	MTLB 5	3	39.1	5.8				29.1	81.0	**34.1**	46.3	46.9				48.0	102.9	**48.0**
MEANS (For Entries Listed)			42.6	10.7	48.4	42.6	62.6			41.9	46.1	45.7	49.5	48.4	42.8			47.2
5/ Growing Season Precipitation (in.)			Pndg	Pndg	8.75	3.15	7.38	6.4										
Soil PAW (in.) to SD @ Planting			Pndg	Pndg	Pndg	8.43	6.16	7.3										
Total Plant Available Water (in.)			Pndg	Pndg	Pndg	11.58	13.54	12.6										
Soil NO3 (lbs.) to SD at Planting			Pndg	Pndg	490.0	146.0	260.0	298.7										
SD (Sampling Depth in Inches)			48.0	48.0	48.0	48.0	48.0	48.0										
Fertilizer Applied		(# N)	65.0	70.0	61.0	70.0	70.0	67.7										
		(# P_2O_5)	40.0	40.0	52.0	40.0	40.0	42.0										
		(# K_2O)	25.0	25.0	25.0	25.0	25.0	25.0										

Check Variety is Gallatin

1/ See MCES Bulletin 1094 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/ for evaluation of other important variety performance characteristics to include malting potential, disease resistance, etc. before making cultivar selecton decisions.

2/ P = Private Variety, + = Protected Variety

3/ Percent of Gallatin yield or test weight for the same data years as those in which a given entry was tested.

4/ 6-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Gallatin for the same years, and z = 6-Yr average yield or test weight for the check variety Gallatin.

5/ Seeding to 14 days prior to harvest maturity.