

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

PRINCIPAL INVESTIGATOR: Gregg R. Carlson, Agronomist, Havre

Personnel: Peggy F. Lamb, Research Associate, Havre
Phil L. Bruckner, Breeder/Geneticist (WW), Bozeman
Luther E. Talbert, Breeder/Geneticist (SW), Bozeman
Tom K. Blake, Breeder/Geneticist (BLY), Bozeman
Joyce L. Eckhoff, Breeder/Agronomist (DURUM), Sidney
Jim E. Berg, Research Associate (WW), Bozeman
Susan P. Lanning, Research Associate (SW), Bozeman
Stan R. Bates, Research Associate (BLY), Bozeman
Eleri Haney, Research Assistant, Havre
Cooperating County Extension Agents
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, durum and oat production together in the five counties represents 29.0 percent of the 2004-2008 statewide total (43 percent and 21 percent 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 1982-2008 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 2009 ranged from fair to excellent across North Central Montana. At Havre, total annual growing season precipitation (9/1/08 through 8/31/09) was 12.46 inches, 4.71 percent more than the average for all years since 1916. April 1 through July 31 precipitation was 6.29 inches or 93 percent of the 94-year average. Heat units expressed as "Growing Degree Days" (GDD, base 50) from May through July were 1242, 96 percent of the average for the last 59 years (1951-2009). The last spring frost was 27 days late with the first fall frost 8 days late, resulting in 110 frost-free days, 19 days shorter than the 94-year average. September 2008 through March 2009 precipitation was 129 percent of the long-term average. The minimum winter temperature was -31 degrees F on December 15. The April through July growing season saw an average daily temperature at 56.5 degrees F, 1.2 degrees below normal. July and August average temperatures were 1.1 percent lower than normal with the high for 2009 recorded on July 26 and September 4 at 100 degrees F. There were 29 days 90 degrees F or above, and no days with temperatures 100 degrees F or above. However, 10 of the days 90 degrees F or above were in September with an additional 4 being in late August after most cereal crops had reached harvest maturity. April growing conditions were wetter and cooler than normal resulting in delayed seeding and emergence of early seeded crops. May and June were drier and cooler than normal resulting in delayed maturity of cereal crops. Overall, spring conditions were drier than normal with March though May precipitation at 88 percent of normal. June and July were drier than normal at 86 percent of the long-term average for those months. The overall growing season was on average cooler than normal. Cool temperatures coupled with a wetter than normal July prolonged maturity of the cereal crops. 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 due to cool temperatures and crusting after planting, whereas winter wheat performance varied from good to excellent depending upon location. Yield and test weight comparisons with long-term comparable averages varied according to crop and location. On-Station WW at Havre had decreased yields (81 percent of the 10-year comparable average of 48.3 bu/ac) and higher than normal test weights (1.2 lbs more than the 10-year comparable average of 60.5 lbs/bu); SW had increased yields (125 percent of the 10-year comparable average of 36.1 bu/ac) and increased test weights (1.3 lbs more than the 10-year comparable average of 58.0 lbs/bu); BLY had increased yields (113 percent of the 10-year comparable average of 55.7 bu/ac) and increased test weights (2.0 lbs more than the 10-year comparable average of 48.7 lbs/bu).

Off-station cropping environments were somewhat variable in 2009. The Loma location had adequate precipitation, good stored soil water and favorable conditions for the production of the winter wheat crop. Compared to ten-year Loma comparable average WW yields, 2009 yields were down 15 percent with average test weights. The Turner location had adequate precipitation, good stored soil water and generally favorable growing conditions for the production of spring cereal crops. Yields of the SW were up 23 percent from the ten-year comparable average with test weights up 2.0 lbs/bu. DURUM yields were 11 percent higher than the eight-year Turner comparable average with test weights up 1.3 lbs/bu. Turner BLY was not analyzed for yield data in 2009 due to wildlife depredation of specific plots coupled with generally poor stands. The Loring location had adequate precipitation, good stored soil water and generally favorable growing conditions for the production of spring cereal crops. Loring SW yields were 15 percent lower than the ten-year comparable average with test weights up 2.1 lbs/bu. Ten-year Loring comparable average barley yields were 13 percent lower with test weights up 3.0 lbs/bu. The North Havre location, established in 2005 for purposes of conducting agronomic investigations in a wheat stem sawfly environment, saw limited growing season precipitation, good stored soil water and generally favorable growing conditions for all crops. Topographically-related snow and ice cover rendered the North Havre WW variety trial unsuitable for research data collection. SW yields were 9 percent higher than the five-year comparable average with test weights 3.3 lbs/bu higher. DURUM yields were 4 percent higher than the five-year comparable average with test weights 2.3 lbs/bu higher. Four-year comparable averages of BLY yields were 16 percent higher than the five-year comparable average with test weights 4.0 lbs/bu higher. Sawfly pressure on winter wheat at Loma was horrendous at Loma, averaging 60 percent cut. Sawfly pressure on spring wheat was moderate at Turner and Loring, and minimal at North Havre. Most locations recorded yields generally commensurate with available moisture. Protein levels for appropriately fertilized wheat, durum and barley were generally excellent.

Stand percent, plant height, yield, moisture, test weight, protein and sawfly cutting data, where appropriate, for the 2009 McKeever (Loma) dryland winter wheat trial are summarized in Table 1. The 2009 Peterson (North Havre) dryland winter wheat trial was lost to winter kill. Multi-year yield and test weight summary data for the McKeever location for 2000-2009 are presented in Table 2 and data for selected winter wheat entries at the Peterson location for 2003-2008 are presented in Table 3.

Stand percent, plant height, yield, moisture, test weight, protein and sawfly cutting data, where appropriate, for the 2009 Cederberg (Turner), Peterson (North Havre) and Flansaas/Lumsden (Loring) dryland spring wheat trials are summarized in Tables 4, 6 and 8, respectively. The Cederberg location, in place since 1982, further featured "fertilized vs. unfertilized" spring wheat variety performance evaluations (1994-1998). The Peterson location was added in 2005 due to the presence of significant sawfly pressure. The Flansaas/Lumsden location replaced the 10-year Solberg location at Dodson (1986-1995). The McKeever location replaced the former, long-term Myers location (Big Sandy, 1988-1997) and spring wheat evaluation there was suspended in 2009. Multi-year yield and test weight summaries for selected spring wheat entries at the Cederberg, Peterson and Flansaas/Lumsden locations are presented in Tables 5, 7 and 9, respectively.

Stand percent, plant height, yield, moisture, test weight, protein and sawfly cutting data, where appropriate, for the 2009 Cederberg (Turner) and Peterson (North Havre) dryland durum trials are summarized in Tables 10 and 12, respectively. The evaluation of durum varieties was added at the Cederberg location in 2002, the Peterson location in 2005, and at the McKeever location in 2003; however durum evaluation at the McKeever location was suspended in 2009. Multi-year yield and test weight summaries for selected durum entries at the Cederberg and Peterson locations are presented in Tables 11 and 13, respectively.

Stand percent, plant height, yield, moisture, test weight, plump/thin, protein, sawfly cutting and wildlife depredation data, where appropriate, for the 2009 Cederberg (Turner), Peterson (North Havre), and Flansaas/Lumsden (Loring) dryland spring barley trials are summarized in Tables 14, 16 and 18 respectively. The Cederberg location, in place since 1982, further featured "fertilized vs. unfertilized" barley variety performance evaluations (1994-1998). The Peterson location was added in 2005 due to the presence of significant sawfly pressure. The Flansaas/Lumsden location replaces the 10-

year Solberg location at Dodson (1986-1995). The McKeever location replaced the former long-term Myers location (Big Sandy, 1988-1997), but barley variety evaluation there was not initiated there until 1999 and was suspended in 2009. Multi-year yield and test weight summaries for selected spring barley entries at the Cederberg, Peterson and Flansaas/Lumsden locations are presented in Tables 15, 17 and 19, respectively.

SUMMARY:

Ten, standard, off-station variety performance trials were conducted in 2009 on chemical fallow at four locations in four northern Montana counties.

Dryland Winter Wheat Trials:

- | | | |
|---|--------------|------------|
| 1. McKeever Farm & Seed Inc., Chouteau County | (12N Loma) | 29-27N-10E |
| 2. Mark Peterson Farm, Hill County | (35NW Havre) | 31-36N-13E |

Dryland Spring Wheat Trials:

- | | | |
|---|--------------|------------|
| 1. Leon Cederberg Farm, Blaine County | (3NE Turner) | 13-36N-25E |
| 2. Mark Peterson Farm, Hill County | (35NW Havre) | 31-36N-13E |
| 3. Flansaas/Lumsden Farm, Phillips County | (1SW Loring) | 24-35N-29E |

Dryland Spring Durum Trials:

- | | | |
|---------------------------------------|--------------|------------|
| 1. Leon Cederberg Farm, Blaine County | (3NE Turner) | 13-36N-25E |
| 2. Mark Peterson Farm, Hill County | (35NW Havre) | 31-36N-13E |

Dryland Spring Barley Trials:

- | | | |
|---|--------------|------------|
| 1. Leon Cederberg Farm, Blaine County | (3NE Turner) | 13-36N-25E |
| 2. Mark Peterson Farm, Hill County | (35NW Havre) | 31-36N-13E |
| 3. Flansaas/Lumsden Farm, Phillips County | (1SW Loring) | 24-35N-29E |

All trials were seeded in replicated, 3-row, 22-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. Beginning with spring planting in 2005, all off-station trials were planted with 'Haybuster' openers further modified to provide narrow, paired-row seed placement for enhanced seed/fertilizer separation. 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. Preceding harvest, depending on sawfly severity, plots were either end-trimmed to 16' or left at 18' to avoid mixing of stems and heads between plots. 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.

TABLE 1. Dryland Fallow Winter Wheat Cultivar Evaluation Nursery Grown Off-Station at McKeever Farm & Seed, Inc., Loma. Northern Agricultural Research Center. Havre, Montana. 2009. (Exp# 09-3853-WW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/	MOISTURE %	TEST WT Lbs/Bu	2/	3/
				YIELD Bu/Ac			PROTEIN %	SAWFLY %
PI619098	WAHOO	94.8	25.7	54.9	8.1	57.8	11.1	76.7
MTS0531	L'Govskaya 167//Rmp//MT94	94.1	24.2	49.5	8.5	59.9	11.4	44.7
JAGALENE	JAGALENE	88.2	25.7	49.4	8.0	59.9	12.3	71.3
MT0552	N95L159/CDC Clair	91.7	23.8	48.6	8.1	59.5	12.3	40.0
PI555458	PROMONTORY	92.7	28.4	48.2	8.1	60.1	11.3	94.7
MTS0532	L'Govskaya 167/Rmp//MT940	93.7	23.7	47.7	8.8	60.0	11.2	23.3
BZ96-788	LEDGER	88.9	24.8	46.9	8.2	58.6	11.5	38.3
DH001819	ACCIPITER	92.0	25.7	46.3	8.3	59.3	11.1	60.0
S94-4	CDC FALCON	93.4	24.1	45.8	7.9	57.8	12.1	63.3
BZ022060	CARTER	93.7	21.2	45.7	7.9	58.3	12.7	38.3
MTCL0306	HYALITE	88.5	26.8	45.7	8.0	59.7	12.8	84.7
MTS0713	93X312E14/NuHorizon	95.5	26.0	45.2	8.5	60.6	12.0	31.7
BZ96-919	PRYOR	96.5	25.7	45.1	8.1	58.9	11.6	28.3
MT00159	YELLOWSTONE	93.4	26.0	44.6	8.0	59.1	11.7	85.0
MTW9441	NuSky	94.5	27.1	44.2	8.3	59.9	12.1	71.7
MTS0031	GENOU	97.6	26.6	42.8	8.0	57.4	12.3	50.0
MT06103	MT9409/W94-137	94.4	25.8	42.7	8.2	59.8	12.0	66.7
MT0495	MT9640/NB1133	95.5	23.5	42.4	7.7	57.6	12.1	78.0
CI 17860	NEELEY	93.4	25.2	42.3	8.1	58.2	11.5	86.3
CI 17879	ROCKY	95.5	27.6	41.7	8.4	60.2	11.1	66.3
MTCL0316	NORRIS	91.3	27.5	41.2	8.0	60.5	11.2	91.7
PI593889	RAMPART	97.6	26.4	41.1	8.0	58.9	12.9	16.7
ND9257	JERRY	91.0	26.0	41.0	8.0	57.5	12.0	76.3
MTCL0318	BYNUM	94.5	29.2	37.3	7.8	58.4	13.2	56.3
EXPERIMENTAL MEANS		93.4	25.7	45.0	8.1	59.1	11.9	60.0
LSD (0.05)		6.2	3.2	8.5	0.4	1.1	-	31.7
C.V.2: (S of MEAN / MEAN)*100		2.3	4.4	6.6	1.7	0.6	-	18.6

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.

3/ Sawfly rating is reported as the percentage of cut stems.

Site Resource & Management Data: (Exp# 09-3853-WW)							
Field		SaltHaz (MMHOS/cm) 6-24	0.52	Dry Surf Soil (in.) @Plnt'g	0.25		
Quarter	NE	S (ppm) 0-24	47	2" Soil Temp (°F) @ Plnt'g	66		
Section	29	Zn (ppm) 0-6	0.81	4" Soil Temp (°F) @ Plnt'g	62		
Tow nship	27N	Fe (ppm) 0-6	26	Fertilizer Formulation	Gran Blend		
Range	10E	Mn (ppm) 0-6	13.86	Fertilizer Placement	Bnd at Plntg		
Latitude	N48 4.284'	Cu (ppm) 0-6	1.26	Fert. Rate (lbs/ac) N	70		
Longitude	W110 27.44'	CEC 0-6	13.3	Fert. Rate (lbs/ac) P2O5	40		
Soil Series	Telstad Joplin	Soil Texture 0-6	n/a	Fert. Rate (lbs/ac) K2O	25		
pH 0-6	6.1	Soil Texture 6-24	n/a	Herbicide App. Date	5/21		
Org.Matter (%) 0-6	1.8	Soil Texture 24-36	n/a	Herbicide Product	Bromac/Osprey		
N (lbs/ac) 0-6	13	Soil Texture36-48	n/a	Herbicide Rate (/ac)	19.2oz/4.75 oz		
N (lbs/ac) 6-24	15	Init PAW (in.) 0-6"	1.51	Precip (in.) Plnt'g-Harvest	-		
N (lbs/ac) 24-36	20	Init PAW (in.) 6-24"	3.83	Precip (>.1) Plnt'g-Harvest	-		
N (lbs/ac) 36-48	34	Init PAW (in.) 24-36"	2.52	Harvest Date	8/27		
N (lbs/ac) 0-48	82	Init PAW (in.) 36-48"	2.27	Rooting Depth (in.)	31"		
P (ppm) Olsen 0-6	22	Init PAW (in.) 0-48"	10.13	Post PAW (in.) 0-6"	0.57		
K (ppm) 0-6	372	Cropping System	NT-ChmFlw	Post PAW (in.) 6-24"	2.15		
Ca (ppm)	1615	Previous Crop	SW	Post PAW (in.) 24-36"	1.86		
Mg (ppm) 0-6	496	Planting Date	9/29	Post PAW (in.) 36-48"	2.21		
Na (ppm) 0-6	21	Planting Depth (in.)	1.5	Post PAW (in.) 0-48"	6.80		
SaltHaz (MMHOS/cm) 0-6	0.33	Moist Soil Depth @Plnt'g	48+	Precip (>.1) Hvst-Post	-		

TABLE 2. Nine-Year Yield and Test Weight Summary of Selected Entries from Dryland Fallow Winter Wheat Variety Nurseries Grown Off-Station at McKeever Farms, Loma. Northern Agricultural Research Center. Havre, Montana. 2000-2009. (Exp# 3853-WW)

2/ VARIETY or SELECTION	No. of YEARS TESTED	1/ YIELD (Bushels Per Acre)					TEST WEIGHT (Pounds Per Bushel)					9-YR COMP. AVE YIELD	9-YR COMP. TEST WT				
		2005	2006	2007	2008	2009	AVE. for YEARS TESTED	% of CHECK YIELD	2005	2006	2007			2008	2009	AVE. for YEARS TESTED	% of CHECK TEST WT
	3/						3/	4/	5/						3/	4/	5/
PI619098 WAHOO (++)	5	75.3	48.2	73.9	75.5	54.9	69.4	106.5	57.0	61.2	60.1	59.0	55.8	57.8	58.7	100.3	58.0
MT00159 YELLOWSTONE (++)	6	62.1	65.2	65.5	76.5	44.6	64.9	105.6	56.5	61.0	60.6	58.6	55.1	59.1	58.3	100.3	58.0
S94-4 CDC FALCON (P+)	6	75.0	48.8	67.5	78.6	45.8	62.8	102.3	54.8	62.8	61.3	59.1	56.1	57.8	58.5	100.6	58.2
JAGALENE JAGALENE (P+)	5	64.6	48.2	62.9	79.5	49.4	66.3	101.6	54.4	63.6	62.8	62.2	57.9	59.9	61.3	104.9	60.6
MTCL0306 HYALITE (P, CL++)	5	69.9	56.3	61.7	78.6	45.7	62.4	101.0	54.1	62.5	61.8	60.2	58.3	59.7	60.5	102.7	59.4
PI555458 PROMONTORY	9	64.3	56.6	64.4	75.9	48.2	54.0	100.9	54.0	63.0	61.7	61.9	59.7	60.1	60.1	104.0	60.1
BZ96-919 PRYOR (P+)	6	79.6	57.4	59.3	66.4	45.1	61.9	100.7	53.9	62.2	62.5	57.8	54.6	58.9	58.3	100.2	58.0
CI 17860 NEELEY	9	79.4	64.5	60.4	62.4	42.3	53.5	100.0	53.5	62.9	60.6	57.9	55.0	58.2	57.8	100.0	57.8
CI 17879 ROCKY (P)	9	71.9	28.6	68.2	71.7	41.7	53.5	100.0	53.5	63.2	60.8	61.2	58.0	60.2	60.1	103.9	60.1
MTCL0316 NORRIS (P, CL++)	5	71.5	60.9	61.2	70.3	41.2	61.0	98.7	52.9	62.8	62.4	60.4	57.6	60.5	60.8	103.1	59.6
MTW 9441 NUSKY (HW)	9	63.0	60.3	62.5	75.1	44.2	51.7	96.6	51.7	61.5	62.0	59.3	57.4	59.9	59.0	102.0	59.0
ND9257 JERRY	6	63.2	44.5	60.7	74.3	41.0	59.3	96.5	51.7	61.3	60.2	58.3	57.8	57.5	58.5	100.7	58.2
BZ96-788 LEDGER (P+)	4		55.2	61.5	62.3	46.9	56.5	96.0	51.4		61.1	60.6	57.5	58.6	59.5	102.7	59.4
PI517194 TIBER	8	66.2	51.2	58.7	60.3		51.8	94.2	50.4	62.0	61.3	59.4	57.4		59.3	102.6	59.3
MTS 0031 GENOU (saw fly res)(++)	6	69.3	57.3	58.5	58.5	42.8	57.0	92.8	49.7	62.2	61.2	58.6	55.4	57.4	58.4	100.5	58.1
PI593891 VANGUARD (saw fly res)	7	68.5	50.3	57.8			49.9	92.5	49.5	61.6	60.6	59.3			59.3	101.8	58.9
PI599336 MORGAN (P+)	7	58.3	57.7	64.7			49.8	92.4	49.5	60.1	60.7	58.6			57.6	99.0	57.2
MT 9432 BIGSKY (++)	7	73.1	48.3	59.4			48.6	90.2	48.3	62.6	60.7	58.5			58.5	100.6	58.2
PI593889 RAMPART (saw fly res)	9	61.7	49.0	60.0	55.9	41.1	48.3	90.1	48.3	61.5	61.0	59.5	57.3	58.9	59.0	102.1	59.0
MTCL0318 BYNUM (sf res)(P, CL++)	5	61.2	46.7	59.6	65.5	37.3	54.1	87.5	46.8	61.4	60.4	60.5	59.5	58.4	60.0	101.9	58.9
MEANS (For Entries Listed)		68.3	52.7	62.4	69.8	44.5			52.1	62.1	61.2	59.5	57.1	58.9			58.8
7/ Growing Season Precipitation (in.)		n/a	8.6	6.9	8.9	n/a	7.2										
Soil PAW (in.) to SD @ Planting		4.0	7.6	n/a	10.5	10.1	7.7										
Total Plant Available Water (in.)		4.0	16.2	n/a	19.4	10.1	12.5										
Soil NO3 (lbs.) to SD at Planting		514	192	n/a	300	82	257										
Fertilizer Applied	(# N)	70	70	70	70	70	69										
	(# P ₂ O ₅)	40	40	40	40	40	40										
	(# K ₂ O)	25	25	25	25	25	25										

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 selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending, HW = Hard White Wheat, CL = Clearfield Line.

3/ Only the most recent 5 years show n, 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/ 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 Neeley for the same years, and z = 9-Yr average yield or test weight for the check variety Neeley.

6/ 2002 Nursery abandoned due to extreme drought stress at this location.

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

TABLE 3. 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 the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2003-2009. (Exp# 3852-WW)

2/ VARIETY or SELECTION	No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre)							TEST WEIGHT (Pounds Per Bushel)								
		2005	2006	2007	2008	2009 6/	AVE	%	5-YR	2005	2006	2007	2008	2009 6/	AVE	%	5-YR
							TESTED 3/	CHECK 4/	COMP. AVE. YIELD 5/						TESTED 3/	TEST WT 4/	COMP. AVE. TEST WT 5/
MT00159 YELLOWSTONE (++)	3		40.1	53.4	47.3		46.9	118.2	49.6		61.2	60.1	58.4		59.9	101.9	58.8
MTCL0316 NORRIS (P, CL++)	4	35.8	40.5	52.1	47.8		44.1	117.1	49.1	55.7	62.9	61.7	60.3		60.2	104.0	60.0
BZ96-788 LEDGER (P+)	3		33.5	58.6	46.9		46.3	116.6	48.9		61.9	61.5	59.6		61.0	103.8	59.9
MTS 0031 GENOU (saw fly res)(++)	5	36.9	40.1	63.3	49.1		48.9	116.6	48.9	55.1	61.6	61.3	58.5		59.2	102.6	59.2
P1619098 WAHOO (++)	4	31.4	30.0	62.9	50.2		43.6	116.0	48.6	53.8	60.8	60.1	58.1		58.2	100.6	58.1
JAGALENE JAGALENE (P+)	4	32.9	30.6	53.2	48.4		41.3	109.6	46.0	56.9	62.3	62.6	59.5		60.3	104.2	60.1
MTCL0306 HYALITE (P, CL++)	4	34.4	31.4	50.7	48.2		41.2	109.5	45.9	56.3	61.7	61.1	60.4		59.9	103.5	59.7
CI 17879 ROCKY (P)	5	35.8	35.8	54.0	46.4		44.8	106.7	44.8	57.2	62.6	62.1	60.0		60.6	105.1	60.6
MTW 9441 NUSKY (HW)	5	30.5	39.7	52.4	43.9		44.5	106.0	44.5	55.3	61.3	60.1	60.5		59.5	103.1	59.5
ND9257 JERRY	5	34.3	27.4	55.2	42.8		44.2	105.4	44.2	54.1	59.7	60.7	58.7		58.2	100.8	58.2
P1593889 RAMPART (saw fly res)	5	35.9	34.0	53.9	41.7		44.1	105.0	44.1	55.1	61.2	61.1	58.7		59.2	102.5	59.2
P1555458 PROMONTORY	5	37.2	29.4	59.3	38.0		44.0	104.9	44.0	57.4	61.8	61.4	60.3		60.5	104.9	60.5
P1599336 MORGAN (P+)	4	35.3	34.6	54.5			45.2	103.4	43.4	53.6	59.6	61.0			58.0	100.4	58.0
P1517194 TIBER	5	34.5	34.0	52.6	48.7		43.0	102.5	43.0	55.4	61.3	60.9	60.7		59.6	103.3	59.6
MTCL0318 BYNUM (sf res)(P, CL++)	4	33.8	28.7	51.7	40.0		38.6	102.4	43.0	56.4	60.5	61.3	59.8		59.5	102.8	59.3
P1593891 VANGUARD (saw fly res)	4	38.2	36.5	57.1			44.7	102.1	42.8	55.4	61.5	61.2			59.4	102.8	59.3
S94-4 CDC FALCON (P+)	5	31.4	34.8	53.6	38.8		42.5	101.4	42.5	54.3	61.2	60.2	57.2		58.4	101.1	58.4
BZ96-919 PRYOR (P+)	5	31.6	33.3	54.6	42.2		42.0	100.2	42.0	54.0	61.2	60.1	57.6		58.1	100.6	58.1
CI 17860 NEELEY	5	31.4	34.2	50.1	34.8		41.9	100.0	41.9	55.2	58.5	60.4	57.4		57.7	100.0	57.7
MT 9432 BIGSKY (++)	4	32.8	33.2	56.8			42.2	96.4	40.4	55.0	61.4	61.0			59.6	103.2	59.5
MEANS (For Entries Listed)		34.1	34.1	55.0	44.4				44.9	55.3	61.2	61.0	59.2				59.2
7/ Growing Season Precipitation (in.)		n/a	4.7	3.9	4.8	n/a	4.3										
Soil PAW (in.) to SD @ Planting		8.0	4.5	7.4	11.0	7.8	7.9										
Total Plant Available Water (in.)		8.0	9.2	11.2	15.8	7.8	11.3										
Soil NO3 (lbs.) to SD at Planting		108	178	364	50	74	156										
Fertilizer Applied	(# N)	70	70	70	70	50.0	70										
	(# P ₂ O ₅)	40	40	40	40	15.0	40										
	(# K ₂ O)	25	25	25	25	0.0	25										

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 selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending, HW = Hard White Wheat, CL = Clearfield Tolerant.

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/ 2004 Nursery not harvested due to extreme variability not associated with varietal differences. 2009 plot nursery not harvested due to winter injury.

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

Site Resource & Management Data: (Exp# 09-3852-WW)					
Field		SaltHaz(MMHOS/cm) 6-24	0.29	Dry Surf Soil (in.) @ Plnt'g	0.25
Quarter	NW	S (ppm) 0-24	10	2" Soil Temp (°F) @ Plnt'g	63
Section	31	Zn (ppm) 0-6	0.63	4" Soil Temp (°F) @ Plnt'g	56
Township	36N	Fe (ppm) 0-6	34.1	Fertilizer Formulation	Gran.Blend
Range	13E	Mn (ppm) 0-6	18.16	Fertilizer Placement	Bdcst at Plnt
Latitude	N48 50.484'	Cu (ppm) 0-6	1.15	Fert. Rate (lbs/ac) N	50
Longitude	W110 5.033'	CEC 0-6	9.3	Fert. Rate (lbs/ac) P2O5	15
Soil Series	Telstad Joplin	Soil Texture 0-6	n/a	Fert. Rate (lbs/ac) K2O	0
pH 0-6	6	Soil Texture 6-24	n/a	Herbicide App. Date	5/21
Org.Matter (%) 0-6	1.3	Soil Texture 24-36	n/a	Herbicide Product	Bromac/Osprey
N (lbs/ac) 0-6	6	Soil Texture 36-48	n/a	Herbicide Rate (/ac)	19.2oz/4.75 oz
N (lbs/ac) 6-24	18	Init PAW (in.) 0-6"	0.85	Precip (in.) Plnt'g-Harvest	2.61*
N (lbs/ac) 24-36	18	Init PAW (in.) 6-24"	3.04	Precip (>.1) Plnt'g-Harvest	2.25*
N (lbs/ac) 36-48	32	Init PAW (in.) 24-36"	2.11	Harvest Date	n/a
N (lbs/ac) 0-48	74	Init PAW (in.) 36-48"	1.76	Rooting Depth (in.)	n/a
P (ppm) Olsen 0-6	17	Init PAW (in.) 0-48"	7.77	Post PAW (in.) 0-6"	n/a
K (ppm) 0-6	374	Cropping System	NT-ChmFlw	Post PAW (in.) 6-24"	n/a
Ca (ppm)	1125	Previous Crop	WW	Post PAW (in.) 24-36"	n/a
Mg (ppm) 0-6	313	Planting Date	9/30	Post PAW (in.) 36-48"	n/a
Na (ppm) 0-6	15	Planting Depth (in.)	1.5	Post PAW (in.) 0-48"	n/a
SaltHaz (MMHOS/cm) 0-6	0.18	Moist Soil Depth @ Plnt'g	48+	Precip (>.1) Hvst-Post	n/a

* precip from May to July

TABLE 4. Dryland Fallow Spring Wheat Cultivar Evaluation Nursery Grown Off-Station at the Leon Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, Montana. 2009. (Exp# 09-9951-SW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/	MOISTURE %	TEST WT Lbs/Bu	2/	3/
				YIELD Bu/Ac			PROTEIN %	SAWFLY %
PI642366	VIDA	89.6	26.0	50.7	9.7	60.8	13.5	2.3
BZ992322	HANK	84.4	23.2	49.3	9.7	60.7	13.1	5.7
BZ999592	ONEAL	95.5	25.8	47.8	9.6	61.6	14.8	7.0
ND 695	REEDER	92.4	24.7	45.1	9.5	61.3	14.3	6.7
SFBLEND3	CHOTEAU+VIDA	92.4	23.8	43.1	9.3	59.6	14.8	10.0
ACS53610	VOLT	97.2	24.4	42.5	9.8	62.2	12.9	25.0
AP-NARC4	04S0515-2-2	93.1	22.4	41.8	9.7	62.6	14.5	3.7
PI574642	McNEAL	96.5	23.8	41.4	9.4	60.6	14.5	18.3
BZ9M1044	JEDD	96.2	20.2	40.6	9.6	62.1	13.9	3.7
SFBLEND1	CHOTEAU+REEDER	87.8	24.2	40.5	9.3	59.6	15.6	8.3
AGRIPRO8	AP604 CL	92.7	24.4	40.4	9.4	61.2	15.6	13.3
AGRIPRO7	KUNTZ	89.2	25.2	40.0	9.6	61.2	14.2	13.3
AGRIPRO3	FREYR	89.9	26.3	39.8	9.6	61.3	15.4	18.3
BZ992588	CONAN	84.4	24.5	39.1	9.9	61.2	15.1	3.7
PI632252	OUTLOOK	97.2	25.3	38.6	9.3	59.9	14.2	13.3
BZ996434	CORBIN	96.5	22.0	38.2	9.6	61.4	15.7	3.7
PI633974	CHOTEAU	92.4	23.4	38.2	9.3	60.1	15.8	3.7
AP-NARC1	04S0514-1-12	97.6	25.1	37.4	9.5	61.1	16.2	13.3
AP-NARC3	04S0514-5-3	92.0	22.0	36.4	9.2	60.7	15.7	3.7
AP-NARC2	04S0514-3-1	96.9	21.9	36.2	9.3	60.3	15.5	2.3
CI 13596	FORTUNA	98.3	27.6	35.8	9.6	61.0	14.9	1.0
SFBLEND4	CHOTEAU+BRENNAN	88.2	22.0	33.4	9.3	61.2	16.4	5.0
AGRIPRO6	KELBY	91.7	21.4	33.3	9.3	61.4	16.4	7.0
SFBLEND2	CHOTEAU+CONAN	93.0	23.4	33.1	9.3	60.8	16.0	5.3
EXPERIMENTAL MEANS		92.7	23.9	40.1	9.5	61.0	15.0	8.2
LSD (0.05)		7.5	1.9	8.3	0.4	1.1	-	7.3
C.V.2: (S of MEAN / MEAN)*100		2.9	2.8	7.3	1.4	0.6	-	31.2

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.

3/ Sawfly rating is reported as the percentage of cut stems.

Site Resource & Management Data: (Exp# 09-9951-SW)							
Field		SaltHaz(MMHOS/cm) 6-24	0.43	Dry Surf Soil (in.) @ Plnt'g	0.25		
Quarter	SE	S (ppm) 0-24	9	2" Soil Temp (°F) @ Plnt'g	60		
Section	13	Zn (ppm) 0-6	0.67	4" Soil Temp (°F) @ Plnt'g	55		
Township	36N	Fe (ppm) 0-6	46.6	Fertilizer Formulation	Gran Blend		
Range	25E	Mn (ppm) 0-6	33.66	Fertilizer Placement	Bnd at Plntg		
Latitude	N48 52.575'	Cu (ppm) 0-6	1.15	Fert. Rate (lbs/ac) N	70		
Longitude	W108 23.557'	CEC 0-6	8.7	Fert. Rate (lbs/ac) P2O5	40		
Soil Series	Telstad Lm	Soil Texture 0-6	n/a	Fert. Rate (lbs/ac) K2O	25		
pH 0-6	6.6	Soil Texture 6-24	n/a	Herbicide App. Date	6/15		
Org.Matter (%) 0-6	1.5	Soil Texture 24-36	n/a	Herbicide Product	Bison/E99		
N (lbs/ac) 0-6	6	Soil Texture 36-48	n/a	Herbicide Rate (/ac)	20oz/8oz		
N (lbs/ac) 6-24	36	Init PAW (in.) 0-6"	0.89	Precip (in.) Plnt'g-Harvest	7.46		
N (lbs/ac) 24-36	12	Init PAW (in.) 6-24"	2.93	Precip (>.1) Plnt'g-Harvest	6.75		
N (lbs/ac) 36-48	40	Init PAW (in.) 24-36"	2.07	Harvest Date	8/27		
N (lbs/ac) 0-48	94	Init PAW (in.) 36-48"	1.94	Rooting Depth (in.)	40"		
P (ppm) Olsen 0-6	19	Init PAW (in.) 0-48"	7.83	Post PAW (in.) 0-6"	0.46		
K (ppm) 0-6	233	Cropping System	NT-MechFlw	Post PAW (in.) 6-24"	2.02		
Ca (ppm)	1111	Previous Crop	DUR	Post PAW (in.) 24-36"	1.18		
Mg (ppm) 0-6	295	Planting Date	5/2	Post PAW (in.) 36-48"	1.75		
Na (MEQ/100g) 0-6	9	Planting Depth (in.)	1.5	Post PAW (in.) 0-48"	5.41		
SaltHaz (MMHOS/cm) 0-6	0.15	Moist Soil Depth @ Plnt'g	48+	Precip (>.1) Hvst-Post	0		

TABLE 5. 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. 2000-2009. (Exp# 9951-SW)

2/ VARIETY or SELECTION	No. of YEARS TESTED	1/ YIELD (Bushels Per Acre)									TEST WEIGHT (Pounds Per Bushel)								
		2005	2006	2007	2008	2009	AVE. for YEARS TESTED	% of CHECK YIELD	10-YR COMP. AVE YIELD	2005	2006	2007	2008	2009	AVE. for YEARS TESTED	% of CHECK TEST WT	10-YR COMP. AVE TEST WT		
PI642366 VIDA (++)	5	51.0	24.7	23.9	20.2	50.7	39.1	125.8	38.5	59.6	57.5	53.9	55.8	60.8	58.1	98.9	58.5		
PI574642 McNEAL	10	43.0	22.0	23.6	19.4	41.4	37.0	120.9	37.0	59.6	56.9	53.0	55.7	60.6	58.4	98.7	58.4		
PI633974 CHOTEAU (+)(saw fly res)	9	45.4	24.1	24.0	20.3	38.2	34.3	117.6	36.0	59.2	56.5	54.3	54.5	60.1	58.0	98.3	58.2		
ND695 REEDER (+)(saw fly res)	10	46.0	19.7	22.4	18.1	45.1	36.0	117.6	36.0	61.3	56.4	54.6	56.7	61.3	59.4	100.4	59.4		
PI592761 ERNEST (+)(saw fly res)	8	39.3	23.4	22.4			36.2	114.8	35.1	59.5	57.7	54.5			59.0	99.5	58.8		
PI632252 OUTLOOK (++)	9	44.5	20.9	24.3	18.8	38.6	33.1	113.4	34.6	59.5	55.8	53.3	55.6	59.9	58.0	98.3	58.1		
PI607557 SCHOLAR (P+)(mod sf res)	8	41.9	20.6	20.7			35.5	112.7	34.4	60.1	57.3	54.1			59.3	100.0	59.2		
PI619086 EXPLORER (HW, ++)	9	47.8	23.9	21.4	21.2		33.7	112.4	34.3	59.5	57.7	54.9	56.8		58.5	99.3	58.7		
BZ992322 HANK (P+)	8	42.1	21.4	25.1	18.4	49.3	33.3	112.2	34.3	59.7	56.2	54.1	56.6	60.7	57.9	98.8	58.5		
BZ992588 CONAN (P+)(saw fly tol)	10	43.7	21.2	24.4	18.9	39.1	34.0	111.4	34.0	60.7	58.6	56.2	57.3	61.2	59.7	100.9	59.7		
BZ996472 AGAWAM (HW, P++)	3	46.4	23.2	23.1			30.9	111.2	34.0	61.2	60.5	57.4			59.7	103.1	61.0		
BZ996434 CORBIN	3			25.0	19.7	38.2	27.6	107.7	32.9			55.0	56.6	61.4	57.7	100.3	59.3		
WPB926 WB 926 (P)	8	43.2	21.4	20.9			33.4	105.7	32.3	58.8	56.3	54.6			58.4	98.5	58.3		
AGRIPRO3 FREYR (P+)	4		19.2	20.3	19.4	39.8	24.7	100.9	30.8		57.5	54.7	56.6	61.3	57.5	99.7	59.0		
CI13596 FORTUNA (saw fly res)	10	38.9	20.8	23.7	17.5	35.8	30.6	100.0	30.6	60.2	58.3	55.3	56.3	61.0	59.2	100.0	59.2		
AGRIPRO2 KNUDSON (P+)	3	45.0	19.2	18.6			27.6	99.2	30.3	60.0	58.0	55.5			57.8	99.8	59.1		
AGRIPRO1 NORPRO (P+)	4	44.6	19.4	17.3	17.2		24.6	97.7	29.9	57.7	55.9	52.0	55.6		55.3	96.2	56.9		
MEANS (For Entries Listed)		44.2	21.6	22.4	19.1	41.6			33.8	59.8	57.3	54.6	56.2	60.8			58.8		
6/ Growing Season Precipitation (in.)		9.7	2.5	7.0	6.6	6.0	7.1												
Soil PAW (in.) to SD @ Planting		8.0	8.8	5.8	8.1	7.8	7.3												
Total Plant Available Water (in.)		17.7	11.3	9.6	14.6	13.8	13.2												
Soil NO3 (lbs.) to SD at Planting		84	64	81	n/a	94	97												
SD (Sampling Depth in Inches)		48	48	48	48	48	48												
Fertilizer Applied																			
	(# N)	70	70	70	70	70	70												
	(# P ₂ O ₅)	40	40	40	40	40	40												
	(# K ₂ O)	25	25	25	25	25	25												

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 selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending, HW = Hard White Wheat.

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.

TABLE 6. Dryland Fallow Spring Wheat Cultivar Evaluation Nursery Grown Off-Station at the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2009. (Exp# 09-9952-SW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/	MOISTURE %	TEST WT Lbs/Bu	2/	3/
				YIELD Bu/Ac			PROTEIN %	SAWFLY %
SFBLEND3	CHOTEAU+VIDA	83.0	25.4	41.8	9.3	59.8	14.3	0.7
PI642366	VIDA	87.4	25.9	41.8	9.5	59.4	14.0	0.7
BZ999592	ONEAL	84.0	25.4	40.1	9.5	60.1	14.3	0.7
AP-NARC4	04S0515-2-2	88.6	22.7	39.2	9.6	61.8	14.0	0.0
AGRIPRO7	KUNTZ	75.9	24.3	36.9	9.3	60.2	14.0	2.3
SFBLEND1	CHOTEAU+REEDER	84.3	24.4	36.7	9.0	59.3	14.8	0.7
AP-NARC2	04S0514-3-1	92.0	23.2	36.6	8.9	59.0	14.2	0.0
AP-NARC3	04S0514-5-3	85.5	23.4	36.1	9.0	59.8	15.0	0.7
PI632252	OUTLOOK	84.6	25.2	35.1	9.0	58.5	14.3	0.7
SFBLEND4	CHOTEAU+BRENNAN	80.9	23.4	33.7	8.9	60.4	15.2	1.0
SFBLEND2	CHOTEAU+CONAN	77.5	25.2	33.7	9.4	59.6	15.2	0.0
AP-NARC1	04S0514-1-12	93.5	24.2	33.6	9.2	59.8	14.7	1.0
AGRIPRO3	FREYR	76.6	26.3	33.5	9.5	60.4	14.5	2.3
AGRIPRO6	KELBY	81.5	23.4	33.1	9.1	59.4	15.6	1.0
BZ992322	HANK	84.3	24.3	32.8	8.8	57.8	15.6	1.0
ND 695	REEDER	89.5	24.1	32.3	9.3	59.8	15.0	1.0
BZ9M1044	JEDD	85.5	21.0	31.9	9.2	60.8	13.9	0.3
PI574642	McNEAL	92.6	24.7	30.8	8.7	57.6	14.9	2.3
AGRIPRO8	AP604 CL	90.1	24.1	30.7	8.9	59.6	15.1	3.7
BZ996434	CORBIN	86.7	23.5	30.6	9.1	60.0	14.9	0.0
ACS53610	VOLT	92.9	22.9	29.5	9.2	60.6	14.2	3.7
BZ992588	CONAN	73.8	23.4	29.4	9.5	59.6	15.7	0.3
PI633974	CHOTEAU	77.8	22.2	28.6	9.2	59.5	15.6	0.3
CI 13596	FORTUNA	88.6	25.9	28.5	9.1	59.2	15.0	0.7
EXPERIMENTAL MEANS		84.9	24.1	34.0	9.2	59.7	14.8	1.0
LSD (0.05)		9.7	2.8	8.4	0.5	0.9	-	1.8
C.V.2: (S of MEAN / MEAN)*100		4.0	4.1	8.7	1.7	0.5	-	61.7

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 wheat.

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

3/ Sawfly rating is reported as the percentage of cut stems.

Site Resource & Management Data: (Exp# 09-9952-SW)							
Field		SaltHaz(MMHOS/cm) 6-24	0.38	Dry Surf Soil (in.) @ Plnt'g	0.25		
Quarter	NW	S (ppm) 0-24	9	2" Soil Temp (°F) @ Plnt'g	54		
Section	31	Zn (ppm) 0-6	0.6	4" Soil Temp (°F) @ Plnt'g	46		
Tow nship	36N	Fe (ppm) 0-6	44.0	Fertilizer Formulation	Gran.Blend		
Range	13E	Mn (ppm) 0-6	39.1	Fertilizer Placement	Bdcst at Plt		
Latitude	N48 50.484'	Cu (ppm) 0-6	1.2	Fert. Rate (lbs/ac) N	50		
Longitude	W110 5.033'	CEC 0-6	9.2	Fert. Rate (lbs/ac) P2O5	15		
Soil Series	Telstad Joplin	Soil Texture 0-6	n/a	Fert. Rate (lbs/ac) K2O	0		
pH 0-6	6.10	Soil Texture 6-24	n/a	Herbicide App. Date	6/11		
Org.Matter (%) 0-6	1.40	Soil Texture 24-36	n/a	Herbicide Product	Bromac		
N (lbs/ac) 0-6	11	Soil Texture 36-48	n/a	Herbicide Rate (/ac)	19.2 oz		
N (lbs/ac) 6-24	30	Init PAW (in.) 0-6"	1.07	Precip (in.) Plnt'g-Harvest	2.61		
N (lbs/ac) 24-36	18	Init PAW (in.) 6-24"	4.29	Precip (>.1) Plnt'g-Harvest	2.25		
N (lbs/ac) 36-48	26	Init PAW (in.) 24-36"	2.30	Harvest Date	8/14		
N (lbs/ac) 0-48	85	Init PAW (in.) 36-48"	1.84	Rooting Depth (in.)	40"		
P (ppm) Olsen 0-6	27	Init PAW (in.) 0-48"	9.50	Post PAW (in.) 0-6"	0.5		
K (ppm) 0-6	380	Cropping System	NT-ChmFlw	Post PAW (in.) 6-24"	1.6		
Ca (ppm)	1099	Previous Crop	WW	Post PAW (in.) 24-36"	1.1		
Mg (ppm) 0-6	314	Planting Date	5/6	Post PAW (in.) 36-48"	1.5		
Na (ppm) 0-6	9	Planting Depth (in.)	1.5	Post PAW (in.) 0-48"	4.7		
SaltHaz (MMHOS/cm) 0-6	0.24	Moist Soil Depth @ Plnt'g	48+	Precip (>.1) Hvst-Post	0		

TABLE 7. Five-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Spring Wheat Variety Nurseries Grown Off-Station Mark Peterson Farm North Havre. Northern Agricultural Research Center. Havre, Montana. 2009. (Exp# 9952-SW)

2/ VARIETY or SELECTION	No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre)					TEST WEIGHT (Pounds Per Bushel)					5-YR COMP. AVE. YIELD 5/	5-YR COMP. TEST WT 5/				
		2005	2006	2007	2008	2009	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	2005	2006	2007			2008	2009	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/
PI642366 VIDA (++)	5	29.6	16.2	46.4	42.0	41.8	35.2	134.3	35.2	52.2	51.2	56.4	59.0	59.4	55.6	98.2	55.6
BZ996434 CORBIN	3			45.4	41.9	30.6	39.3	127.7	33.5			58.3	60.2	60.0	59.5	101.9	57.7
BZ992588 CONAN (P+)(saw fly tol)	5	29.4	18.0	45.3	38.6	29.4	32.1	122.5	32.1	54.6	54.2	58.4	59.7	59.6	57.3	101.2	57.3
AGRIPRO3 FREYR (P+)	4		12.9	42.1	38.1	33.5	31.7	120.8	31.7		50.9	57.6	60.1	60.4	57.2	100.0	56.7
PI633974 CHOTEAU (+)(saw fly res)	5	27.9	16.3	41.5	41.0	28.6	31.1	118.5	31.1	52.9	52.0	56.9	58.4	59.5	56.0	98.8	56.0
PI632252 OUTLOOK (++)	5	25.9	15.3	45.5	33.4	35.1	31.0	118.4	31.0	52.0	50.8	54.1	57.8	58.5	54.6	96.5	54.6
BZ992322 HANK (P+)	5	25.2	14.8	41.5	38.2	32.8	30.5	116.4	30.5	51.1	51.5	55.8	58.2	57.8	54.9	96.9	54.9
BZ996472 AGAWAM (P)	3	28.3	18.1	42.7			29.7	115.7	30.3	56.0	55.9	60.4			57.5	104.5	59.2
ND 695 REEDER (+)	5	20.4	11.2	46.5	40.3	32.3	30.1	114.9	30.1	51.6	50.6	57.1	58.8	59.8	55.6	98.1	55.6
PI619086 EXPLORER (HW, ++)	4	24.8	15.3	42.9	34.5		29.4	114.5	30.0	52.3	50.5	55.7	59.5		54.5	97.3	55.1
PI574642 McNEAL	5	24.3	14.7	40.0	34.9	30.8	28.9	110.3	28.9	51.8	50.2	54.6	58.4	57.6	54.5	96.2	54.5
AGRIPRO1 NORPRO (P+)	4	15.0	12.1	42.7	40.0		27.4	107.0	28.0	48.1	49.3	57.7	59.4		53.6	95.7	54.2
PI592761 ERNEST (+)(saw fly res)	3	25.1	17.2	39.1			27.1	105.7	27.7	53.0	52.7	56.8			54.2	98.5	55.8
WB 926 WESTBRED 926 (P)	3	22.6	17.7	38.2			26.1	101.9	26.7	51.4	52.2	56.0			53.2	96.7	54.8
CI 13596 FORTUNA (saw fly res)	5	26.3	12.5	38.3	25.6	28.5	26.2	100.0	26.2	54.3	53.6	57.1	59.0	59.2	56.6	100.0	56.6
AGRIPRO2 KNUDSON (P+)	3	21.5	13.2	40.6			25.1	97.8	25.6	52.6	52.6	58.1			54.4	99.0	56.0
PI607557 SCHOLAR (+)(mod sf res)	3	19.3	13.0	40.9			24.4	95.0	24.9	52.5	52.3	58.4			54.4	98.9	56.0
MEANS (For Entries Listed)		24.4	14.9	42.3	37.4	32.3			29.6	52.4	51.9	57.0	59.0	59.2			55.9
6/ Growing Season Precipitation (in.)		3.96	4.07	3.88	4.78	2.61	3.86										
Soil PAW (in.) to SD @ Planting		2.67	n/a	0.99	8.6	9.5	5.44										
Total Plant Available Water (in.)		6.63	n/a	5.69	13.4	12.11	9.45										
Soil NO3 (lbs.) to SD at Planting		60	n/a	10	n/a	85	52										
SD (Sampling Depth in Inches)		48	n/a	6	48	48	38										
Fertilizer Applied	(# N)	70	70	70	70	50	66										
	(# P ₂ O ₅)	40	40	40	40	15	35										
	(# K ₂ O)	25	25	25	25	0	20										

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 selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending, HW = Hard White Wheat.

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/ 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 Fortuna for the same years, and z = 5-Yr average yield or test weight for the check variety Fortuna.

6/ Seeding to 14 days prior to harvest maturity.

TABLE 8. Dryland Fallow Spring Wheat Cultivar Evaluation Nursery Grown Off-Station at the Flansaas-Lumsden Farm, Loring. Northern Agricultural Research Center. Havre, Montana. 2009. (Exp# 09-9955-SW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/	MOISTURE %	TEST WT Lbs/Bu	2/	3/
				YIELD Bu/Ac			PROTEIN %	SAWFLY %
SFBLEND3	CHOTEAU+VIDA	92.7	22.2	37.4	9.1	60.8	14.0	3.7
AGRIPRO8	AP604 CL	95.9	21.1	33.9	8.8	60.8	15.4	3.7
PI642366	VIDA	95.2	22.1	33.3	9.2	60.5	13.9	8.3
PI632252	OUTLOOK	95.1	23.2	32.7	8.7	59.5	14.6	8.3
BZ992322	HANK	96.2	21.4	31.5	9.0	61.0	14.3	6.7
BZ999592	ONEAL	97.2	22.0	31.4	9.3	62.6	14.4	3.7
BZ9M1044	JEDD	90.3	19.8	31.2	9.2	62.4	14.1	2.3
ND 695	REEDER	96.5	22.5	30.4	8.9	61.5	14.8	3.7
AGRIPRO7	KUNTZ	91.7	22.2	30.4	9.2	61.4	13.6	5.0
BZ996434	CORBIN	95.5	21.3	30.0	9.0	61.4	15.5	2.3
SFBLEND1	CHOTEAU+REEDER	94.8	20.5	29.8	9.0	61.5	14.8	5.3
SFBLEND2	CHOTEAU+CONAN	92.4	23.0	28.9	9.1	61.7	15.0	1.0
AGRIPRO3	FREYR	91.7	25.2	28.4	9.2	62.0	14.9	6.7
PI574642	MCNEAL	95.5	21.6	27.8	8.9	60.4	14.5	21.7
ACS53610	VOLT	94.4	23.4	27.0	9.0	62.1	13.9	26.7
CI 13596	FORTUNA	96.5	24.8	26.2	8.8	58.5	15.5	5.3
PI633974	CHOTEAU	93.4	21.5	26.1	8.6	59.2	16.1	3.7
SFBLEND4	CHOTEAU+BRENNAN	89.6	20.6	25.5	8.8	61.2	16.1	1.0
BZ992588	CONAN	93.4	22.7	25.3	9.0	61.6	15.6	1.0
AGRIPRO6	KELBY	92.0	19.8	24.0	8.9	61.2	16.7	2.3
EXPERIMENTAL MEANS		94.0	22.0	29.6	9.0	61.1	14.9	6.1
LSD (0.05)		5.3	1.5	5.5	0.2	0.8	-	7.3
C.V.2: (S of MEAN / MEAN)*100		2.0	2.4	6.5	0.7	0.5	-	41.9

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.

3/ Sawfly rating is reported as the percentage of cut stems.

Site Resource & Management Data: (Exp# 09-9955-SW)							
Field		SaltHaz(MMHOS/cm) 6-24	0.37	Dry Surf Soil (in.) @ Plnt'g	0.25		
Quarter	SW	S (ppm) 0-24	7	2" Soil Temp (°F) @ Plnt'g	59		
Section	24	Zn (ppm) 0-6	0.67	4" Soil Temp (°F) @ Plnt'g	58		
Tow nship	35N	Fe (ppm) 0-6	47.4	Fertilizer Formulation	Gran Blend		
Range	29E	Mn (ppm) 0-6	18.73	Fertilizer Placement	Bnd at Plntg		
Latitude	N48 46.178'	Cu (ppm) 0-6	1.11	Fert. Rate (lbs/ac) N	70		
Longitude	W107 52.228'	CEC 0-6	10.7	Fert. Rate (lbs/ac) P2O5	40		
Soil Series	Scobey CI-Lm	Soil Texture 0-6	n/a	Fert. Rate (lbs/ac) K2O	25		
pH 0-6	6.6	Soil Texture 6-24	n/a	Herbicide App. Date	n/a		
Org.Matter (%) 0-6	1.9	Soil Texture 24-36	n/a	Herbicide Product	none		
N (lbs/ac) 0-6	4	Soil Texture 36-48	n/a	Herbicide Rate (/ac)	n/a		
N (lbs/ac) 6-24	18	Init PAW (in.) 0-6"	1.15	Precip (in.) Plnt'g-Harvest	5.25		
N (lbs/ac) 24-36	12	Init PAW (in.) 6-24"	4.31	Precip (>.1) Plnt'g-Harvest	4.70		
N (lbs/ac) 36-48	8	Init PAW (in.) 24-36"	2.74	Harvest Date	9/2		
N (lbs/ac) 0-48	42	Init PAW (in.) 36-48"	2.33	Rooting Depth (in.)	42"		
P (ppm) Olsen 0-6	14	Init PAW (in.) 0-48"	10.52	Post PAW (in.) 0-6"	0.47		
K (ppm) 0-6	265	Cropping System	NT-ChmFlw	Post PAW (in.) 6-24"	1.76		
Ca (ppm)	1280	Previous Crop	SW	Post PAW (in.) 24-36"	0.80		
Mg (ppm) 0-6	429	Planting Date	5/1	Post PAW (in.) 36-48"	1.26		
Na (ppm) 0-6	7	Planting Depth (in.)	1.5	Post PAW (in.) 0-48"	4.29		
SaltHaz (MMHOS/cm) 0-6	0.21	Moist Soil Depth @ Plnt'g	48+	Precip (>.1) Hvst-Post	0		

TABLE 9. Ten-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, 2000-2009. (Exp# 9955-SW)

2/ VARIETY or SELECTION	No. of YEARS TESTED	1/ YIELD (Bushels Per Acre)					TEST WEIGHT (Pounds Per Bushel)					10-YR COMP. AVE. YIELD 5/	10-YR COMP. TEST WT 5/				
		2005	2006	2007	2008	2009	AVE. YEARS TESTED 3/	% of CHECK YIELD 4/	2005	2006	2007			2008	2009	AVE. YEARS TESTED 3/	% of CHECK TEST WT 4/
BZ996472 AGAWAM (P)	3	43.2	23.8	35.4			34.1	129.2	39.7	60.4	59.6	57.4			59.1	103.8	60.9
PI642366 VIDA (++)	6	42.8	24.4	36.3	33.6	33.3	38.4	128.3	39.5	57.3	56.3	55.7	57.6	60.5	58.4	100.2	58.8
BZ996434 CORBIN	3			31.8	34.7	30.0	32.2	118.0	36.3			54.8	58.1	61.4	58.1	101.0	59.2
ND 695 REEDER (+)	10	38.8	21.3	32.4	36.9	30.4	35.4	115.1	35.4	58.2	56.2	55.1	58.0	61.5	58.9	100.4	58.9
PI632252 OUTLOOK (++)	9	38.3	19.2	33.3	31.7	32.7	34.6	113.8	35.0	56.3	55.7	53.2	57.2	59.5	57.1	97.9	57.4
AGRIPRO1 NORPRO (P+)	4	38.3	19.8	29.0	33.7		30.2	111.5	34.3	55.8	55.7	53.4	57.9		55.7	97.5	57.2
PI574642 McNEAL	10	34.5	20.2	30.6	34.9	27.8	34.1	110.8	34.1	56.0	55.6	53.5	57.5	60.4	57.4	97.9	57.4
PI633974 CHOTEAU (+)(saw fly res)	9	37.3	22.6	29.5	34.9	26.1	33.5	110.0	33.9	56.6	56.3	54.4	56.2	59.2	57.3	98.1	57.5
AGRIPRO2 KNUDSON (P+)	3	36.7	19.2	31.2			29.0	109.9	33.8	57.8	57.8	55.7			57.1	100.3	58.8
BZ992322 HANK (P+)	8	37.2	20.2	32.2	35.8	31.5	32.8	108.9	33.5	57.1	56.6	52.9	57.3	61.0	56.8	98.0	57.5
AGRIPRO3 FREYR (P+)	4		20.5	30.2	32.4	28.4	27.9	108.3	33.3		57.7	54.6	58.2	62.0	58.1	101.2	59.4
PI592761 ERNEST (+)(saw fly res)	8	34.1	22.6	27.2			33.7	106.9	32.9	56.6	56.7	55.4			58.4	99.3	58.2
BZ992588 CONAN (P+)(saw fly tol)	10	36.3	21.2	29.9	30.9	25.3	32.7	106.2	32.7	58.4	58.6	55.6	58.4	61.6	59.3	101.2	59.3
PI619086 EXPLORER (HW, ++)	9	38.7	20.3	30.5	30.4		33.2	106.0	32.6	57.9	57.2	54.9	57.8		58.1	99.0	58.0
PI607557 SCHOLAR (+)(mod sf res)	8	30.7	22.9	32.8			33.2	105.3	32.4	57.1	57.5	56.6			59.1	100.6	59.0
CI 13596 FORTUNA (saw fly res)	10	31.6	21.2	26.5	29.1	26.2	30.8	100.0	30.8	57.3	57.1	56.4	57.7	58.5	58.6	100.0	58.6
MEANS (For Entries Listed)		37.0	21.3	31.2	33.2	29.2			34.4	57.3	57.0	55.0	57.7	60.6			58.5
6/ Growing Season Precipitation (in.)		n/a	2.4	7.4	8.9	5.3	6.7										
Soil PAW (in.) to SD @ Planting		9.1	8.3	8.3	8.2	10.5	8.2										
Total Plant Available Water (in.)		9.1	10.7	15.7	17.2	15.7	14.0										
Soil NO3 (lbs.) to SD at Planting		54	81	89	n/a	42	69										
SD (Sampling Depth in Inches)		48	48	48	48	48	48										
Fertilizer Applied	(# N)	70	70	70	70	70	70										
	(# P ₂ O ₅)	40	40	40	40	40	40										
	(# K ₂ O)	25	25	25	25	25	25										

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 selection decisions.

2/ P = Private Variety, + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending, HW = Hard White Wheat.

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.

TABLE 10. Dryland Fallow Spring Durum Cultivar Evaluation Nursery Grown Off-Station at the Leon Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, Montana. 2009. (Exp# 09-9851-SW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/		2/		3/
				YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	PROTEIN %	SAWFLY %
NORMANNO	NORMANNO	90.6	21.8	40.9	9.0	59.8	14.5	0.7
STRONGFIELD	STRONGFIELD	83.7	25.9	36.5	8.9	59.9	15.7	10.0
Cimmy#5	Cimmy#5	83.0	18.6	36.3	9.2	60.3	14.0	2.3
Cimmy#8	Cimmy#8	87.1	21.3	36.3	9.3	62.3	13.4	1.0
MOUNTRAIL	MOUNTRAIL	81.6	23.3	35.4	9.2	60.2	14.8	8.3
GRENORA	GRENORA	90.6	24.6	35.4	9.1	60.6	14.7	15.0
Cimmy#11	Cimmy#11	88.5	24.5	34.6	9.3	59.7	14.0	2.3
MT03012	MT03012	71.2	22.8	33.0	9.0	60.1	15.5	5.7
PIERCE	PIERCE	86.4	24.2	32.9	9.0	60.9	15.4	11.7
ALKABO	ALKABO	85.1	23.9	31.9	9.2	60.8	15.2	8.7
MT04174	MT04174	85.4	20.9	31.9	9.0	60.1	15.7	8.7
DILSE	DILSE	93.8	24.6	31.2	8.9	60.4	16.3	15.0
MT01649	MT01649	75.0	18.7	30.5	8.7	58.7	16.2	5.3
DIVIDE	DIVIDE	98.3	24.8	29.9	8.9	60.0	15.7	5.0
ALZADA	ALZADA	86.4	22.3	29.1	8.9	60.6	15.9	8.3
EXPERIMENTAL MEANS		85.8	22.8	33.7	9.0	60.3	15.1	7.2
LSD (0.05)		20.0	3.0	4.7	0.2	0.7	-	7.1
C.V.2: (S of MEAN / MEAN)*100		8.1	4.5	4.8	0.8	0.4	-	33.8

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

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

3/ Sawfly rating is reported as the percentage of cut stems.

Site Resource & Management Data: (Exp# 09-9851-SW)							
Field		SaltHaz(MMHOS/cm) 6-24	0.43	Dry Surf Soil (in.) @ Plnt'g	0.25		
Quarter	SE	S (ppm) 0-24	9	2" Soil Temp (°F) @ Plnt'g	58		
Section	13	Zn (ppm) 0-6	0.67	4" Soil Temp (°F) @ Plnt'g	54		
Tow nship	36N	Fe (ppm) 0-6	46.60	Fertilizer Formulation	Gran Blend		
Range	25E	Mn (ppm) 0-6	33.66	Fertilizer Placement	Bnd at Plntg		
Latitude	N48 52.575'	Cu (ppm) 0-6	1.15	Fert. Rate (lbs/ac) N	70		
Longitude	W108 23.557'	CEC 0-6	8.70	Fert. Rate (lbs/ac) P2O5	40		
Soil Series	Telstad Lm	Soil Texture 0-6	n/a	Fert. Rate (lbs/ac) K2O	25		
pH 0-6	6.6	Soil Texture 6-24	n/a	Herbicide App. Date	6/15		
Org.Matter (%) 0-6	1.5	Soil Texture 24-36	n/a	Herbicide Product	Bison/E99		
N (lbs/ac) 0-6	6	Soil Texture 36-48	n/a	Herbicide Rate (/ac)	20oz/8oz		
N (lbs/ac) 6-24	36	Init PAW (in.) 0-6"	0.89	Precip (in.) Plnt'g-Harvest	7.46		
N (lbs/ac) 24-36	12	Init PAW (in.) 6-24"	2.93	Precip (>.1) Plnt'g-Harvest	6.75		
N (lbs/ac) 36-48	40	Init PAW (in.) 24-36"	2.07	Harvest Date	9/10		
N (lbs/ac) 0-48	94	Init PAW (in.) 36-48"	1.94	Rooting Depth (in.)	39"		
P (ppm) Olsen 0-6	19	Init PAW (in.) 0-48"	7.83	Post PAW (in.) 0-6"	0.5		
K (ppm) 0-6	233	Cropping System	NT-MechFlw	Post PAW (in.) 6-24"	1.5		
Ca (ppm)	1111	Previous Crop	DUR	Post PAW (in.) 24-36"	0.8		
Mg (ppm) 0-6	295	Planting Date	5/2	Post PAW (in.) 36-48"	0.9		
Na (ppm) 0-6	9	Planting Depth (in.)	1.5	Post PAW (in.) 0-48"	3.8		
SaltHaz (MMHOS/cm) 0-6	0.15	Moist Soil Depth @Plnt'g	48+	Precip (>.1) Hvst-Post	0		

TABLE 11. Eight-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. 2002-2009. (Exp# 9851-SW)

2/ VARIETY or SELECTION	No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre)							TEST WEIGHT (Pounds Per Bushel)								
		2005	2006	2007	2008	2009	AVE.	%	8-YR COMP. AVE YIELD 5/	2005	2006	2007	2008	2009	AVE.	%	8-YR COMP. TEST WT 5/
							for YEARS TESTED 3/	of CHECK YIELD 4/							for YEARS TESTED 3/	of CHECK TEST WT 4/	
MT02525 MT02525	3		21.1	26.1	20.5		22.5	119.7	35.3		57.5	56.8	57.7		57.3	101.2	59.5
D91080 PLAZA (+)	5	37.0	18.9				37.0	113.6	33.5	59.0	57.3			59.9	101.0	59.4	
STRONGFLC STRONGFIELD (+)	4		21.6	24.0	19.4	36.5	25.4	110.4	32.5		56.7	56.1	57.5	59.9	57.6	100.0	58.8
ACAVONLE AC AVONLEA (+)	5	37.6	22.0				35.0	107.6	31.7	59.4	58.1			60.1	101.4	59.6	
YU894-75 ALZADA (P+)	5	42.8	23.7	25.2	17.1	29.1	27.6	106.9	31.5	59.3	57.0	56.1	57.4	60.6	58.1	100.5	59.1
MT03012 MT03012	4		21.7	24.3	16.5	33.0	23.9	103.9	30.6		57.3	55.0	56.9	60.1	57.3	99.6	58.6
GRENORA GRENORA (+)	4		19.1	25.6	15.4	35.4	23.9	103.9	30.6		57.0	55.7	56.5	60.6	57.4	99.8	58.7
D901313 MOUNTRAIL (+)	8	37.1	18.9	22.3	15.3	35.4	29.5	100.0	29.5	58.7	56.3	56.1	57.6	60.2	58.8	100.0	58.8
CANKYLE KYLE	5	35.0	19.2				32.0	98.4	29.0	59.4	58.8				60.3	101.7	59.8
ALKABO ALKABO (+)	4		18.4	22.5	14.8	31.9	21.9	95.3	28.1		58.5	57.5	57.4	60.8	58.5	101.7	59.8
PIERCE PIERCE (+)	6	34.1	17.6	20.0	14.8	32.9	28.3	94.7	27.9	60.1	57.3	57.6	57.0	60.9	59.3	101.4	59.6
D901442 LEBSOCK (+)	5	32.4		20.2			31.4	94.5	27.8	59.5		57.7			60.1	101.4	59.6
DILSE DILSE (+)	5	36.1	18.2		12.8	31.2	29.5	93.9	27.7	59.4	57.5		56.9	60.4	59.2	100.5	59.1
DIVIDE DIVIDE	4		17.9	20.0	17.2	29.9	21.2	92.5	27.2		57.3	56.7	57.3	60.0	57.8	100.5	59.1
MT02DH55 MT02DH55	3		18.0	19.2	12.9		16.7	88.7	26.1		56.4	55.6	56.8		56.3	99.3	58.4
P478289 MONROE	4	31.9					30.9	85.8	25.3	58.9					59.6	99.1	58.3
MEANS (For Entries Listed)		36.0	19.7	22.7	16.1	32.8			29.6	59.3	57.4	56.4	57.2	60.4			59.1
6/ Growing Season Precipitation (in.)		9.7	2.5	7.0	6.6	6.0	7.3										
Soil PAW (in.) to SD @ Planting		8.0	8.8	5.8	8.1	7.8	7.5										
Total Plant Available Water (in.)		17.7	11.3	12.8	14.6	13.8	14.8										
Soil NO3 (lbs.) to SD at Planting		84	64	81	71	94	89										
SD (Sampling Depth in Inches)		48	48	48	48	48	48										
Fertilizer Applied	(# N)	70	70	70	70	70	69										
	(# P ₂ O ₅)	40	40	40	40	40	39										
	(# K ₂ O)	25	25	25	25	25	22										

Check Variety is Mountrail.

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 selection decisions.

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

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

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

5/ 8-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 Mountrail for the same years, and z = 8-Yr average yield or test weight for the check variety Mountrail.

6/ Seeding to 14 days prior to harvest maturity.

TABLE 12. Dryland Fallow Spring Durum Cultivar Evaluation Nursery Grown Off-Station at the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2009. (Exp# 09-9852-SW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/	MOISTURE %	TEST WT Lbs/Bu	2/	3/
				YIELD Bu/Ac			PROTEIN %	SAWFLY %
Cimmy#5	Cimmy#5	94.4	20.7	39.8	8.3	58.5	13.5	0.0
NORMANNO	NORMANNO	89.2	21.0	39.4	8.3	57.6	14.1	0.0
STRONGFIELD	STRONGFIELD	79.0	27.4	37.7	8.4	59.3	15.3	0.0
MT01649	MT01649	88.3	19.7	36.3	8.1	56.7	13.9	1.0
DIVIDE	DIVIDE	85.8	28.3	35.8	8.4	59.5	14.6	0.0
MT04174	MT04174	88.9	23.6	35.6	8.3	58.7	14.0	1.0
Cimmy#11	Cimmy#11	91.7	22.8	35.4	8.4	56.5	13.3	0.0
Cimmy#8	Cimmy#8	85.8	22.3	34.8	8.7	60.9	12.9	0.0
GRENORA	GRENORA	89.8	24.5	34.5	8.4	59.2	14.2	0.0
MOUNTRAIL	MOUNTRAIL	84.6	25.7	34.2	8.3	58.4	14.7	0.3
PIERCE	PIERCE	91.0	26.1	31.8	8.5	60.0	14.1	0.3
MT03012	MT03012	93.2	23.3	31.7	8.2	58.7	14.6	0.3
ALZADA	ALZADA	72.5	23.8	31.6	8.4	60.2	15.4	0.0
DILSE	DILSE	85.2	26.2	29.0	8.3	59.0	15.2	0.7
ALKABO	ALKABO	92.3	25.9	24.2	8.4	59.9	14.3	0.3
EXPERIMENTAL MEANS		87.4	24.1	34.1	8.4	58.9	14.3	0.3
LSD (0.05)		11.8	2.8	5.8	0.4	1.4	-	0.5
C.V.2: (S of MEAN / MEAN)*100		4.7	4.0	5.9	1.4	0.8	-	68.5

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 durum.

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

3/ Sawfly rating is reported as the percentage of cut stems. (stems were larvae infested, but stem cutting was limited).

Site Resource & Management Data: (Exp# 09-9852-SW)							
Field		SaltHaz(MMHOS/cm) 6-24	0.38	Dry Surf Soil (in.) @ Plnt'g	0.25		
Quarter	NW	S (ppm) 0-24	9	2" Soil Temp (°F) @ Plnt'g	56		
Section	31	Zn (ppm) 0-6	0.6	4" Soil Temp (°F) @ Plnt'g	51		
Tow nship	36N	Fe (ppm) 0-6	44.0	Fertilizer Formulation	Gran.Blend		
Range	13E	Mn (ppm) 0-6	39.1	Fertilizer Placement	Bdcst at Plt		
Latitude	N48 50.484'	Cu (ppm) 0-6	1.2	Fert. Rate (lbs/ac) N	50		
Longitude	W110 5.033'	CEC 0-6	9.2	Fert. Rate (lbs/ac) P2O5	15		
Soil Series	Telstad Joplin	Soil Texture 0-6	n/a	Fert. Rate (lbs/ac) K2O	0		
pH 0-6	6.10	Soil Texture 6-24	n/a	Herbicide App. Date	6/11		
Org.Matter (%) 0-6	1.40	Soil Texture 24-36	n/a	Herbicide Product	Bromac		
N (lbs/ac) 0-6	11	Soil Texture 36-48	n/a	Herbicide Rate (/ac)	19.2 oz		
N (lbs/ac) 6-24	30	Init PAW (in.) 0-6"	1.07	Precip (in.) Plnt'g-Harvest	2.61		
N (lbs/ac) 24-36	18	Init PAW (in.) 6-24"	4.29	Precip (>.1) Plnt'g-Harvest	2.25		
N (lbs/ac) 36-48	26	Init PAW (in.) 24-36"	2.30	Harvest Date	8/28		
N (lbs/ac) 0-48	85	Init PAW (in.) 36-48"	1.84	Rooting Depth (in.)	36"		
P (ppm) Olsen 0-6	27	Init PAW (in.) 0-48"	9.50	Post PAW (in.) 0-6"	0.32		
K (ppm) 0-6	380	Cropping System	NT-ChmFlw	Post PAW (in.) 6-24"	1.62		
Ca (ppm)	1099	Previous Crop	WW	Post PAW (in.) 24-36"	1.20		
Mg (ppm) 0-6	314	Planting Date	5/6	Post PAW (in.) 36-48"	1.87		
Na (ppm) 0-6	9	Planting Depth (in.)	1.5	Post PAW (in.) 0-48"	5.01		
SaltHaz (MMHOS/cm) 0-6	0.24	Moist Soil Depth @ Plnt'g	48+	Precip (>.1) Hvst-Post	0		

TABLE 13. Five-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Spring Durum Variety Nurseries Grown Off-Station at the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2005-2009. (Exp# 9852-SW)

2/ VARIETY or SELECTION	No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre)							TEST WEIGHT (Pounds Per Bushel)								
		2005	2006	2007	2008	2009	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	5-YR COMP. AVE YIELD 5/	2005	2006	2007	2008	2009	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	5-YR COMP. TEST WT 5/
MT02525 MT02525	3		13.8	46.3	47.9		36.0	110.5	34.6		52.1	59.4	61.6		57.7	103.2	58.0
MT03012 MT03012	4		18.2	40.0	46.4	31.7	34.1	103.3	32.3		53.9	57.9	60.8	58.7	57.8	102.3	57.5
STRONGFLC STRONGFIELD (+)	4		13.6	46.3	38.5	37.7	34.0	103.2	32.3		52.8	57.1	59.8	59.3	57.3	101.3	56.9
YU894-75 ALZADA (P+)	5	27.7	18.3	44.0	39.6	31.6	32.2	103.0	32.2	55.1	52.5	58.6	59.4	60.2	57.1	101.7	57.1
GRENORA GRENORA	4		15.8	41.9	39.9	34.5	33.0	100.2	31.3		51.6	57.6	60.1	59.2	57.1	101.1	56.8
D901313 MOUNTRAIL (+)	5	24.5	16.0	45.1	36.6	34.2	31.3	100.0	31.3	54.9	51.8	56.5	59.4	58.4	56.2	100.0	56.2
DIVIDE DIVIDE	4		15.7	42.1	37.8	35.8	32.8	99.6	31.2		54.5	58.1	59.3	59.5	57.9	102.4	57.5
MT02DH55 MT02DH55	3		14.6	41.6	39.1		31.8	97.6	30.5		50.1	56.2	59.6		55.3	98.9	55.6
DILSE DILSE (+)	4	22.7	15.8		35.7	29.0	25.8	92.7	29.0	55.0	51.7		59.7	59.0	56.4	100.4	56.4
PIERCE PIERCE (+)	5	22.0	12.6	40.7	33.4	31.8	28.1	89.9	28.1	56.3	52.6	59.2	60.2	60.0	57.7	102.6	57.7
ALKABO ALKABO (+)	4		16.4	43.7	33.5	24.2	29.4	89.3	27.9		52.9	58.5	60.1	59.9	57.8	102.3	57.5
MEANS (For Entries Listed)		24.2	15.5	43.2	38.9	32.3			31.0	55.3	52.4	57.9	60.0	59.3			57.0
6/ Growing Season Precipitation (in.)		4.0	4.1	3.9	4.8	2.6	3.9										
Soil PAW (in.) to SD @ Planting		8.2	n/a	1.0	8.6	9.5	6.8										
Total Plant Available Water (in.)		12.2	4.1	5.7	13.4	12.1	9.5										
Soil NO3 (lbs.) to SD at Planting		60	n/a	10	n/a	85	52										
SD (Sampling Depth in Inches)		48	n/a	6	48	48	38										
Fertilizer Applied	(# N)	70	70	70	70	50	66										
	(# P ₂ O ₅)	40	40	40	40	15	35										
	(# K ₂ O)	25	25	25	25	0	20										

Check Variety is Mountrail.

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 selection decisions.

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

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

4/ Percent of Mountrail 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 Mountrail for the same years, and z = 5-Yr average yield or test weight for the check variety Mountrail.

6/ Seeding to 14 days prior to harvest maturity.

TABLE 14. Dryland Fallow Spring Barley Cultivar Evaluation Nursery Grown Off-Station at the Leon Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, Montana. 2009. (Exp# 09-3651-SB)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	MOIST. %	TEST WT Lbs/Bu	PLUMP %	THIN %	PROTEIN %	1/ WILDLIFE
									DEPREDAION
MT970116	CRAFT	83.0	22.9	9.2	51.3	89.1	4.3	14.8	99.7
MT950186	HAXBY	66.7	23.0	9.7	52.8	91.6	2.6	14.4	69.7
GOLDENEY	GOLDENEYE	56.6	22.6	9.2	49.5	79.3	7.5	13.3	31.7
MT960101	GERALDINE	41.3	21.4	9.7	53.3	94.9	1.5	15.1	3.3
2B965057	CONRAD	56.2	22.3	9.8	51.8	95.2	1.7	15.8	3.3
TR232	METCALFE	26.8	24.9	9.6	53.3	95.7	1.9	16.2	3.3
PI491534	GALLATIN	59.7	25.4	9.7	52.7	88.3	4.7	14.4	1.7
YU501385	CHAMPION	67.4	21.8	9.6	52.2	90.2	3.7	13.8	1.7
PI643354	PINNACLE	48.2	22.6	9.7	53.0	95.4	1.8	12.6	1.7
MT020155	MT960225/H1851195	36.4	23.4	9.6	51.4	90.2	3.7	13.9	0.0
MT910189	HOCKETT	75.7	23.8	9.8	52.9	93.1	2.7	13.7	0.0
MT061207	MT970229/LK232	66.0	22.1	9.3	51.6	95.8	1.9	14.3	0.0
PI568246	BARONESSE	76.7	22.6	9.5	51.4	90.4	3.9	14.4	0.0
SK 76333	HARRINGTON	60.8	22.8	9.7	52.2	91.4	3.5	14.2	0.0
MT030042	MT910189/MT960099	54.9	21.2	9.9	53.8	93.4	2.5	12.9	0.0
MT010158	MT920041/Harrington	58.0	25.1	9.6	52.2	92.1	3.1	15.4	0.0
EXPERIMENTAL MEANS		58.4	23.0	9.6	52.2	91.6	3.2	14.3	13.5
LSD (0.05)		33.3	3.2	0.3	1.0	-	-	-	24.5
C.V.2: (S of MEAN / MEAN)*100		19.7	4.9	1.0	0.7	-	-	-	62.8

1/ Wildlife depredation (likely deer, but antelope also suspected) consisted of head clipping from 0-100 percent with amazing specificity by variety or cultivar. Such damage likely occurred relatively late in crop development since there was no stem or leaf grazing noted. There were no heads on the ground which further served to confirm wildlife depredation as to the cause of the head loss. Due to late season rain, no animal tracks were visible in the plots at harvest time, but an obvious "game trail" across an adjacent chemical fallow field led directly to the plot site.

Yields for this 16-entry study are not reported since wildlife depredation uniformly and heavily impacted 3 entries with 45 to 100 percent selective head clipping, and generally poor stands rendered adjusted or unadjusted yield values meaningless for both depredated and undepredated plots. Minimal grain samples in depredated plots were collected to obtain grain-related data other than yield.

Site Resource & Management Data: (Exp# 09-3651-SB)							
Field		SaltHaz(MMHOS/cm) 6-24	0.43	Dry Surf Soil (in.) @ Plnt'g	0.75		
Quarter	SE	S (ppm) 0-24	9	2" Soil Temp (°F) @ Plnt'g	58		
Section	13	Zn (ppm) 0-6	0.67	4" Soil Temp (°F) @ Plnt'g	54		
Township	36N	Fe (ppm) 0-6	46.6	Fertilizer Formulation	Gran Blend		
Range	25E	Mn (ppm) 0-6	33.66	Fertilizer Placement	Bnd at Plntg		
Latitude	N48 52.575'	Cu (ppm) 0-6	1.15	Fert. Rate (lbs/ac) N	70		
Longitude	W108 23.557'	CEC 0-6	8.7	Fert. Rate (lbs/ac) P2O5	40		
Soil Series	Telstad Lm	Soil Texture 0-6	n/a	Fert. Rate (lbs/ac) K2O	25		
pH 0-6	6.6	Soil Texture 6-24	n/a	Herbicide App. Date	6/15		
Org.Matter (%) 0-6	1.5	Soil Texture 24-36	n/a	Herbicide Product	Bison/E99		
N (lbs/ac) 0-6	6	Soil Texture 36-48	n/a	Herbicide Rate (/ac)	20oz/8oz		
N (lbs/ac) 6-24	36	Init PAW (in.) 0-6"	0.89	Precip (in.) Plnt'g-Harvest	7.46		
N (lbs/ac) 24-36	12	Init PAW (in.) 6-24"	2.93	Precip (>.1) Plnt'g-Harvest	6.75		
N (lbs/ac) 36-48	40	Init PAW (in.) 24-36"	2.07	Harvest Date	9/10		
N (lbs/ac) 0-48	94	Init PAW (in.) 36-48"	1.94	Rooting Depth (in.)	42"		
P (ppm) Olsen 0-6	19	Init PAW (in.) 0-48"	7.83	Post PAW (in.) 0-6"	0.55		
K (ppm) 0-6	233	Cropping System	CT-MechFlw	Post PAW (in.) 6-24"	1.97		
Ca (ppm) 0-6	1111	Previous Crop	DUR	Post PAW (in.) 24-36"	0.06		
Mg (ppm) 0-6	295	Planting Date	5/2	Post PAW (in.) 36-48"	0.56		
Na (ppm) 0-6	9	Planting Depth (in.)	1.5	Post PAW (in.) 0-48"	3.14		
SaltHaz (MMHOS/cm) 0-6	0.15	Moist Soil Depth @ Plnt'g	48+	Precip (>.1) Hvst-Post	0		

TABLE 15. Eight-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. 2000-2009. (Exp# 3651-SB)

2/ VARIETY or SELECTION	No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre)							TEST WEIGHT (Pounds Per Bushel)						
		2005	2006	2007	AVE. for YEARS TESTED 3/		% of CHECK YIELD 4/	8-YR COMP. AVE YIELD 5/	2005	2006	2007	AVE. for YEARS TESTED 3/		% of CHECK TEST WT 4/	8-YR COMP. AVE TEST WT 5/
					2008 **	2009 **						2008 **	2009 **		
P1568246 BARONESSE (P+)	7	66.9			61.3	112.3	53.3	45.9				49.1	101.6	47.9	
P1610264 VALIER (++)	5				53.7	107.0	50.7					50.4	103.1	48.6	
BZ594-19 WPB XENA (P+)	7	66.5	33.7	12.0	48.6	106.9	50.7	46.8	45.0	41.3		48.0	103.1	48.6	
MT970229 MT970229	5	66.6	29.3		51.2	106.6	50.5	49.6	46.5			49.3	105.9	50.0	
TR150 COPELAND	3	59.9	28.8		52.4	100.0	47.4	44.6	44.3			45.7	98.8	46.6	
MT960228 ESLICK	8	70.4	31.5	11.8	47.8	98.9	46.9	46.9	45.0	43.1		48.7	103.6	48.9	
P491534 GALLATIN	6				51.4	95.3	45.2					50.1	102.5	48.3	
MT960101 GERALDINE	5	67.3	31.1	12.1	39.6	94.1	44.6	46.7	44.1	41.4		45.3	100.8	47.6	
BZ596117 BOULDER (+)	3	71.2	33.0	12.0	38.8	93.3	44.2	49.5	45.8	44.9		46.8	107.0	50.5	
2B965057 CONRAD (+)	3	68.0	32.5	12.1	37.5	90.7	43.0	46.7	45.5	43.7		45.3	103.7	48.9	
MT910189 HOCKETT (++)	4	64.1	34.8	12.1	44.6	90.2	42.8	50.1	44.9	43.9		47.7	105.2	49.6	
MT950186 HAXBY (+)	8	62.8	11.6	11.7	43.1	89.4	42.4	49.7	45.7	44.5		49.9	106.3	50.1	
SK76333 HARRINGTON	8	58.5	32.9	11.7	44.3	85.8	40.7	44.8	43.9	42.4		47.0	99.6	47.0	
TR232 METCALFE	4	59.7	30.0	11.9	42.2	85.6	40.6	46.2	44.8	43.5		46.2	102.0	48.1	
ND15477 DRUMMOND (+)	3	58.7	32.3	11.8	34.3	83.3	39.5	45.9	42.7	42.8		43.8	100.3	47.3	
2B914947 MERIT (P+)	3	60.3	30.0	11.9	34.1	83.0	39.4	42.5	41.7	39.8		41.4	94.7	44.6	
MT970116 CRAFT	7	58.0	7.7	11.7	36.7	82.2	39.0	48.0	45.0	45.1		48.2	104.4	49.2	
6B952482 TRADITION	4	61.9	30.4	11.5	40.6	82.2	39.0	47.0	43.5	42.7		45.5	100.4	47.3	
6B932978 LEGACY (P+)	3	60.1	23.8	11.6	31.9	78.0	37.0	43.5	40.9	41.2		41.9	95.8	45.2	
MT981060 HAYS	5	39.8	6.0	10.9	16.4	38.2	18.1	43.9	39.0	39.0		41.7	92.4	43.6	
MEANS (For Entries Listed)		62.3	27.0	11.8			42.7	46.6	44.0	42.6				47.9	
6/ Growing Season Precipitation (in.)		9.7	2.5	7.0	6.6	6.0	6.9								
Soil PAW (in.) to SD @ Planting		8.0	8.8	5.8	8.1	7.8	7.3								
Total Plant Available Water (in.)		17.7	11.3	12.8	14.6	13.8	13.4								
Soil NO3 (lbs.) to SD at Planting		84	64	81	71	94	87								
SD (Sampling Depth in Inches)		48	48	48	48	48	48								
Fertilizer Applied	(# N)	70	70	70	70	70	69								
	(# P ₂ O ₅)	40	40	40	40	40	40								
	(# K ₂ O)	25	25	25	25	25	23								

Check Variety is Harrington.

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 selection 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 Harrington yield or test weight for the same data years as those in which a given entry was tested.

5/ 8-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 Harrington for the same years and z = 8-Yr average yield or test weight for the check variety Harrington.

6/ Seeding to 14 days prior to harvest maturity.

**2008 and 2009 nursery yields not available due to wildlife depredation.

TABLE 16. Dryland Fallow Spring Barley Cultivar Evaluation Nursery Grown Off-Station at the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. (Exp# 09-3652-SB)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/			TEST WT Lbs/Bu	PLUMP %	THIN %	2/
				YIELD Bu/Ac	MOIST. %	PROTEIN %				
YU501385	CHAMPION	83.6	25.1	76.7	9.2	50.1	88.4	3.2	12.9	
GOLDENEY	GOLDENEYE	76.9	21.9	72.5	8.6	45.1	77.2	8.2	12.5	
MT030042	MT910189/MT960099	70.4	22.4	71.6	9.7	51.2	82.3	7.2	12.9	
MT970116	CRAFT	87.1	25.5	71.4	9.3	50.7	93.7	2.0	13.8	
MT061207	MT970229/LK232	77.8	22.2	67.7	8.9	49.1	94.7	1.3	14.2	
MT910189	HOCKETT	77.5	23.3	65.7	9.4	50.3	87.0	5.1	13.6	
2B965057	CONRAD	76.9	21.0	64.9	9.1	48.1	87.1	4.3	14.8	
MT010158	MT920041/Harrington	82.1	24.1	64.3	9.3	49.3	83.3	5.4	14.6	
PI568246	BARONESSE	85.8	23.0	63.2	9.2	48.9	88.1	4.4	14.2	
PI491534	GALLATIN	83.6	23.8	61.1	9.4	49.5	80.9	5.8	14.1	
MT950186	HAXBY	72.8	23.3	58.4	9.2	50.7	89.5	3.2	14.1	
MT960101	GERALDINE	75.6	22.0	57.7	9.1	49.3	76.4	9.8	15.3	
SK 76333	HARRINGTON	75.0	24.0	57.4	9.2	48.5	82.9	6.0	13.9	
PI643354	PINNACLE	74.7	23.2	57.2	9.2	49.6	95.8	1.6	12.8	
MT020155	MT960225/H1851195	60.8	23.2	54.5	9.0	48.2	87.5	3.3	13.8	
TR232	METCALFE	63.9	24.5	48.8	9.3	49.2	86.8	3.7	15.1	
EXPERIMENTAL MEANS		76.5	23.3	63.3	9.2	49.2	86.4	4.7	13.9	
LSD (0.05)		17.7	2.8	13.7	0.2	1.2	-	-	-	
C.V.2: (S of MEAN / MEAN)*100		8.0	4.2	7.5	0.8	0.8	-	-	-	

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# 09-3652-SB)					
Field		SaltHaz(MMHOS/cm) 6-24	0.38	Dry Surf Soil (in.) @ Plnt'g	0.25
Quarter	NW	S (ppm) 0-24	9	2" Soil Temp (°F) @ Plnt'g	56
Section	31	Zn (ppm) 0-6	0.6	4" Soil Temp (°F) @ Plnt'g	51
Tow nship	36N	Fe (ppm) 0-6	44.0	Fertilizer Formulation	Gran.Blend
Range	13E	Mn (ppm) 0-6	39.1	Fertilizer Placement	Bdcst at Plt
Latitude	N48 50.484'	Cu (ppm) 0-6	1.2	Fert. Rate (lbs/ac) N	50
Longitude	W110 5.033'	CEC 0-6	9.2	Fert. Rate (lbs/ac) P2O5	15
Soil Series	Telstad Joplin	Soil Texture 0-6	n/a	Fert. Rate (lbs/ac) K2O	0
pH 0-6	6.10	Soil Texture 6-24	n/a	Herbicide App. Date	6/11
Org.Matter (%) 0-6	1.40	Soil Texture 24-36	n/a	Herbicide Product	Bromac
N (lbs/ac) 0-6	11	Soil Texture 36-48	n/a	Herbicide Rate (/ac)	19.2 oz
N (lbs/ac) 6-24	30	Init PAW (in.) 0-6"	1.1	Precip (in.) Plnt'g-Harvest	2.61
N (lbs/ac) 24-36	18	Init PAW (in.) 6-24"	4.3	Precip (>.1) Plnt'g-Harvest	2.25
N (lbs/ac) 36-48	26	Init PAW (in.) 24-36"	2.3	Harvest Date	9/1
N (lbs/ac) 0-48	85	Init PAW (in.) 36-48"	1.8	Rooting Depth (in.)	38"
P (ppm) Olsen 0-6	27	Init PAW (in.) 0-48"	9.5	Post PAW (in.) 0-6"	0.39
K (ppm) 0-6	380	Cropping System	NT-ChmFlw	Post PAW (in.) 6-24"	1.94
Ca (ppm) 0-6	1099	Previous Crop	WW	Post PAW (in.) 24-36"	0.80
Mg (ppm) 0-6	314	Planting Date	5/6	Post PAW (in.) 36-48"	1.40
Na (ppm) 0-6	9	Planting Depth (in.)	1.5	Post PAW (in.) 0-48"	4.54
SaltHaz (MMHOS/cm) 0-6	0.24	Moist Soil Depth @ Plnt'g	48+	Precip (>.1) Hvst-Post	0

TABLE 17. Five-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Barley Variety Nurseries Grown Off-Station at the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2005-2009. (Exp# 3652-SB)

2/ VARIETY or SELECTION	No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre)							TEST WEIGHT (Pounds Per Bushel)								
		2005	2006	2007	2008	2009	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	5-YR COMP. AVE YIELD 5/	2005	2006	2007	2008	2009	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	5-YR COMP. TEST WT 5/
BZ596117 BOULDER (+)	4	63.8	42.2	79.7	58.4		61.0	126.9	63.4	46.2	42.0	49.8	50.1		47.0	105.1	47.8
MT960228 ESLICK	4	56.4	35.7	73.0	60.0		56.3	117.0	58.5	45.1	42.8	45.7	48.0		45.4	101.4	46.2
2B965057 CONRAD (+)	5	55.1	30.9	68.5	63.4	64.9	56.6	113.2	56.6	44.5	43.0	44.8	49.3	48.1	45.9	100.9	45.9
PI568246 BARONESSE (P+)	3	54.3			62.3	63.2	59.9	112.6	56.2	43.5			50.1	48.9	47.5	101.1	46.0
6B95-248 TRADITION (P+)	4	64.9	33.4	68.4	48.7		53.9	111.9	55.9	43.7	38.6	46.4	48.4		44.3	99.0	45.0
MT950186 HAXBY	5	58.1	39.5	64.3	56.6	58.4	55.4	110.8	55.4	48.3	44.8	48.4	51.8	50.7	48.8	107.3	48.8
MT970116 CRAFT	5	54.7	34.8	55.8	55.9	71.4	54.5	109.1	54.5	46.8	45.4	47.5	51.2	50.7	48.3	106.2	48.3
MT981060 HAYS	3	54.7	31.5	69.6			51.9	107.5	53.7	40.8	39.6	41.9			40.8	93.8	42.7
BZ594-19 WPB XENA (P+)	4	51.4	32.8	72.0	49.3		51.4	106.8	53.4	43.3	42.6	44.7	48.7		44.8	100.2	45.6
MT910189 HOCKETT (++)	5	54.5	33.7	64.9	43.5	65.7	52.5	105.0	52.5	47.8	43.0	48.0	50.7	50.3	48.0	105.4	48.0
MT960101 GERALDINE	5	55.5	28.6	61.5	55.3	57.7	51.7	103.5	51.7	44.1	42.4	44.1	48.6	49.3	45.7	100.4	45.7
SK 76333 HARRINGTON	5	54.7	25.7	64.5	47.5	57.4	50.0	100.0	50.0	43.8	43.0	43.6	48.6	48.5	45.5	100.0	45.5
2B914947 MERIT (P+)	4	48.6	27.0	64.7	51.9		48.1	99.9	49.9	41.9	40.5	43.0	48.1		43.4	96.9	44.1
ND15477 DRUMMOND (+)	4	56.0	34.2	57.4	36.4		46.0	95.6	47.8	41.3	37.5	45.8	47.5		43.0	96.1	43.7
TR232 METCALFE	5	50.4	27.7	60.0	51.0	48.8	47.6	95.3	47.6	44.4	43.6	46.4	49.6	49.2	46.6	102.5	46.6
PI639694 STELLAR-ND (+)	3		28.5	51.6	43.9		41.3	90.0	45.0		34.0	43.1	46.0		41.1	91.1	41.4
6B932978 LEGACY (P+)	4	51.8	29.6	55.2	27.5		41.0	85.3	42.6	39.2	37.0	43.0	45.4		41.2	92.0	41.9
MEANS (For Entries Listed)		55.3	32.2	64.4	50.7	60.9			52.6	44.0	41.2	45.4	48.9	49.5			45.5
6/ Growing Season Precipitation (in.)		4.0	n/a	3.9	4.8	2.6	3.8										
Soil PAW (in.) to SD @ Planting		8.2	n/a	1.0	8.6	9.5	6.8										
Total Plant Available Water (in.)		12.2	n/a	4.9	13.4	12.1	10.6										
Soil NO3 (lbs.) to SD at Planting		60	n/a	10	n/a	85	52										
SD (Sampling Depth in Inches)		48	n/a	6	48	48	38										
Fertilizer Applied	(# N)	70	70	70	70	50	66										
	(# P ₂ O ₅)	40	40	40	40	15	35										
	(# K ₂ O)	25	25	25	25	0	20										

Check Variety is Harrington.

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 selection decisions.

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

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

4/ Percent of Harrington 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 Harrington for the same years and z = 5-Yr average yield or test weight for the check variety Harrington.

6/ Seeding to 14 days prior to harvest maturity.

TABLE 18. Dryland Fallow Spring Barley Cultivar Evaluation Nursery Grown Off-Station at the Flansaas-Lumsden Farm, Loring. Northern Agricultural Research Center. Havre, (Exp# 09-3655-SB)

ID	1/ CULTIVAR or SELECTION	STAND %	PLNT HT Inches	2/		TEST WT Lbs/Bu	PLUMP %	THIN %	3/ PROTEIN %
				YIELD Bu/Ac	MOISTURE %				
MT030042	MT910189/MT960099	91.3	18.1	48.2	9.6	51.7	94.2	2.3	12.7
SK 76333	HARRINGTON	91.3	19.5	46.9	9.3	49.8	90.4	3.9	14.0
PI568246	BARONESSE	91.3	18.8	46.3	9.3	50.5	94.9	1.9	13.9
MT061207	MT970229/LK232	92.7	18.7	44.8	9.0	50.2	97.5	0.8	13.4
2B965057	CONRAD	89.9	16.5	44.7	9.3	49.6	93.2	2.3	14.6
MT910189	HOCKETT	88.2	18.9	44.1	9.5	51.6	96.4	1.4	13.8
MT960101	GERALDINE	88.5	19.2	41.6	9.2	50.2	88.5	5.1	14.2
TR232	METCALFE	89.2	22.2	41.5	9.4	50.4	96.2	1.4	15.1
MT020155	MT960225/H1851195	90.3	19.2	40.8	9.0	49.0	93.7	2.1	13.8
PI491534	GALLATIN	93.1	19.7	34.6	9.5	50.7	85.7	6.0	13.3
MT010158	MT920041/Harrington	80.9	19.1	32.0	9.2	50.9	95.5	1.6	15.1
EXPERIMENTAL MEANS		89.7	19.1	42.3	9.3	50.4	93.3	2.6	14.0
LSD (0.05)		9.0	2.8	13.5	0.3	0.9	-	-	-
C.V.2: (S of MEAN / MEAN)*100		3.4	5.0	10.8	1.0	0.6	-	-	-

1/ Eleven of 16 entries originally in the trial. Five others (Goldeneye, Haxby, Craft, Champion and Pinnacle) suffered severe, selective depredation by wildlife). MT010158 and Gallatin suffered 31.7 and 15.0 percent average depredation, but were affected only in a single replication whereas the 5 others showed severe entry-selective head grazing in all replications.

2/ 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.

3/ Protein values are reported on a 100% dry matter basis.

Site Resource & Management Data: (Exp# 09-3655-SB)							
Field		SaltHaz(MMHOS/cm) 6-24	0.37	Dry Surf Soil (in.) @ Plnt'g	0.25		
Quarter	SW	S (ppm) 0-24	7	2" Soil Temp (°F) @ Plnt'g	59		
Section	24	Zn (ppm) 0-6	0.67	4" Soil Temp (°F) @ Plnt'g	58		
Tow nship	35N	Fe (ppm) 0-6	47.4	Fertilizer Formulation	Gran Blend		
Range	29E	Mn (ppm) 0-6	18.73	Fertilizer Placement	Bnd at Plntg		
Latitude	N48 29.495'	Cu (ppm) 0-6	1.11	Fert. Rate (lbs/ac) N	70		
Longitude	W109 47.910'	CEC 0-6	10.7	Fert. Rate (lbs/ac) P2O5	40		
Soil Series	ScobeyCL	Soil Texture 0-6	n/a	Fert. Rate (lbs/ac) K2O	25		
pH 0-6	6.6	Soil Texture 6-24	n/a	Herbicide App. Date	n/a		
Org.Matter (%) 0-6	1.9	Soil Texture 24-36	n/a	Herbicide Product	none		
N (lbs/ac) 0-6	4	Soil Texture 36-48	n/a	Herbicide Rate (/ac)	n/a		
N (lbs/ac) 6-24	18	Init PAW (in.) 0-6"	1.15	Precip (in.) Plnt'g-Harvest	5.25		
N (lbs/ac) 24-36	12	Init PAW (in.) 6-24"	4.31	Precip (>.1) Plnt'g-Harvest	4.70		
N (lbs/ac) 36-48	8	Init PAW (in.) 24-36"	2.74	Harvest Date	9/2		
N (lbs/ac) 0-48	42	Init PAW (in.) 36-48"	2.33	Rooting Depth (in.)	44"		
P (ppm) Olsen 0-6	14	Init PAW (in.) 0-48"	10.52	Post PAW (in.) 0-6"	0.60		
K (ppm) 0-6	265	Cropping System	NT-ChmFlw	Post PAW (in.) 6-24"	1.41		
Ca (ppm) 0-6	1280	Previous Crop	SW	Post PAW (in.) 24-36"	0.76		
Mg (ppm) 0-6	429	Planting Date	5/11	Post PAW (in.) 36-48"	1.53		
Na (ppm) 0-6	7	Planting Depth (in.)	1.5	Post PAW (in.) 0-48"	4.30		
SaltHaz (MMHOS/cm) 0-6	0.21	Moist Soil Depth @ Plnt'g	48+	Precip (>.1) Hvst-Post	0		

TABLE 19. Ten-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, 2000-2009. (Exp# 3655-SB)

2/ VARIETY or SELECTION	No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre)							TEST WEIGHT (Pounds Per Bushel)					10-YR COMP. AVE 5/			
		2005	2006	2007	2008	2009	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	2005	2006	2007	2008	2009		AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	
BZ596117 BOULDER (+)	4	68.5	32.9	57.8	56.0		53.8	124.7	61.1	49.5	44.2	44.0	48.7		46.6	103.5	48.6
MT970229 MT970229	5	60.9	27.8				55.9	113.2	55.4	50.6	46.6				48.4	105.8	49.7
PI568246 BARONESSE (P+)	8	65.2			52.4	46.3	57.5	112.6	55.1	47.3			49.0	50.5	48.3	100.4	47.1
MT950186 HAXBY	9	57.3	37.7	60.3	47.2		54.9	111.6	54.7	50.3	47.4	45.4	51.1		50.0	107.1	50.3
2B965057 CONRAD (+)	5	61.8	29.0	57.4	45.5	44.7	47.7	110.6	54.1	48.5	44.9	41.3	49.0	49.6	46.7	101.4	47.6
BZ594-19 WPB XENA (P+)	8	59.4	29.1	50.6	47.7		50.9	108.3	53.0	47.9	44.2	41.1	48.9		47.0	101.4	47.6
MT960228 ESLICK	9	61.0	31.2	52.6	54.2		53.1	107.9	52.8	48.7	45.8	42.2	48.3		47.8	102.4	48.1
ND15477 DRUMMOND (+)	4	47.5	33.0	54.2	46.5		45.3	105.0	51.4	47.9	43.4	41.3	47.0		44.9	99.7	46.8
MT960101 GERALDINE	7	64.4	30.0	48.2	48.4	41.6	47.4	104.8	51.3	47.6	44.9	40.7	49.2	50.2	46.4	101.8	47.8
MT910189 HOCKETT (++)	6	57.1	27.4	53.6	39.2	44.1	48.9	102.4	50.1	50.5	46.6	42.9	49.7	51.6	48.9	105.1	49.3
2B914947 MERIT (P+)	4	63.5	26.4	52.0	32.2		43.5	100.9	49.4	45.6	44.5	38.7	48.1		44.2	98.1	46.1
SK76333 HARRINGTON	10	52.0	30.6	50.5	39.4	46.9	49.0	100.0	49.0	46.7	44.1	40.2	49.3	49.8	46.9	100.0	46.9
TR232 METCALFE	6	60.3	22.6	53.2	40.5	41.5	47.7	99.9	48.9	46.4	46.4	42.2	49.8	50.4	47.5	102.2	48.0
6B952482 TRADITION	5	52.2	26.2	54.8	42.0		47.7	99.5	48.7	48.4	41.8	42.0	47.9		45.9	100.0	46.9
MT970116 CRAFT	8	27.7	33.1	57.0	39.2		47.6	97.6	47.8	49.5	49.5	45.2	50.3		49.3	107.0	50.2
MT981060 HAYS	5	34.5	30.4	53.3			47.9	96.7	47.3	45.9	41.8	37.3			43.7	97.3	45.7
6B932978 LEGACY (P+)	3		26.2	47.4	36.6		36.7	91.4	44.7		42.3	37.7	46.6		42.2	94.8	44.5
PI639694 STELLAR-ND (+)	3		23.2	46.7	32.8		34.2	85.2	41.7		38.7	37.6	45.0		40.4	90.8	42.6
MEANS (For Entries Listed)		55.8	29.2	53.1	43.7	44.2			50.9	48.2	44.5	41.2	48.6	50.4			47.4
6/ Growing Season Precipitation (in.)		n/a	2.4	8.8	n/a	5.3	6.6										
Soil PAW (in.) to SD @ Planting		9.1	8.3	8.3	8.1	10.5	8.2										
Total Plant Available Water (in.)		9.1	10.7	17.1	8.1	15.7	12.9										
Soil NO3 (lbs.) to SD at Planting		54	81	89	n/a	42	67										
SD (Sampling Depth in Inches)		48	48	48	48	48	48										
Fertilizer Applied	(# N)	70	70	70	70	70	70										
	(# P ₂ O ₅)	40	40	40	40	40	40										
	(# K ₂ O)	25	25	25	25	25	25										

Check Variety is Harrington.

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 selection decisions.

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

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

4/ Percent of Harrington 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 Harrington for the same year and z = 10-Yr average yield or test weight for the check variety Harrington.

6/ Seeding to 14 days prior to harvest maturity.