TITLE: Long-Term Small Grain Variety Performance Evaluation Under Mechanical or Chemical Fallow Conditions Off-Station in Northern Montana Counties. (4W6131)

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OBJECTIVES:

Diverse cropping environments exist within the 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 29.2 percent of the 2005-2009 statewide total (42 percent and 19 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 1982-2009 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 2010 ranged from fair to excellent across North Central Montana. At Havre, total annual growing season precipitation (9/1/09 through 8/31/10) was 14.61 inches, 22.6 percent more than the average for all years since 1916. April 1 through July 31 precipitation was 9.69 inches or 143.5 percent of the 95-year average. Heat units expressed as "Growing Degree Days" (GDD, base 50) from May through July were 1043, 81 percent of the average for the last 60 years (1951-2010). The last spring frost was one day early with the first fall frost 24 days late, resulting in 154 frost-free days, 25 days longer than the 95-year average. At 6.06 inches, March 2010 through May 2010 precipitation was 183 percent of the long-term average. The minimum winter temperature was -35 degrees F on December 7. Overall, the growing season was slightly cooler than normal. The April through July growing season saw an average daily temperature at 55.3 degrees F, 1.9 degrees below normal. July and August average temperatures were 1.5 percent lower than normal with the high for 2010 recorded on August 27 102 degrees F. There were only 18 days 90 degrees F or above, and only one day with temperatures 100 degrees F or above. June, July and August had all of the days 90 degrees F or above therefore, some cereal crops were affected by the heat prior to reaching harvest maturity. April and May growing conditions were much wetter than normal resulting in delayed seeding and emergence of early seeded crops. June and July were about average for precipitation, but were cooler than normal resulting in delayed maturity of cereal crops. Overall, growing conditions were wetter than normal with March though May precipitation at 183 percent of normal. Prolonged maturity of crops coupled with a wetter than normal August extended the harvest of cereal crops into early October. Crop outlook was initially good with adequate fallow-stored soil moisture

and generally favorable conditions. Spring crop performance in some areas was poorer than expected due to early season cool temperatures, followed by some untimely heat, whereas winter wheat performance was excellent across locations. Yield and test weight comparisons with long-term comparable averages varied according to crop and location. On-Station WW at Havre had increased yields (143 percent of the 10-year comparable average of 49.5 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 (144 percent of the 10-year comparable average of 37.1 bu/ac) and decreased test weights (0.85 lbs less than the 10-year comparable average of 58.0 lbs/ac); BLY had increased yields (129 percent of the 10-year comparable average of 57.5 bu/ac) and increased test weights (0.9 lbs more than the 10-year comparable average of 49.9 lbs/bu).

Off-station cropping environments were very favorable in 2010. 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, 2010 yields were down 2.8 percent with very low test weights. Low test weights at Loma are contributed to the large amount of precipitation between physiological maturity and grain harvest. The Turner location had higher than normal precipitation, good stored soil water and generally favorable growing conditions for the production of spring cereal crops. Yields of the SW were down 5 percent from the ten-year comparable average with test weights down 3 lbs/bu. DURUM yields were 16 percent lower than the nine-year Turner comparable average with test weights down 3.2 lbs/bu. The Loring location had higher than normal precipitation, good stored soil water and generally favorable growing conditions for the production of spring cereal crops. Loring SW yields were 7 percent lower than the ten-year comparable average with test weights down 2.2 lbs/bu. The North Havre location, established in 2005 for purposes of conducting agronomic investigations in a wheat stem sawfly environment, also had very good growing season precipitation, good stored soil water and generally favorable growing conditions for all crops. WW yields were 34 percent higher than the six-year comparable average with test weights 2.6 lbs/bu lower. SW yields were 54 percent higher than the six-year comparable average with test weights nearly equal to the average. DURUM yields were 65 percent higher than the six-year comparable average with test weights nearly equal to the average. Sawfly pressure on winter wheat at Loma was horrendous, averaging 71.8 percent cutting, while cutting at North Havre was minimal, averaging only 5.7 percent. Sawfly pressure on spring wheat was moderate at Turner and Loring, and minimal at North Havre. North Havre recorded yields generally commensurate with available moisture, however Turner and Loring recorded yields lower than anticipated for the amount of precipitation received. Protein levels for appropriately fertilized wheat and durum were generally good, however, as expected, entries with very high yields had lower than ideal proteins.

Stand percent, plant height, yield, moisture, test weight, protein and sawfly cutting data, where appropriate, for the 2010 Peterson (North Havre) dryland winter wheat trial are summarized in Table 1 and the 2010 McKeever (Loma) dryland winter wheat trial data are summarized in Table 3. Multi-year yield and test weight summary data for the Peterson location for 2003-2010 are presented in Table 2 and data for selected winter wheat entries at the McKeever location for 2001-2010 are presented in Table 4.

Stand percent, plant height, yield, moisture, test weight, protein, sawfly cutting and wildlife depredation data, where appropriate, for the 2010 Cederberg (Turner), Peterson (North Havre) and Flansaas/Lumsden (Loring) dryland spring wheat trials are summarized in Tables 5, 7 and 9, 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 the 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 6, 8 and 10, respectively.

Stand percent, plant height, yield, moisture, test weight, protein, sawfly cutting and wildlife depredation data, where appropriate, for the 2010 Cederberg (Turner) and Peterson (North Havre) dryland durum trials are summarized in Tables 11 and 13, 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 12 and 14, respectively.

SUMMARY:

Seven, standard, off-station variety performance trials were conducted in 2010 on chemical fallow at four locations in four northern Montana counties.

Dryland Winter Wheat Trials:

1. McKeever Farm & Seed Inc., Chouteau County	(12N Loma)	20-27N-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

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.

FUNDING SUMMARY:

Expenditure information is to be provided by Montana State University, Office of Sponsored Programs. There is no other grant support for this project.

MWBC FY2012 GRANT SUBMISSION PLANS:

It is planned to submit this project for funding consideration in the next fiscal year.

With drought, budget and other resources allowing, it is planned 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 Council. 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 later resulted in relocation of the sawfly-resistant variety development work to northern Hill County as of the 2005 crop year. It was our intent to continue standard off-station variety evaluation work at Loma until at least ten years of performance data were collected, which occurred in 2008 for SW and BLY. Due to the ten years of data collection along with the workload associated with maintaining both winter and spring crops at the same location, spring trials were dropped from the Loma location in 2009. This continues to be an excellent location with outstanding producer cooperation and support.

With ever changing sawfly pressure, it is planned to continue winter wheat variety investigations at McKeever (Loma) location and begin winter wheat investigations at the Cederberg (Turner) location while suspending efforts at the Peterson (North Havre) location. It is also planned to continue off-station spring wheat variety evaluations at the

Cederberg (Turner) and Flansaas/Lumsden (Loring) locations and durum evaluations at the Cederberg location. All spring cereal investigations will be suspended at the Peterson location. In 2010, off-station spring barley variety evaluations were discontinued at the Cederberg (Turner) and Flansaas/Lumsden (Loring) locations until wildlife depredation issues can be adequately dealt with. The Loring location is entering its' sixteenth 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. 2010 marked 23 years at the present Turner site (plus 5 years on a different soil series at a site nearby). Double plantings initiated in 1994 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 also outstanding.

Data processed by Northern Agricultural Research 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 the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2010. (Exp# 10-3852-WW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	2/ PROTEIN %	3/ SAWFLY %
DH001819	ACCIPITER	96.9	30.6	73.2	12.4	56.9	8.6	2.3
PI619098	WAHOO	98.2	32.2	72.7	12.1	54.0	9.5	2.3
BZ96-919	PRYOR	97.5	29.8	70.4	12.2	56.3	9.0	1.0
MT0552	N95L159/CDC Clair	97.2	29.9	68.3	11.8	55.7	9.9	2.3
BZ022060	CARTER	98.4	27.4	66.8	12.1	55.9	10.3	4.0
MTCLO3O6	HYALITE	98.4	32.5	66.8	12.2	56.6	10.6	16.7
MT00159	YELLOWSTONE	98.4	32.6	66.7	12.3	55.8	9.6	10.0
S94-4	CDC FALCON	97.8	29.5	66.7	12.0	56.0	9.8	2.3
MT06103	MT9409/W94-137	97.8	34.0	66.6	12.3	57.3	9.9	5.3
BZ96-788	LEDGER	98.8	29.3	66.3	12.0	56.3	10.2	1.0
MTS0832	92X73E70/MTW9911	97.2	35.5	65.7	12.0	55.6	9.8	1.0
MTCL0318	BYNUM	96.0	34.9	65.5	12.1	57.2	10.9	1.0
JAGALENE	JAGALENE	98.2	32.1	65.0	11.8	56.6	10.2	8.3
MTS0721	DMS/Rmp//Pronghorn/3/2*Rm	97.1	32.6	64.8	12.1	56.3	9.6	1.0
MTS0031	GENOU	97.5	32.0	64.0	12.3	56.8	9.2	3.7
MTS0705	MT9524/G14048//Rampart	97.5	37.9	63.2	12.1	56.5	9.8	1.0
PI555458	PROMONTORY	98.2	31.7	63.2	12.3	56.1	9.6	18.3
ND9257	JERRY	97.5	34.9	62.2	12.2	55.6	10.0	11.7
MTS0713	93X312E14/NuHorizon	97.5	28.2	59.8	12.4	57.1	9.5	3.7
CI 17860	NEELEY	98.4	35.5	57.5	12.2	55.3	9.9	8.7
MTS0826	MT9524/G15048//Rampart	99.1	35.9	57.4	11.8	56.3	10.3	2.3
MTCL0316	NORRIS	95.1	32.1	57.2	12.0	56.4	10.4	23.3
MTS0532	L'Govskaya 167/Rmp//MT940	99.1	31.2	56.7	12.2	55.2	9.9	3.7
PI593889	RAMPART	98.7	33.5	54.2	12.1	54.8	10.0	1.0
EXPERIMENTAL MEANS		97.8	32.3	64.2	12.1	56.1	9.9	5.7
LSD (0.05)		1.0	2.7	4.9	0.5	0.6	-	36.1
C.V.2: (S of MEAN / MEAN)*100		2.7	2.5	8.9	0.2	1.0	-	5.8

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 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# 10-3852-WW)							
Field			SaltHaz(MMHOS/cm) 6-24	0.30		Dry Surf Soil (in.) @ Plnt'g	4.00
Quarter	NW		S (ppm) 0-24	9		2" Soil Temp (°F) @ Plnt'g	67
Section	31		Zn (ppm) 0-6	0.65		4" Soil Temp (°F) @ Plnt'g	60
Township	36N		Fe (ppm) 0-6	26.40		Fertilizer Formulation	Gran.Blend
Range	13E		Mn (ppm) 0-6	16.58		Fertilizer Placement	Bnd at Plntg
Latitude	N48 28.08'		Cu (ppm) 0-6	1.26		Fert. Rate (lbs/ac) N	70
Longitude	W110 5.881'		CEC 0-6	12.60		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	6.3		Soil Texture 6-24	n/a		Herbicide App. Date	5/13
Org.Matter (%) 0-6	1.5		Soil Texture 24-36	n/a		Herbicide Product	Brox-M, Osprey
N (lbs/ac) 0-6	33		Soil Texture 36-48	n/a		Herbicide Rate (/ac)	20 oz, 4.75 oz
N (lbs/ac) 6-24	12		Init PAW (in.) 0-6"	0.43		Precip (in.) Plnt'g-Harvest	9.92*
N (lbs/ac) 24-36	4		Init PAW (in.) 6-24"	2.52		Precip (>.1) Plnt'g-Harvest	8.01*
N (lbs/ac) 36-48	8		Init PAW (in.) 24-36"	1.68		Harvest Date	9/26
N (lbs/ac) 0-48	57		Init PAW (in.) 36-48"	2.29		Rooting Depth (in.)	n/a
P (ppm) Olsen 0-6	24		Init PAW (in.) 0-48"	6.92		Post PAW (in.) 0-6"	1.40
K (ppm) 0-6	505		Cropping System	NT-ChmFlw		Post PAW (in.) 6-24"	3.15
Ca (ppm)	1506		Previous Crop	WW		Post PAW (in.) 24-36"	0.33
Mg (ppm) 0-6	449		Planting Date	9/28		Post PAW (in.) 36-48"	0.98
Na (ppm) 0-6	17		Planting Depth (in.)	1.25		Post PAW (in.) 0-48"	5.86
SaltHaz (MMHOS/cm) 0-6	0.29		Moist Soil Depth @ Plnt'g	48+		Precip (>.1) Hvst-Post	n/a

* precip from May to September

TABLE 2. Six-Year Yield and Test Weight Summary of Selected Entries from Dryland Fallow Winter Wheat Variety Nurseries Grown Off-Station at the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2003-2010. (Exp# 3852-WW)

2/ VARIETY or SELECTION		No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre) 2006	2007	2008	2009 6/	2010	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	**6-YR COMP. AVE. YIELD 5/**	TEST WEIGHT (Pounds Per Bushel) 2006	2007	2008	2009 6/	2010	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	**6-YR COMP. AVE. TEST WT 5/**
PI619098	WAHOO (++)	5	30.0	62.9	50.2		72.7	49.4	118.9	**52.9**	60.8	60.1	58.1		54.0	57.4	100.0	**57.3**
BZ96-788	LEDGER (P+)	4	33.5	58.6	46.9		66.3	51.3	116.2	**51.7**	61.9	61.5	59.6		56.3	59.8	103.3	**59.2**
MTS 0031	GENOU (saw fly res)(++)	6	40.1	63.3	49.1		64.0	51.4	115.5	**51.4**	61.6	61.3	58.5		56.8	58.8	102.6	**58.8**
MT00159	YELLOWSTONE (++)	6	40.1	53.4	47.3		66.7	50.3	112.9	**50.3**	61.2	60.1	58.4		55.8	58.1	101.3	**58.1**
MTCL0316	NORRIS (P, CL++)	5	40.5	52.1	47.8		57.2	46.7	112.2	**50.0**	62.9	61.7	60.3		56.4	59.4	103.6	**59.4**
MTCL0306	HYALITE (P, CL++)	5	31.4	50.7	48.2		66.8	46.3	111.3	**49.6**	61.7	61.1	60.4		56.6	59.2	103.3	**59.2**
JAGALENE	JAGALENE (P+)	5	30.6	53.2	48.4		65.0	46.0	110.6	**49.2**	62.3	62.6	59.5		56.6	59.6	103.9	**59.5**
CI 17879	ROCKY (P)	5	35.8	54.0	46.4			44.8	106.7	**47.5**	62.6	62.1	60.0			60.6	105.1	**60.2**
ND9257	JERRY	6	27.4	55.2	42.8		62.2	47.2	106.0	**47.2**	59.7	60.7	58.7		55.6	57.8	100.8	**57.8**
PI555458	PROMONTORY	6	29.4	59.3	38.0		63.2	47.2	106.0	**47.2**	61.8	61.4	60.3		56.1	59.8	104.3	**59.8**
MTW 9441	NUSKY (HW)	5	39.7	52.4	43.9			44.5	106.0	**47.2**	61.3	60.1	60.5			59.5	103.1	**59.1**
MTCL0318	BYNUM (sf res)(P, CL++)	5	28.7	51.7	40.0		65.5	43.9	105.6	**47.0**	60.5	61.3	59.8		57.2	59.1	103.0	**59.0**
BZ96-919	PRYOR (P+)	6	33.3	54.6	42.2		70.4	46.8	105.0	**46.8**	61.2	60.1	57.6		56.3	57.8	100.8	**57.8**
S94-4	CDC FALCON (P+)	6	34.8	53.6	38.8		66.7	46.6	104.6	**46.6**	61.2	60.2	57.2		56.0	58.0	101.1	**58.0**
PI599336	MORGAN (P+)	4	34.6	54.5				45.2	103.4	**46.0**	59.6	61.0				58.0	100.4	**57.6**
PI593889	RAMPART (saw fly res)	6	34.0	53.9	41.7		54.2	45.8	102.7	**45.8**	61.2	61.1	58.7		54.8	58.4	101.9	**58.4**
PI517194	TIBER	5	34.0	52.6	48.7			43.0	102.5	**45.6**	61.3	60.9	60.7			59.6	103.3	**59.2**
PI593891	VANGUARD (saw fly res)	4	36.5	57.1				44.7	102.1	**45.5**	61.5	61.2				59.4	102.8	**58.9**
CI 17860	NEELEY	6	34.2	50.1	34.8		57.5	44.5	100.0	**44.5**	58.5	60.4	57.4		55.3	57.3	100.0	**57.3**
MEANS (For Entries Listed)			34.1	54.9	44.4		64.2			**48.0**	61.2	61.0	59.2		56.0			**58.7**
7/ Growing Season Precipitation (in.)			4.7	3.9	4.8		9.4	4.3										
Soil PAW (in.) to SD @ Planting			4.5	7.4	11.0		6.9	7.9										
Total Plant Available Water (in.)			9.2	11.2	15.8		16.3	11.3										
Soil NO3 (lbs.) to SD at Planting			178	364	50		57	156										
Fertilizer Applied	(# N)		70	70	70		70	70										
	(# P_2O_5)		40	40	40		40	40										
	(# K_2O)		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 selecton 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/ 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 Neeley for the same years, and z = 6-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 Nursery not harvested due to winter injury.

7/ May 3 to 14 days prior to harvest maturity.

TABLE 3. Dryland Fallow Winter Wheat Cultivar Evaluation Nursery Grown Off-Station at McKeever Farm & Seed, Inc., Loma. Northern Agricultural Research Center. Havre, Montana. 2010. (Exp# 10-3853-WW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	2/ PROTEIN %	3/ SAWFLY %
PI619098	WAHOO	99.7	34.9	68.6	12.9	51.2	11.2	98.3
MT00159	YELLOWSTONE	100.0	36.5	66.6	12.8	52.7	10.8	99.3
MTS0532	L'Govskaya 167/Rmp//MT940	100.0	36.1	66.1	13.1	54.8	11.2	82.7
BZ96-788	LEDGER	99.7	36.1	62.2	13.2	54.5	11.0	100.0
MT0552	N95L159/CDC Clair	100.0	34.1	61.5	12.9	53.7	11.9	96.3
MTCL0318	BYNUM	100.0	39.0	60.4	13.1	55.2	12.6	63.3
BZ022060	CARTER	100.0	35.5	59.3	13.0	54.7	11.4	96.0
MTS0832	92X73E70/MTW9911	99.7	39.8	59.2	13.6	52.6	11.6	6.7
PI555458	PROMONTORY	99.7	37.7	58.6	12.9	54.2	10.9	100.0
JAGALENE	JAGALENE	99.4	37.7	57.0	13.0	55.0	11.6	99.7
MTS0826	MT9524/G15048//Rampart	99.4	37.3	56.2	13.2	53.6	12.6	5.0
CI 17860	NEELEY	100.0	38.7	56.1	12.8	52.4	11.8	96.3
S94-4	CDC FALCON	99.7	34.9	56.0	12.7	52.3	11.7	99.7
MTS0713	93X312E14/NuHorizon	99.1	37.2	55.1	13.3	53.0	11.9	53.3
MT06103	MT9409/W94-137	100.0	37.2	54.7	13.1	53.7	12.1	86.7
MTS0721	DMS/Rmp//Pronghorn/3/2*Rm	100.0	32.5	54.7	13.4	54.1	11.9	8.3
MTS0705	MT9524/G14048//Rampart	100.0	39.9	53.9	13.2	52.3	13.3	11.7
MTCL0316	NORRIS	99.4	38.4	52.8	12.7	52.4	11.5	93.0
PI593889	RAMPART	99.7	39.0	52.7	13.0	52.8	12.8	10.0
BZ96-919	PRYOR	100.0	33.9	51.8	13.0	53.2	11.3	70.0
MTS0031	GENOU	100.0	39.4	51.6	12.9	51.9	13.1	51.7
DH001819	ACCIPITER	99.7	36.2	46.8	12.8	51.1	12.2	97.7
MTCLO3O6	HYALITE	100.0	38.0	46.4	12.8	52.6	12.2	100.0
ND9257	JERRY	100.0	38.5	41.9	12.5	49.7	13.0	96.7
EXPERIMENTAL MEANS		99.8	37.0	56.3	13.0	53.1	11.9	71.8
LSD (0.05)		0.2	3.3	6.2	1.4	1.7	-	10.5
C.V.2: (S of MEAN / MEAN)*100		0.6	3.5	9.9	0.5	2.6	-	21.5

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

Site Resource & Management Data: (Exp# 10-3853-WW)							
Field			SaltHaz (MMHOS/cm) 6-24	0.32		Dry Surf Soil (in.) @Plnt'g	3.00
Quarter	SE		S (ppm) 0-24	7		2" Soil Temp (°F) @ Plnt'g	67
Section	20		Zn (ppm) 0-6	0.80		4" Soil Temp (°F) @ Plnt'g	63
Township	27N		Fe (ppm) 0-6	42.70		Fertilizer Formulation	Gran Blend
Range	10E		Mn (ppm) 0-6	16.92		Fertilizer Placement	Bnd at Plntg
Latitude	N48 4'.286'		Cu (ppm) 0-6	1.52		Fert. Rate (lbs/ac) N	70
Longitude	W110 28.168'		CEC 0-6	12.80		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	n/a
Org.Matter (%) 0-6	1.7		Soil Texture 24-36	n/a		Herbicide Product	n/a
N (lbs/ac) 0-6	12		Soil Texture36-48	n/a		Herbicide Rate (/ac)	n/a
N (lbs/ac) 6-24	12		Init PAW (in.) 0-6"	0.75		Precip (in.) Plnt'g-Harvest	-
N (lbs/ac) 24-36	4		Init PAW (in.) 6-24"	3.74		Precip (>.1) Plnt'g-Harvest	-
N (lbs/ac) 36-48	8		Init PAW (in.) 24-36"	1.27		Harvest Date	9/15
N (lbs/ac) 0-48	36		Init PAW (in.) 36-48"	1.77		Rooting Depth (in.)	32"
P (ppm) Olsen 0-6	24		Init PAW (in.) 0-48"	7.52		Post PAW (in.) 0-6"	0.91
K (ppm) 0-6	348		Cropping System	NT-ChmFlw		Post PAW (in.) 6-24"	1.51
Ca (ppm)	1586		Previous Crop	SW		Post PAW (in.) 24-36"	1.05
Mg (ppm) 0-6	471		Planting Date	9/26		Post PAW (in.) 36-48"	2.51
Na (ppm) 0-6	17		Planting Depth (in.)	1.5		Post PAW (in.) 0-48"	5.97
SaltHaz (MMHOS/cm) 0-6	0.16		Moist Soil Depth @Plnt'g	48+		Precip (>.1) Hvst-Post	-

TABLE 4. 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. 2001-2010. (Exp# 3853-WW)

			1/ YIELD (Bushels Per Acre)								TEST WEIGHT (Pounds Per Bushel)							
2/ VARIETY	or SELECTION	No. of YEARS TESTED 3/	2006	2007	2008	2009	2010	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	**9-YR COMP. AVE. YIELD 5/**	2006	2007	2008	2009	2010	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	**9-YR COMP. AVE. TEST WT 5/**
PI619098	WAHOO (++)	7	48.2	73.9	75.5	54.9	68.6	69.3	108.5	**60.1**	60.1	59.0	55.8	57.8	51.2	57.6	100.0	**56.8**
MT00159	YELLOWSTONE (++)	8	65.2	65.5	76.5	44.6	66.6	65.1	107.1	**59.3**	60.6	58.6	55.1	59.1	52.7	57.6	100.3	**57.0**
BZ022060	CARTER (P++)	3			63.9	45.7	59.3	56.3	105.1	**58.2**			56.8	58.3	54.7	56.6	102.6	**58.2**
S94-4	CDC FALCON (P+)	8	48.8	67.5	78.6	45.8	56.0	62.0	102.0	**56.5**	61.3	59.1	56.1	57.8	52.3	57.7	100.5	**57.0**
JAGALENE	JAGALENE (P+)	7	48.2	62.9	79.5	49.4	57.0	65.0	101.6	**56.3**	62.8	62.2	57.9	59.9	55.0	60.4	104.9	**59.6**
PI555458	PROMONTORY	9	56.6	64.4	75.9	48.2	58.6	56.1	101.3	**56.1**	61.7	61.9	59.7	60.1	54.2	59.1	104.1	**59.1**
BZ96-788	LEDGER (P+)	5	55.2	61.5	62.3	46.9	62.2	57.6	100.9	**55.9**	61.1	60.6	57.5	58.6	54.5	58.5	102.9	**58.4**
CI 17860	NEELEY	9	64.5	60.4	62.4	42.3	56.1	55.4	100.0	**55.4**	60.6	57.9	55.0	58.2	52.4	56.8	100.0	**56.8**
BZ96-919	PRYOR (P+)	8	57.4	59.3	66.4	45.1	51.8	60.6	99.7	**55.2**	62.5	57.8	54.6	58.9	53.2	57.6	100.4	**57.0**
MTW 9441	NUSKY (HW)	8	60.3	62.5	75.1	44.2		54.8	99.0	**54.8**	62.0	59.3	57.4	59.9		58.7	102.5	**58.2**
CI 17879	ROCKY (P)	8	28.6	68.2	71.7	41.7		54.3	98.2	**54.4**	60.8	61.2	58.0	60.2		59.7	104.1	**59.1**
MTCL0306	HYALITE (P, CL++)	6	56.3	61.7	78.6	45.7	46.4	59.8	98.2	**54.4**	61.8	60.2	58.3	59.7	52.6	59.2	102.4	**58.1**
MTCL0316	NORRIS (P, CL++)	6	60.9	61.2	70.3	41.2	52.8	59.6	98.0	**54.3**	62.4	60.4	57.6	60.5	52.4	59.4	102.7	**58.3**
ND9257	JERRY	8	44.5	60.7	74.3	41.0	41.9	57.1	94.0	**52.0**	60.2	58.3	57.8	57.5	49.7	57.4	100.0	**56.8**
MTS 0031	GENOU (saw fly res)(++)	8	57.3	58.5	58.5	42.8	51.6	56.4	92.7	**51.4**	61.2	58.6	55.4	57.4	51.9	57.6	100.4	**57.0**
PI517194	TIBER	7	51.2	58.7	60.3			52.7	92.3	**51.1**	61.3	59.4	57.4			58.8	102.8	**58.4**
PI599336	MORGAN (P+)	6	57.7	64.7				51.9	92.2	**51.1**	60.7	58.6				56.9	98.8	**56.1**
PI593891	VANGUARD (saw fly res)	6	50.3	57.8				51.3	91.1	**50.5**	60.6	59.3				58.7	102.0	**57.9**
MTCL0318	BYNUM (sf res)(P, CL++)	6	46.7	59.6	65.5	37.3	60.4	55.1	90.6	**50.2**	60.4	60.5	59.5	58.4	55.2	59.2	102.4	**58.2**
PI593889	RAMPART (saw fly res)	9	49.0	60.0	55.9	41.1	52.7	49.4	89.1	**49.4**	61.0	59.5	57.3	58.9	52.8	58.0	102.2	**58.0**
MEANS (For Entries Listed)			53.0	62.6	69.5	44.6	56.1			**54.3**	61.2	59.6	57.1	58.9	53.0			**57.8**
7/ Growing Season Precipitation (in.)			8.6	6.9	8.9	n/a	n/a	7.2										
Soil PAW (in.) to SD @ Planting			7.6	n/a	10.5	10.1	7.5	7.6										
Total Plant Available Water (in.)			16.2	n/a	19.4	10.1	7.5	11.8										
Soil NO3 (lbs.) to SD at Planting			192	n/a	300	82	36	226										
Fertilizer Applied		(# N)	70	70	70	70	70	70										
		(# P_2O_5)	40	40	40	40	40	40										
		(# K_2O)	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 selecton 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 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/ 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 5. Dryland Fallow Spring Wheat Cultivar Evaluation Nursery Grown Off-Station at the Leon Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, Montana. 2010. (Exp# 10-9951-SW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	2/ PROTEIN %	3/ SAWFLY %	4/ WILDLIFE DEPREDATION
BZ9M1044	JEDD	99.3	25.8	41.5	12.5	57.0	14.0	3.7	0.0
BZ999592	ONEAL	99.7	27.5	37.1	12.6	57.8	14.8	2.3	0.0
MT 0832	CHOTEAU/MT0249	100.0	26.8	36.7	12.1	54.8	15.2	13.7	0.0
BZ992322	HANK	98.3	27.5	36.5	12.3	54.7	15.6	8.3	0.0
AGRIPROB	04S0512-2-2	100.0	25.1	33.0	12.4	56.3	14.0	15.0	0.0
AGRIPRO6	KELBY	98.3	25.3	32.9	12.2	56.8	15.2	8.7	0.0
PI574642	McNEAL	100.0	27.2	32.7	12.2	55.2	14.6	25.0	0.0
BZ996434	CORBIN	98.6	28.4	32.7	12.4	55.6	15.3	10.3	0.0
PI633974	CHOTEAU	100.0	25.5	32.6	11.8	53.7	15.4	13.3	0.0
AGRIPRO7	KUNTZ	98.6	27.5	32.4	12.3	56.3	13.8	18.3	0.0
MT 0852	MT0249/CHOTEAU	100.0	27.5	32.3	12.0	55.2	15.5	8.3	0.0
AGRIPRO8	AP604 CL	99.7	28.2	31.8	12.0	55.7	14.9	20.0	0.0
AGRIPRO3	FREYR	99.3	30.3	31.6	12.5	56.5	14.6	31.7	0.0
BZ992588	CONAN	99.7	24.7	31.4	12.3	56.8	14.8	3.7	0.0
AGRIPROA	04S0514-1-12	99.7	26.1	31.0	12.4	55.8	14.9	23.3	0.0
ND 695	REEDER	99.0	26.9	30.9	12.0	56.5	14.8	16.7	0.0
NDSW0449	MOTT	100.0	27.3	30.3	12.0	55.0	15.3	3.7	0.0
MT 0827	CHOTEAU/MT0249	99.3	28.4	28.5	12.2	55.6	15.3	21.7	0.0
ACS52610	VOLT	100.0	26.2	27.2	12.4	56.8	14.3	38.3	0.0
PI632252	OUTLOOK	100.0	24.8	26.9	11.9	54.5	14.8	21.7	0.0
PI642366	VIDA	100.0	25.8	25.6	12.3	55.6	14.6	18.3	13.3
CI 13596	FORTUNA	100.0	28.5	24.4	12.4	56.4	14.3	8.3	6.7
EXPERIMENTAL MEANS		99.5	26.9	31.8	12.3	55.8	14.8	15.2	0.9
LSD (0.05)		0.7	2.5	6.1	0.5	0.6	-	26.7	224.4
C.V.2: (S of MEAN / MEAN)*100		1.9	1.9	5.5	0.2	1.0	-	11.6	5.8

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 wheat.

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

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

4/ 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.

Site Resource & Management Data: (Exp# 10-9951-SW)							
Field			SaltHaz(MMHOS/cm) 6-24	0.43		Dry Surf Soil (in.) @ Plnt'g	0.25
Quarter	SE		S (ppm) 0-24	11		2" Soil Temp (°F) @ Plnt'g	80
Section	13		Zn (ppm) 0-6	0.70		4" Soil Temp (°F) @ Plnt'g	73
Township	36N		Fe (ppm) 0-6	45.00		Fertilizer Formulation	Gran Blend
Range	25E		Mn (ppm) 0-6	13.41		Fertilizer Placement	Bnd at Plntg
Latitude	N48 52.579'		Cu (ppm) 0-6	0.97		Fert. Rate (lbs/ac) N	70
Longitude	W109 23.530'		CEC 0-6	10.00		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	5.8		Soil Texture 6-24	n/a		Herbicide App. Date	none
Org.Matter (%) 0-6	1.6		Soil Texture 24-36	n/a		Herbicide Product	n/a
N (lbs/ac) 0-6	11		Soil Texture 36-48	n/a		Herbicide Rate (/ac)	n/a
N (lbs/ac) 6-24	75		Init PAW (in.) 0-6"	0.95		Precip (in.) Plnt'g-Harvest	11.95
N (lbs/ac) 24-36	56		Init PAW (in.) 6-24"	3.69		Precip (>.1) Plnt'g-Harvest	11.60
N (lbs/ac) 36-48	20		Init PAW (in.) 24-36"	2.46		Harvest Date	9/17
N (lbs/ac) 0-48	162		Init PAW (in.) 36-48"	1.87		Rooting Depth (in.)	n/a
P (ppm) Olsen 0-6	17		Init PAW (in.) 0-48"	8.98		Post PAW (in.) 0-6"	1.13
K (ppm) 0-6	305		Cropping System	NT-MechFlw		Post PAW (in.) 6-24"	2.66
Ca (ppm)	1222		Previous Crop	SW		Post PAW (in.) 24-36"	0.29
Mg (ppm) 0-6	363		Planting Date	5/17		Post PAW (in.) 36-48"	
Na (MEQ/100g) 0-6	17		Planting Depth (in.)	1.5		Post PAW (in.) 0-48"	4.08
SaltHaz (MMHOS/cm) 0-6	0.15		Moist Soil Depth @ Plnt'g	48+		Precip (>.1) Hvst-Post	0

TABLE 6. 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. 2001-2010. (Exp# 9951-SW)

2/ VARIETY or SELECTION		No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre) 2006	2007	2008	2009	2010	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	**10-YR COMP. AVE. YIELD 5/**	TEST WEIGHT (Pounds Per Bushel) 2006	2007	2008	2009	2010	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	**10-YR COMP. AVE. TEST WT 5/**
BZ999592	ONEAL (P+)	3			20.5	47.8	37.1	35.1	135.6	**38.9**			57.9	61.6	57.8	59.1	102.1	**60.0**
BZ9M1044	JEDD (P+)	3			20.8	40.6	41.5	34.3	132.5	**38.0**			58.2	62.1	57.0	59.1	102.1	**60.0**
PI642366	VIDA (++)	7	24.7	23.9	20.2	50.7	25.6	37.2	123.4	**35.4**	57.5	53.9	55.8	60.8	55.6	57.7	98.9	**58.1**
PI574642	McNEAL	10	22.0	23.6	19.4	41.4	32.7	35.0	121.8	**35.0**	56.9	53.0	55.7	60.6	55.2	57.9	98.6	**57.9**
PI633974	CHOTEAU (+)(sawfly res)	10	24.1	24.0	20.3	38.2	32.6	34.2	119.0	**34.2**	56.5	54.3	54.5	60.1	53.7	57.6	98.0	**57.6**
ND695	REEDER (+)	10	19.7	22.4	18.1	45.1	30.9	34.1	118.6	**34.1**	56.4	54.6	56.7	61.3	56.5	58.8	100.2	**58.8**
PI592761	ERNEST (+)(sawfly res)	7	23.4	22.4				34.9	116.8	**33.5**	57.7	54.5				58.6	99.2	**58.2**
AGRIPRO7	KUNTZ (P+)	3			17.5	40.0	32.4	30.0	115.7	**33.2**			56.7	61.2	56.3	58.1	100.3	**58.9**
BZ992322	HANK (P+)	9	21.4	25.1	18.4	49.3	36.5	33.6	115.7	**33.2**	56.2	54.1	56.6	60.7	54.7	57.6	98.6	**57.9**
BZ992588	CONAN (P+)(sawfly tol)	10	21.2	24.4	18.9	39.1	31.4	32.9	114.5	**32.9**	58.6	56.2	57.3	61.2	56.8	59.3	101.0	**59.3**
BZ996434	CORBIN	4		25.0	19.7	38.2	32.7	28.9	114.1	**32.7**		55.0	56.6	61.4	55.6	57.2	99.9	**58.7**
PI607557	SCHOLAR (P+)(mod sf res)	7	20.6	20.7				33.9	113.2	**32.5**	57.3	54.1				59.0	99.7	**58.6**
PI632252	OUTLOOK (++)	10	20.9	24.3	18.8	38.6	26.9	32.5	113.1	**32.5**	55.8	53.3	55.6	59.9	54.5	57.6	98.1	**57.6**
ACS53610	VOLT (P+)	3			16.2	42.5	27.2	28.6	110.6	**31.7**			56.7	62.2	56.8	58.6	101.2	**59.4**
AGRIPRO6	KELBY (P+)	3			19.1	33.3	32.9	28.4	109.8	**31.5**			57.0	61.4	56.8	58.4	100.9	**59.3**
AGRIPRO3	FREYR (P+)	5	19.2	20.3	19.4	39.8	31.6	26.1	106.6	**30.6**	57.5	54.7	56.6	61.3	56.5	57.3	99.8	**58.6**
CI13596	FORTUNA (sawfly res)	10	20.8	23.7	17.5	35.8	24.4	28.7	100.0	**28.7**	58.3	55.3	56.3	61.0	56.4	58.7	100.0	**58.7**
MEANS (For Entries Listed)			21.6	23.3	19.0	41.4	31.8			**33.5**	57.2	54.4	56.5	61.1	56.0			**58.7**
6/ Growing Season Precipitation (in.)			2.5	7.0	6.6	6.0	10.3	7.3										
Soil PAW (in.) to SD @ Planting			8.8	5.8	8.1	7.8	9.0	7.5										
Total Plant Available Water (in.)			11.3	9.6	14.6	13.8	19.2	13.7										
Soil NO3 (lbs.) to SD at Planting			64	81	n/a	94	162	105										
SD (Sampling Depth in Inches)			48	48	48	48	48	48										
Fertilizer Applied		(# N)	70	70	70	70	70	70										
		(# P_2O_5)	40	40	40	40	40	40										
		(# K_2O)	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 selecton 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 7. Dryland Fallow Spring Wheat Cultivar Evaluation Nursery Grown Off-Station at the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2010. (Exp# 10-9952-SW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	2/ PROTEIN %	3/ SAWFLY %
MT 0832	CHOTEAU/MT0249	80.6	31.3	66.0	11.6	55.5	14.0	2.3
AGRIPROB	04S0512-2-2	86.7	28.0	62.2	12.0	57.4	13.1	5.7
BZ9M1044	JEDD	79.6	26.9	60.9	12.0	57.7	13.0	2.3
BZ999592	ONEAL	85.5	32.2	59.6	12.3	57.8	13.7	2.3
BZ996434	CORBIN	82.7	31.7	58.6	12.3	56.8	13.5	1.0
MT 0852	MT0249/CHOTEAU	85.2	30.6	57.1	11.7	56.1	14.5	1.0
PI633974	CHOTEAU	83.7	29.8	56.9	11.4	54.9	14.9	3.7
CI 13596	FORTUNA	85.2	35.8	55.5	12.1	56.5	13.3	2.3
PI642366	VIDA	88.9	30.7	55.4	11.9	56.5	13.2	6.7
BZ992322	HANK	84.9	30.6	55.3	12.0	55.3	13.5	6.7
PI574642	McNEAL	90.4	30.2	55.0	11.8	56.5	13.7	7.0
BZ992588	CONAN	82.1	29.2	51.5	11.9	57.3	14.1	1.0
NDSW0449	MOTT	84.6	32.4	51.2	11.5	55.7	14.1	1.0
AGRIPROA	04S0514-1-12	88.3	29.2	51.2	11.9	56.8	13.3	13.3
PI632252	OUTLOOK	93.2	33.5	50.9	11.6	55.9	13.3	6.7
ACS52610	VOLT	87.4	27.6	50.7	11.9	57.4	12.9	13.3
AGRIPRO7	KUNTZ	86.1	29.8	50.5	12.0	57.0	12.8	11.7
ND 695	REEDER	92.0	31.8	49.5	11.6	57.0	14.5	10.0
AGRIPRO3	FREYR	83.3	32.8	48.8	12.1	57.6	13.8	6.7
MT 0827	CHOTEAU/MT0249	90.1	33.4	47.1	11.8	56.9	14.2	3.7
AGRIPRO8	AP604 CL	88.6	30.0	46.8	11.7	57.2	14.2	11.7
AGRIPRO6	KELBY	85.5	28.5	42.6	11.6	57.3	15.2	3.7
EXPERIMENTAL MEANS		86.1	30.7	53.8	11.9	56.7	13.8	5.6
LSD (0.05)		3.0	2.4	5.2	0.6	0.3	-	35.1
C.V.2: (S of MEAN / MEAN)*100		7.3	2.1	8.0	0.2	0.5	-	5.6

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# 10-9952-SW)							
Field			SaltHaz(MMHOS/cm) 6-24	n/a		Dry Surf Soil (in.) @ Plnt'g	0.25
Quarter	NW		S (ppm) 0-24	n/a		2" Soil Temp (°F) @ Plnt'g	60
Section	31		Zn (ppm) 0-6	n/a		4" Soil Temp (°F) @ Plnt'g	54
Township	36N		Fe (ppm) 0-6	n/a		Fertilizer Formulation	Gran.Blend
Range	13E		Mn (ppm) 0-6	n/a		Fertilizer Placement	Bnd at Plntg
Latitude	N48 28.08'		Cu (ppm) 0-6	n/a		Fert. Rate (lbs/ac) N	70
Longitude	W110 5.881'		CEC 0-6	n/a		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	n/a		Soil Texture 6-24	n/a		Herbicide App. Date	6/8
Org.Matter (%) 0-6	n/a		Soil Texture 24-36	n/a		Herbicide Product	Brox- M
N (lbs/ac) 0-6	n/a		Soil Texture 36-48	n/a		Herbicide Rate (/ac)	24 oz
N (lbs/ac) 6-24	n/a		Init PAW (in.) 0-6"	n/a		Precip (in.) Plnt'g-Harvest	9.92
N (lbs/ac) 24-36	n/a		Init PAW (in.) 6-24"	n/a		Precip (>.1) Plnt'g-Harvest	8.01
N (lbs/ac) 36-48	n/a		Init PAW (in.) 24-36"	n/a		Harvest Date	9/26
N (lbs/ac) 0-48	n/a		Init PAW (in.) 36-48"	n/a		Rooting Depth (in.)	40"
P (ppm) Olsen 0-6	n/a		Init PAW (in.) 0-48"	n/a		Post PAW (in.) 0-6"	1.07
K (ppm) 0-6	n/a		Cropping System	NT-ChmFlw		Post PAW (in.) 6-24"	2.30
Ca (ppm)	n/a		Previous Crop	WW		Post PAW (in.) 24-36"	1.08
Mg (ppm) 0-6	n/a		Planting Date	5/3		Post PAW (in.) 36-48"	0.05
Na (ppm) 0-6	n/a		Planting Depth (in.)	1.5		Post PAW (in.) 0-48"	4.50
SaltHaz (MMHOS/cm) 0-6	n/a		Moist Soil Depth @ Plnt'g	48+		Precip (>.1) Hvst-Post	0

TABLE 8. Six-Year Yield and Test Weight Summary on Selected Entries from Dryland Fallow Spring Wheat Variety Nurseries Grown Off-Station at Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2005-2010. (Exp# 9952-SW)

			1/ YIELD (Bushels Per Acre)								TEST WEIGHT (Pounds Per Bushel)							
2/ VARIETY	or SELECTION	No. of YEARS TESTED 3/	2006	2007	2008	2009	2010	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	**6-YR COMP. AVE. YIELD 5/**	2006	2007	2008	2009	2010	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	**6-YR COMP. AVE. TEST WT 5/**
BZ999592	ONEAL (P+)	3			44.5	40.1	59.6	48.1	131.6	**40.9**			61.2	60.1	57.8	59.7	102.5	**58.0**
BZ9M1044	JEDD (P+)	3			45.8	31.9	60.9	46.2	126.4	**39.3**			61.3	60.8	57.7	60.0	103.0	**58.3**
PI642366	VIDA (++)	6	16.2	46.4	42.0	41.8	55.4	38.6	124.0	**38.6**	51.2	56.4	59.0	59.4	56.5	55.8	98.5	**55.8**
BZ996434	CORBIN	4		45.4	41.9	30.6	58.6	44.1	119.4	**37.1**		58.3	60.2	60.0	56.8	58.8	101.5	**57.5**
AGRIPRO7	KUNTZ (P+)	3			41.1	36.9	50.5	42.8	117.3	**36.5**			59.9	60.2	57.0	59.0	101.4	**57.4**
PI633974	CHOTEAU (+)(saw fly res)	6	16.3	41.5	41.0	28.6	56.9	35.4	113.8	**35.4**	52.0	56.9	58.4	59.5	54.9	55.8	98.5	**55.8**
BZ992588	CONAN (P+)(saw fly tol)	6	18.0	45.3	38.6	29.4	51.5	35.3	113.7	**35.3**	54.2	58.4	59.7	59.6	57.3	57.3	101.2	**57.3**
BZ992322	HANK (P+)	6	14.8	41.5	38.2	32.8	55.3	34.6	111.4	**34.6**	51.5	55.8	58.2	57.8	55.3	54.9	97.0	**54.9**
PI632252	OUTLOOK (++)	6	15.3	45.5	33.4	35.1	50.9	34.3	110.5	**34.3**	50.8	54.1	57.8	58.5	55.9	54.8	96.9	**54.8**
ACS53610	VOLT (P+)	3			39.6	29.5	50.7	40.0	109.4	**34.0**			61.1	60.6	57.4	59.7	102.5	**58.1**
AGRIPRO3	FREYR (P+)	5	12.9	42.1	38.1	33.5	48.8	35.1	109.4	**34.0**	50.9	57.6	60.1	60.4	57.6	57.3	100.4	**56.9**
ND 695	REEDER (+)	6	11.2	46.5	40.3	32.3	49.5	33.4	107.3	**33.4**	50.6	57.1	58.8	59.8	57.0	55.8	98.6	**55.8**
PI574642	McNEAL	6	14.7	40.0	34.9	30.8	55.0	33.3	107.0	**33.3**	50.2	54.6	58.4	57.6	56.5	54.8	96.9	**54.8**
PI592761	ERNEST (+)(saw fly res)	3	17.2	39.1				27.1	105.7	**32.9**	52.7	56.8				54.2	98.5	**55.7**
AGRIPRO6	KELBY (P+)	3			34.5	33.1	42.6	36.7	100.6	**31.3**			60.6	59.4	57.3	59.1	101.5	**57.5**
CI 13596	FORTUNA (saw fly res)	6	12.5	38.3	25.6	28.5	55.5	31.1	100.0	**31.1**	53.6	57.1	59.0	59.2	56.5	56.6	100.0	**56.6**
PI607557	SCHOLAR (+)(mod sf res)	3	13.0	40.9				24.4	95.0	**29.5**	52.3	58.4				54.4	98.9	**56.0**
MEANS (For Entries Listed)			14.7	42.7	38.6	33.0	53.4			**34.8**	51.8	56.8	59.6	59.5	56.8			**56.5**
6/ Growing Season Precipitation (in.)			4.07	3.88	4.78	2.61	9.36	4.78										
Soil PAW (in.) to SD @ Planting			n/a	0.99	8.6	9.5	n/a	5.44										
Total Plant Available Water (in.)			n/a	5.69	13.4	12.11	9.36	9.43										
Soil NO3 (lbs.) to SD at Planting			n/a	10	n/a	85	n/a	52										
SD (Sampling Depth in Inches)			n/a	6	48	48	n/a	38										
Fertilizer Applied		(# N)	70	70	70	50	70	67										
		(# P_2O_5)	40	40	40	15	40	36										
		(# K_2O)	25	25	25	0	25	21										

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 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/ 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 Fortuna for the same years, and z = 6-Yr average yield or test weight for the check variety Fortuna.

6/ Seeding to 14 days prior to harvest maturity.

TABLE 9. Dryland Fallow Spring Wheat Cultivar Evaluation Nursery Grown Off-Station at the Flansaas-Lumsden Farm, Loring. Northern Agricultural Research Center. Havre, Montana. 2010. (Exp# 10-9955-SW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	2/ PROTEIN %	3/ SAWFLY %
PI642366	VIDA	99.3	26.6	37.0	12.4	56.5	13.2	10.0
BZ999592	ONEAL	100.0	25.8	36.3	12.6	58.2	14.4	2.3
BZ9M1044	JEDD	96.9	24.5	36.2	12.6	57.8	13.4	2.3
AGRIPROB	04S0512-2-2	100.0	24.6	35.7	12.6	57.0	13.8	5.0
AGRIPRO6	KELBY	100.0	24.4	35.1	12.3	57.0	15.3	3.7
MT 0832	CHOTEAU/MT0249	100.0	24.8	34.9	12.3	55.3	14.7	10.0
ACS52610	VOLT	99.7	26.0	34.7	12.6	57.8	13.3	15.0
ND 695	REEDER	100.0	25.6	32.9	12.1	56.7	14.8	10.3
NDSW0449	MOTT	100.0	27.6	32.8	12.3	56.2	14.7	1.0
BZ992588	CONAN	99.7	25.9	32.8	12.4	57.4	14.6	1.0
MT 0852	MT0249/CHOTEAU	100.0	26.4	32.5	12.3	56.2	14.8	2.3
BZ996434	CORBIN	99.7	26.5	30.5	12.5	55.8	14.8	5.3
BZ992322	HANK	98.6	26.6	30.2	12.3	55.1	14.6	5.0
AGRIPRO7	KUNTZ	100.0	25.5	30.1	12.4	56.5	13.4	10.0
AGRIPRO8	AP604 CL	99.7	27.2	29.8	12.2	55.4	15.6	8.3
PI633974	CHOTEAU	100.0	24.4	29.6	12.0	54.5	14.0	8.3
PI574642	McNEAL	99.7	27.2	29.3	12.3	55.7	14.6	20.0
PI632252	OUTLOOK	100.0	26.9	28.6	12.1	55.3	14.5	13.3
MT 0827	CHOTEAU/MT0249	100.0	27.3	28.0	12.4	56.2	15.1	15.0
AGRIPROA	04S0514-1-12	100.0	23.8	27.2	12.4	55.7	14.4	10.0
CI 13596	FORTUNA	99.3	31.6	26.4	12.5	56.4	13.5	11.7
AGRIPRO3	FREYR	99.7	29.4	26.1	12.4	56.3	14.3	11.7
EXPERIMENTAL MEANS		99.6	26.3	31.7	12.4	56.3	14.4	8.3
LSD (0.05)		0.5	3.4	8.2	0.7	0.7	-	28.7
C.V.2: (S of MEAN / MEAN)*100		1.3	2.6	7.4	0.3	1.1	-	6.8

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 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# 10-9955-SW)							
Field			SaltHaz(MMHOS/cm) 6-24	0.26		Dry Surf Soil (in.) @ Plnt'g	0.25
Quarter	SW		S (ppm) 0-24	12		2" Soil Temp (°F) @ Plnt'g	70
Section	24		Zn (ppm) 0-6	1.02		4" Soil Temp (°F) @ Plnt'g	68
Township	35N		Fe (ppm) 0-6	71.00		Fertilizer Formulation	Gran.Blend
Range	29E		Mn (ppm) 0-6	20.67		Fertilizer Placement	Bnd at Plntg
Latitude	N48 46.293'		Cu (ppm) 0-6	0.95		Fert. Rate (lbs/ac) N	70
Longitude	W109 52.209'		CEC 0-6	8.9		Fert. Rate (lbs/ac) P2O5	40
Soil Series	unknown		Soil Texture 0-6	n/a		Fert. Rate (lbs/ac) K2O	25
pH 0-6	5.6		Soil Texture 6-24	n/a		Herbicide App. Date	unknown
Org.Matter (%) 0-6	2.0		Soil Texture 24-36	n/a		Herbicide Product	unknown
N (lbs/ac) 0-6	3		Soil Texture 36-48	n/a		Herbicide Rate (/ac)	unknown
N (lbs/ac) 6-24	51		Init PAW (in.) 0-6"	1.26		Precip (in.) Plnt'g-Harvest	12.09
N (lbs/ac) 24-36	22		Init PAW (in.) 6-24"	3.04		Precip (>.1) Plnt'g-Harvest	10.61
N (lbs/ac) 36-48	18		Init PAW (in.) 24-36"	1.68		Harvest Date	10/2
N (lbs/ac) 0-48	94		Init PAW (in.) 36-48"	1.71		Rooting Depth (in.)	44"
P (ppm) Olsen 0-6	21		Init PAW (in.) 0-48"	7.69		Post PAW (in.) 0-6"	1.21
K (ppm) 0-6	312		Cropping System	NT-ChmFlw		Post PAW (in.) 6-24"	3.40
Ca (ppm)	1163		Previous Crop	SW		Post PAW (in.) 24-36"	1.20
Mg (ppm) 0-6	265		Planting Date	5/14		Post PAW (in.) 36-48"	1.45
Na (ppm) 0-6	17		Planting Depth (in.)	1.5		Post PAW (in.) 0-48"	7.26
SaltHaz (MMHOS/cm) 0-6	0.07		Moist Soil Depth @ Plnt'g	48+		Precip (>.1) Hvst-Post	0

TABLE 10. 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. 2001-2010. (Exp# 9955-SW)

2/ VARIETY or SELECTION		No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre) 2006	2007	2008	2009	2010	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	**10-YR COMP. AVE. YIELD 5/**	TEST WEIGHT (Pounds Per Bushel) 2006	2007	2008	2009	2010	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	**10-YR COMP. AVE. TEST WT 5/**
BZ9M1044	JEDD (P+)	3			39.5	31.2	36.2	35.6	130.8	**39.3**			59.6	62.4	57.8	59.9	104.1	**60.6**
BZ999592	ONEAL (P+)	3			38.6	31.4	36.3	35.4	130.0	**39.0**			59.4	62.6	58.2	60.1	104.4	**60.7**
PI642366	VIDA (++)	7	24.4	36.3	33.6	33.3	37.0	38.2	129.8	**39.0**	56.3	55.7	57.6	60.5	56.5	58.1	100.2	**58.3**
BZ996434	CORBIN	4		31.8	34.7	30.0	30.5	31.8	117.3	**35.2**		54.8	58.1	61.4	55.8	57.5	100.5	**58.5**
AGRIPRO7	KUNTZ (P+)	3			34.5	30.4	30.1	31.7	116.2	**34.9**			58.0	61.4	56.5	58.6	101.9	**59.3**
ND 695	REEDER (+)	10	21.3	32.4	36.9	30.4	32.9	34.6	115.1	**34.6**	56.2	55.1	58.0	61.5	56.7	58.4	100.3	**58.4**
AGRIPRO6	KELBY (P+)	3			34.1	24.0	35.1	31.1	114.0	**34.2**			58.5	61.2	57.0	58.9	102.3	**59.5**
PI632252	OUTLOOK (++)	10	19.2	33.3	31.7	32.7	28.6	34.0	113.4	**34.0**	55.7	53.2	57.2	59.5	55.3	56.9	97.9	**56.9**
ACS53610	VOLT (P+)	3			30.0	27.0	34.7	30.5	112.1	**33.7**			58.2	62.1	57.8	59.4	103.2	**60.0**
PI633974	CHOTEAU (+)(saw fly res)	10	22.6	29.5	34.9	26.1	29.6	33.1	110.2	**33.1**	56.3	54.4	56.2	59.2	54.5	57.0	98.0	**57.0**
BZ992322	HANK (P+)	9	20.2	32.2	35.8	31.5	30.2	32.5	109.5	**32.9**	56.6	52.9	57.3	61.0	55.1	56.6	97.9	**57.0**
PI574642	McNEAL	10	20.2	30.6	34.9	27.8	29.3	32.7	109.0	**32.7**	55.6	53.5	57.5	60.4	55.7	57.0	98.0	**57.0**
BZ992588	CONAN (P+)(saw fly tol)	10	21.2	29.9	30.9	25.3	32.8	32.2	107.2	**32.2**	58.6	55.6	58.4	61.6	57.4	59.0	101.4	**59.0**
AGRIPRO3	FREYR (P+)	5	20.5	30.2	32.4	28.4	26.1	27.5	106.3	**31.9**	57.7	54.6	58.2	62.0	56.3	57.8	101.0	**58.7**
PI592761	ERNEST (+)(saw fly res)	7	22.6	27.2				33.1	106.0	**31.8**	56.7	55.4				57.9	99.1	**57.7**
PI607557	SCHOLAR (+)(mod sf res)	7	22.9	32.8				32.6	104.4	**31.3**	57.5	56.6				58.8	100.6	**58.5**
CI 13596	FORTUNA (saw fly res)	10	21.2	26.5	29.1	26.2	26.4	30.0	100.0	**30.0**	57.1	56.4	57.7	58.5	56.4	58.2	100.0	**58.2**
MEANS (For Entries Listed)			21.5	31.1	34.1	29.0	31.7			**34.1**	56.8	54.8	58.0	61.0	56.5			**58.5**
6/ Growing Season Precipitation (in.)			2.4	7.4	8.9	5.3	11.6	7.4										
Soil PAW (in.) to SD @ Planting			8.3	8.3	8.2	10.5	7.7	8.1										
Total Plant Available Water (in.)			10.7	15.7	17.2	15.7	19.3	14.6										
Soil NO3 (lbs.) to SD at Planting			81	89	n/a	42	94	72										
SD (Sampling Depth in Inches)			48	48	48	48	48	48										
Fertilizer Applied	(# N)		70	70	70	70	70	70										
	(# P_2O_5)		40	40	40	40	40	40										
	(# K_2O)		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 selecton 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 11. Dryland Fallow Spring Durum Cultivar Evaluation Nursery Grown Off-Station at the Leon Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, Montana. 2010. (Exp# 10-9851-SW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	2/ PROTEIN %	3/ SAWFLY %	4/ WILDLIFE DEPREDATION
NORMANNO	NORMANNO	100.0	23.2	33.1	11.7	55.8	14.3	2.3	0.0
Cimmyt#8	Cimmyt#8	100.0	23.7	31.6	11.7	57.2	13.4	2.3	0.0
Cimmyt#5	Cimmyt#5	86.1	23.5	31.4	11.3	54.9	13.6	3.7	3.3
MT01649	MT01649	100.0	22.3	30.2	11.3	54.9	15.8	6.7	0.0
Cimmyt#11	Cimmyt#11	100.0	24.3	29.8	11.7	54.6	14.1	10.0	5.0
MT04174	MT04174	100.0	25.7	28.6	11.6	55.8	15.4	18.3	2.0
ALZADA	ALZADA	100.0	25.1	28.1	11.7	56.2	14.0	8.3	10.0
STRONGFIELD	STRONGFIELD	100.0	27.6	27.0	11.6	56.0	15.7	13.3	22.0
MT03012	MT03012	99.3	24.8	26.2	11.4	55.4	14.8	18.3	10.0
GRENORA	GRENORA	100.0	26.2	24.9	11.6	55.6	14.8	25.0	8.3
ALKABO	ALKABO	97.9	27.2	17.3	11.8	57.0	14.5	21.7	58.3
PIERCE	PIERCE	100.0	29.5	15.5	11.6	56.7	15.7	23.3	66.3
MOUNTRAIL	MOUNTRAIL	86.8	26.2	15.4	11.8	56.0	15.4	21.7	69.7
DIVIDE	DIVIDE	100.0	27.5	14.6	11.6	55.2	15.9	18.3	69.7
TIOGA	TIOGA	100.0	27.5	9.4	11.5	52.9	16.2	21.7	96.0
EXPERIMENTAL MEANS		98.0	25.6	24.2	11.6	55.6	14.9	14.3	28.0
LSD (0.05)		4.5	3.3	8.1	0.6	0.7	-	31.1	27.4
C.V.2: (S of MEAN / MEAN)*100		12.8	2.5	5.7	0.2	1.3	-	12.9	38.5

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.

4/ 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.

Site Resource & Management Data: (Exp# 10-9851-SW)							
Field			SaltHaz(MMHOS/cm) 6-24	0.43		Dry Surf Soil (in.) @ Plnt'g	0.25
Quarter	SE		S (ppm) 0-24	11		2" Soil Temp (°F) @ Plnt'g	81
Section	13		Zn (ppm) 0-6	0.74		4" Soil Temp (°F) @ Plnt'g	75
Township	36N		Fe (ppm) 0-6	45.00		Fertilizer Formulation	Gran.Blend
Range	25E		Mn (ppm) 0-6	13.41		Fertilizer Placement	Bnd at Plntg
Latitude	N48 52.579'		Cu (ppm) 0-6	0.97		Fert. Rate (lbs/ac) N	70
Longitude	W109 23.530'		CEC 0-6	10.00		Fert. Rate (lbs/ac) P2O5	40
Soil Series	Telstad Loam		Soil Texture 0-6	n/a		Fert. Rate (lbs/ac) K2O	25
pH 0-6	5.8		Soil Texture 6-24	n/a		Herbicide App. Date	none
Org.Matter (%) 0-6	1.6		Soil Texture 24-36	n/a		Herbicide Product	n/a
N (lbs/ac) 0-6	11		Soil Texture 36-48	n/a		Herbicide Rate (/ac)	n/a
N (lbs/ac) 6-24	75		Init PAW (in.) 0-6"	1.12		Precip (in.) Plnt'g-Harvest	11.95
N (lbs/ac) 24-36	56		Init PAW (in.) 6-24"	2.91		Precip (>.1) Plnt'g-Harvest	11.60
N (lbs/ac) 36-48	20		Init PAW (in.) 24-36"	0.65		Harvest Date	10/1
N (lbs/ac) 0-48	162		Init PAW (in.) 36-48"	0.26		Rooting Depth (in.)	39"
P (ppm) Olsen 0-6	17		Init PAW (in.) 0-48"	4.94		Post PAW (in.) 0-6"	1.12
K (ppm) 0-6	305		Cropping System	NT-MechFlw		Post PAW (in.) 6-24"	2.91
Ca (ppm)	1222		Previous Crop	SB		Post PAW (in.) 24-36"	0.65
Mg (ppm) 0-6	363		Planting Date	5/17		Post PAW (in.) 36-48"	0.26
Na (ppm) 0-6	17		Planting Depth (in.)	1.5		Post PAW (in.) 0-48"	4.94
SaltHaz (MMHOS/cm) 0-6	0.15		Moist Soil Depth @Plnt'g	48+		Precip (>.1) Hvst-Post	0

TABLE 12. Nine-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. 2002-2010. (Exp# 9851-SW)

2/ VARIETY or SELECTION		No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre) 2006	2007	2008	2009	2010	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	**9-YR COMP. AVE. YIELD 5/**	TEST WEIGHT (Pounds Per Bushel) 2006	2007	2008	2009	2010	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	**9-YR COMP. AVE. TEST WT 5/**
CIMMYT#8	CIMMYT#8	3			21.9	36.3	31.6	29.9	135.9	**37.9**			58.1	62.3	57.2	59.2	102.2	**59.8**
CIMMYT11	CIMMYT#11	3			20.6	34.6	29.8	28.3	128.7	**35.9**			55.7	59.7	54.6	56.6	97.8	**57.2**
CIMMYT#5	CIMMYT#5	3			17.2	36.3	31.4	28.3	128.7	**35.9**			56.6	60.3	54.9	57.3	98.8	**57.8**
STRONGFLD	STRONGFIELD (+)	5	21.6	24.0	19.4	36.5	27.0	25.7	119.7	**33.4**	56.7	56.1	57.5	59.9	56.0	57.2	100.0	**58.5**
YU894-75	ALZADA (P+)	6	23.7	25.2	17.1	29.1	28.1	27.7	115.0	**32.1**	57.0	56.1	57.4	60.6	56.2	57.8	100.5	**58.8**
MT04174	MT04174	3			15.3	31.9	28.6	25.3	114.8	**32.0**			57.2	60.1	55.8	57.7	99.6	**58.2**
D91080	PLAZA (+)	5	18.9					37.0	113.6	**31.7**	57.3					59.9	101.0	**59.1**
GRENORA	GRENORA (+)	5	19.1	25.6	15.4	35.4	24.9	24.1	112.2	**31.3**	57.0	55.7	56.5	60.6	55.6	57.1	99.7	**58.3**
ACAVONLE	AC AVONLEA (+)	5	22.0					35.0	107.6	**30.0**	58.1					60.1	101.4	**59.3**
D901313	MOUNTRAIL (+)	9	18.9	22.3	15.3	35.4	15.4	27.9	100.0	**27.9**	56.3	56.1	57.6	60.2	56.0	58.5	100.0	**58.5**
CANKYLE	KYLE	5	19.2					32.0	98.4	**27.4**	58.8					60.3	101.7	**59.5**
ALKABO	ALKABO (+)	5	18.4	22.5	14.8	31.9	17.3	21.0	97.8	**27.3**	58.5	57.5	57.4	60.8	57.0	58.2	101.7	**59.5**
PIERCE	PIERCE (+)	7	17.6	20.0	14.8	32.9	15.5	26.5	95.2	**26.5**	57.3	57.6	57.0	60.9	56.7	58.9	101.4	**59.3**
D901442	LEBSOCK (+)	5		20.2				31.4	94.5	**26.4**		57.7				60.1	101.4	**59.3**
DILSE	DILSE (+)	5	18.2		12.8	31.2		29.5	93.9	**26.2**	57.5		56.9	60.4		59.2	100.5	**58.8**
DIVIDE	DIVIDE	5	17.9	20.0	17.2	29.9	14.6	19.9	92.8	**25.9**	57.3	56.7	57.3	60.0	55.2	57.3	100.1	**58.6**
MEANS (For Entries Listed)			19.6	22.5	16.8	33.5	24.0			**30.5**	57.4	56.7	57.1	60.5	55.9			**58.8**
6/ Growing Season Precipitation (in.)			2.5	7.0	6.6	6.0	10.3	7.6										
Soil PAW (in.) to SD @ Planting			8.8	5.8	8.1	7.8	9.0	7.7										
Total Plant Available Water (in.)			11.3	12.8	14.6	13.8	19.2	15.3										
Soil NO3 (lbs.) to SD at Planting			64	81	71	94	162	97										
SD (Sampling Depth in Inches)			48	48	48	48	48	48										
Fertilizer Applied	(# N)		70	70	70	70	70	69										
	(# P_2O_5)		40	40	40	40	40	39										
	(# K_2O)		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 selecton 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/ 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 Mountrail for the same years, and z = 9-Yr average yield or test weight for the check variety Mountrail.

6/ Seeding to 14 days prior to harvest maturity.

TABLE 13. Dryland Fallow Spring Durum Cultivar Evaluation Nursery Grown Off-Station at the Mark Peterson Farm, North Havre. Northern Agricultural Research Center. Havre, Montana. 2010. (Exp# 10-9852-SW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	2/ PROTEIN %	3/ SAWFLY %
GRENORA	GRENORA	83.3	32.6	68.1	11.1	56.6	13.1	1.0
STRONGFIELD	STRONGFIELD	85.8	33.1	64.8	11.3	56.3	14.3	1.0
Cimmyt#5	Cimmyt#5	89.2	26.8	63.4	11.0	55.0	12.8	2.3
ALKABO	ALKABO	84.3	32.2	62.8	11.2	56.9	13.0	1.0
ALZADA	ALZADA	70.7	30.2	62.5	11.4	57.7	13.7	1.0
MT01649	MT01649	88.0	26.2	61.1	10.8	54.6	14.3	1.0
MT04174	MT04174	82.7	27.9	60.8	11.2	56.2	13.6	1.0
TIOGA	TIOGA	91.0	37.7	59.9	11.1	56.2	13.7	1.0
MOUNTRAIL	MOUNTRAIL	86.1	31.7	57.4	11.3	56.5	14.1	1.0
PIERCE	PIERCE	88.0	35.9	57.3	11.2	57.1	13.8	1.0
NORMANNO	NORMANNO	87.0	28.6	56.7	11.2	55.7	13.8	1.0
Cimmyt#11	Cimmyt#11	88.0	29.2	56.0	11.3	54.9	13.0	1.0
MT03012	MT03012	87.4	29.5	54.5	11.1	55.4	13.6	3.7
Cimmyt#8	Cimmyt#8	87.7	28.2	54.5	11.4	57.5	12.9	1.0
DIVIDE	DIVIDE	90.1	34.1	52.6	11.4	56.5	13.2	1.0
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# 10-9852-SW)							
Field			SaltHaz(MMHOS/cm) 6-24	n/a		Dry Surf Soil (in.) @ Plnt'g	0.25
Quarter	NW		S (ppm) 0-24	n/a		2" Soil Temp (°F) @ Plnt'g	60
Section	31		Zn (ppm) 0-6	n/a		4" Soil Temp (°F) @ Plnt'g	55
Township	36N		Fe (ppm) 0-6	n/a		Fertilizer Formulation	Gran.Blend
Range	13E		Mn (ppm) 0-6	n/a		Fertilizer Placement	Bnd at Plntg
Latitude	N48 28.08'		Cu (ppm) 0-6	n/a		Fert. Rate (lbs/ac) N	70
Longitude	W110 5.881'		CEC 0-6	n/a		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	n/a		Soil Texture 6-24	n/a		Herbicide App. Date	6/8
Org.Matter (%) 0-6	n/a		Soil Texture 24-36	n/a		Herbicide Product	Brox- M
N (lbs/ac) 0-6	n/a		Soil Texture 36-48	n/a		Herbicide Rate (/ac)	24 oz
N (lbs/ac) 6-24	n/a		Init PAW (in.) 0-6"	n/a		Precip (in.) Plnt'g-Harvest	9.92
N (lbs/ac) 24-36	n/a		Init PAW (in.) 6-24"	n/a		Precip (>.1) Plnt'g-Harvest	8.01
N (lbs/ac) 36-48	n/a		Init PAW (in.) 24-36"	n/a		Harvest Date	9/26
N (lbs/ac) 0-48	n/a		Init PAW (in.) 36-48"	n/a		Rooting Depth (in.)	39"
P (ppm) Olsen 0-6	n/a		Init PAW (in.) 0-48"	n/a		Post PAW (in.) 0-6"	1.15
K (ppm) 0-6	n/a		Cropping System	NT-ChmFlw		Post PAW (in.) 6-24"	2.82
Ca (ppm)	n/a		Previous Crop	WW		Post PAW (in.) 24-36"	0.83
Mg (ppm) 0-6	n/a		Planting Date	5/3		Post PAW (in.) 36-48"	1.30
Na (ppm) 0-6	n/a		Planting Depth (in.)	1.5		Post PAW (in.) 0-48"	6.10
SaltHaz (MMHOS/cm) 0-6	n/a		Moist Soil Depth @ Plnt'g	48+		Precip (>.1) Hvst-Post	0

TABLE 14. Six-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. 2005-2010. (Exp# 9852-SW)

2/ VARIETY or SELECTION		No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre) 2006	2007	2008	2009	2010	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	**6-YR COMP. AVE. YIELD 5/**	TEST WEIGHT (Pounds Per Bushel) 2006	2007	2008	2009	2010	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	**6-YR COMP. AVE. TEST WT 5/**
CIMMYT#5	CIMMYT#5	3			48.2	39.8	63.4	50.5	118.2	**42.1**			60.7	58.5	55.0	58.1	100.0	**56.3**
MT04174	MT04174	3			45.7	35.6	60.8	47.4	110.9	**39.5**			61.3	58.7	56.2	58.7	101.1	**56.9**
MT02525	MT02525	3	13.8	46.3	47.9			36.0	110.5	**39.4**	52.1	59.4	61.6			57.7	103.2	**58.0**
CIMMYT#8	CIMMYT#8	3			49.3	34.8	54.5	46.2	108.2	**38.5**			61.9	60.9	57.5	60.1	103.5	**58.2**
STRONGFLD	STRONGFIELD (+)	5	13.6	46.3	38.5	37.7	64.8	40.2	106.1	**37.8**	52.8	57.1	59.8	59.3	56.3	57.1	101.0	**56.8**
GRENORA	GRENORA (+)	5	15.8	41.9	39.9	34.5	68.1	40.0	105.8	**37.7**	51.6	57.6	60.1	59.2	56.6	57.0	100.9	**56.8**
CIMMYT11	CIMMYT#11	3			43.9	35.4	56.0	45.1	105.6	**37.6**			59.1	56.5	54.9	56.8	97.9	**55.0**
YU894-75	ALZADA (P+)	6	18.3	44.0	39.6	31.6	62.5	37.3	104.6	**37.3**	52.5	58.6	59.4	60.2	57.7	57.2	101.8	**57.2**
MT03012	MT03012	5	18.2	40.0	46.4	31.7	54.5	38.2	100.8	**35.9**	53.9	57.9	60.8	58.7	55.4	57.3	101.5	**57.1**
D901313	MOUNTRAIL (+)	6	16.0	45.1	36.6	34.2	57.4	35.6	100.0	**35.6**	51.8	56.5	59.4	58.4	56.5	56.2	100.0	**56.2**
MT02DH55	MT02DH55	3	14.6	41.6	39.1			31.8	97.6	**34.8**	50.1	56.2	59.6			55.3	98.9	**55.6**
DIVIDE	DIVIDE	5	15.7	42.1	37.8	35.8	52.6	36.8	97.2	**34.6**	54.5	58.1	59.3	59.5	56.5	57.6	101.9	**57.3**
ALKABO	ALKABO (+)	5	16.4	43.7	33.5	24.2	62.8	36.1	95.4	**34.0**	52.9	58.5	60.1	59.9	56.9	57.7	102.0	**57.4**
DILSE	DILSE (+)	4	15.8		35.7	29.0		25.8	92.7	**33.0**	51.7		59.7	59.0		56.4	100.4	**56.5**
PIERCE	PIERCE (+)	6	12.6	40.7	33.4	31.8	57.3	33.0	92.5	**33.0**	52.6	59.2	60.2	60.0	57.1	57.6	102.4	**57.6**
MEANS (For Entries Listed)			15.0	42.6	41.0	34.1	59.5			**36.1**	52.5	58.3	60.2	58.9	56.2			**56.9**
6/ Growing Season Precipitation (in.)			4.1	3.9	4.8	2.6	9.4	4.8										
Soil PAW (in.) to SD @ Planting			n/a	1.0	8.6	9.5	n/a	6.8										
Total Plant Available Water (in.)			4.1	5.7	13.4	12.1	9.4	9.5										
Soil NO3 (lbs.) to SD at Planting			n/a	10	n/a	85	n/a	52										
SD (Sampling Depth in Inches)			n/a	6	48	48	n/a	38										
Fertilizer Applied	(# N)		70	70	70	50	70	67										
	(# P_2O_5)		40	40	40	15	40	36										
	(# K_2O)		25	25	25	0	26	21										

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 selecton 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/ 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 Mountrail for the same years, and z = 6-Yr average yield or test weight for the check variety Mountrail.

6/ Seeding to 14 days prior to harvest maturity.