MONTANA STATE UNIVERSITY
MONTANA AGRICULTURAL EXPERIMENT STATION

RESULTS OF AGRONOMIC AND WEED SCIENCE RESEARCH CONDUCTED IN SOUTH CENTRAL MONTANA - 2011

Annual Report of the Investigations at and Administration of the
Southern Agricultural Research Center, Huntley, Montana

PROJECT TITLE:

2011 Off-Station Winter Wheat Variety Performance Trials in South Central Montana. This research is partially supported by Montana farmers through the Montana Wheat and Barley Committee.

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Dave Kelsey, Molt
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OBJECTIVES:

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

METHODS:

The 2011 off-station winter wheat trials were established under dryland conditions near Molt under conventional summer fallow conditions; near Forsyth, Hardin, Fort Smith and Rapelje under no-till, chemical fallow conditions (Fig. 1). Each trial contained 25 winter wheat cultivars (15 commercial, 10 experimental), and was planted using a partially-balanced lattice design with three replications. All entries were seeded at approximately 1 million seeds per acre under dryland conditions (~60 lb/a). Seeding rates were not adjusted for germination. Test plots consisted of a 15-foot, 7-row plot with 7-inch row spacing. All rows of each harvested test plot were trimmed 36 inches and harvested using a plot combine. Information pertaining to the traits and characteristics of the winter wheat entries are provided in Table 1.

Recorded grain yields were adjusted to 13% grain moisture content, and are reported in bushels per acre based on a 60 pound standard bushel weight. Two year (2010-11) and three year (2009-11 yield averages are provided for cultivars tested during previous years. Test weight (pounds per bushel) and grain

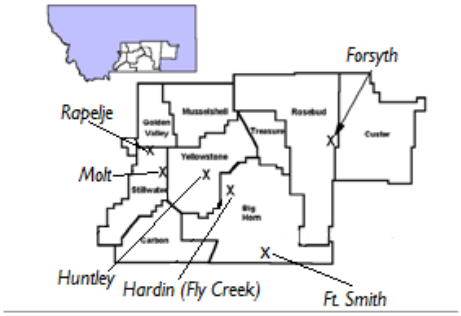

Figure1. 2011 off-station winter wheat trial locations in south central Montana.

moisture content (percent) were obtained for each plot using a Dickey-john™ GAC 2100 grain analyzer. Grain protein content (percent) was determined by near-infrared reflectance for each harvested sample, and adjusted to 12% grain moisture content. Plant height was measured in inches from the soil surface to the top of the head, excluding the awns if present. Corresponding calendar dates also are presented. Information pertaining to the specific cultural management of each study site is listed at the bottom of their respective data table (Tables 2 through 6).

RESULTS:

Surface soil moisture conditions were good to excellent at all five of the winter wheat test locations planted in the fall of 2011. The 2011 winter wheat test sites had above average moisture during winter months, with above average rain or snow accumulating in November, December and February. Below average precipitation occurred during March and June, while above average precipitation occurred May and July. Unusually high rainfall in May (7.59 inches) coupled with cooler than normal temperatures resulted in higher foliar diseases incident that needed treatment at some sites. Above-average precipitation during May and July delayed crop development and maturity boosting winter wheat yield at some dryland sites while depressing yield at others due to nutrient leaching and heavy weed pressure. All sites were harvested in August of 2011. Overall, winter wheat yields were average to above average. Test weight values were also average to above average. Grain protein content fluctuated greatly from site-to-site in 2011, but on average was comparable to the protein content measured in the trials harvested last year.

Average yield under dryland conditions at Rapelje in 2011 was 38 bu/a (Table 2), about 14 bushels per acre less than winter wheat yields observed at this site in 2010. Yields ranged from 24 bu/a for experimental line ‘MTS0826’ to 48 bu/a for commercial cultivar ‘Wahoo’. Twelve other entries produced yields statistically equal with that of Wahoo. The lowest yielding commercial entry was ‘AP503 CL2’, a Clearfield wheat, at 27 bu/a. Test weight was very good ranging from 58.8 to 63.6 lb/bu. Average test weight was 61.5 lb/bu, with all commercial entries producing test weights heavier than 60 lb/bu. Grain protein averaged 12.6 percent and ranged from 11.7 percent for ‘MTCL1068’ and ‘MTS0832’ to 13.9 percent for ‘Jagalene’ Two-year average yield for winter wheat varieties tested at Rapelje during 2010 and 2011 averaged 44 bu/a. Three-year average yield from 2009 through 2011 averaged 50 bu/a. Pryor was the top yielding entry for the past three years averaging nearly 59 bu/a. Six other commercial entries produced averaged three years yield at this location that was statistically equal to Pryor.

Average yield of the 25 winter wheat cultivars tested at Forsyth in 2011 was 40 bu/a (Table 3), 21 bushels per acre less than winter wheat entries harvested at Forsyth in 2010. Yields ranged from 32 bu/a for ‘CDC Falcon’ to 52 bu/a for the

experimental entry 'MTCL1068'. The highest yielding commercial entry was 'Wahoo' at 49 bu/a. Two other commercial entries namely 'Bynum' and 'Pryor' produced yield of 45 bu/a statistically equal to the yield of MTCL1068. Test weight was excellent at Forsyth averaging 62.8 lb/bu, with all entry possessing test weight values heavier than 62 lb/bu. Grain protein content was high averaging 17.1 percent and ranged from 14.7 percent for Pryor to 20.2 percent for Bynum. Protein content was higher compared to last year and all entries produced grain with protein content 14 % or higher. Two year average yield (2010-2011) was 52 bu/a and three year (2009-2011) average yield was 48 bu/a at Forsyth.

Average winter wheat yield at Hardin during 2011 was 97 bu/a (Table 4), higher than last year yield at this site. Hardin has the highest yield among all the dryland locations in 2011. Winter wheat at this location was sprayed with Headline fungicide to prevent onset of foliar disease. Yields ranged from 75 bu/a for 'Genou' to 114 bu/a for experimental line 'MTCL1067''. The highest yielding commercial entry was 'Wahoo' yielding 111 bu/a. Seven other commercial entries produces yield ranged from 98 to 110 bu/a statistically equal to the yield of experimental line 'MTCL1067'. Test weight values were also excellent at Hardin in 2011, averaging 62.5 lb/bu and ranged from 59.5 lb/bu for 'Wahoo' to 63.7 lb/bu for 'Jagalene'. Except for 'Wahoo', all entries possessed test weight values heavier than 60 lb/bu. Grain protein content was averaged 11.8 percent. Protein content ranged from 11.0 percent to 13.3 percent. Two-year average yield for winter wheat varieties tested during 2010 and 2011 averaged 81 bu/a. Three-year average yield for winter wheat varieties tested during 2009 to 2011 averaged 75 bu/a.

Average yield under dryland conditions at Molt in 2011 was 40 bu/a (Table 5), about half of the winter wheat yield harvested in 2010. This low production at Molt was mainly attributed to relatively poor stand and high weed competition during early development of winter wheat. Delayed herbicide application, due to wet conditions, resulted in significant yield reduction. No foliar diseases were observed at Molt in 2011. The yield was not significantly different among the entries and ranged from 27 bu/a to 22 bu/a. Average test weight was 62 lb/bu, and ranged from 59.9 lb/bu for 'Rampart' to 63.3 lb/bu for 'MT0871'. Except for 'Rampart' all entries have test weight value heavier than 60 lb/bu. Grain protein content was high and averaged 16.3 percent. Protein content ranged from 13.3 percent for 'MT0871' to 18.9 percent for 'Jagalene'. All commercial entries have protein content over 14 percent. Three-year average yield for winter wheat varieties tested during 2009 to 2011 averaged 50 bu/a. ledger produced the highest yield of 57 bu/a at Molt averaged over the past three years.

Agronomic performance of the winter wheat cultivars tested under dryland conditions near 'Fort Smith' during 2011 is presented in Table 6. Winter wheat grown in this region of south central Montana frequently suffers from the occurrence of dwarf bunt (*aka*, dwarf smut, TCK smut, *Tilletia controversa* Kuhn), but this disease was not evident during the 2011 season. Winter wheat however was treated with Headline fungicide to protect against foliar diseases. Averaged yield at Fort Smith location was 86 bu/a. Yield ranged from 77 bu/a for 'Genou' to 98 bu/a for 'MTCL1067'. Only three commercial entries, namely 'Bynum', 'Norris' and 'Yellowstone', produced yields of about 92 bu/ac which were statistically equal to the yield of 'MTCL1067'. Average test weight was 60.4 lb/bu and ranged from 58.5 for 'Pryor' to 62.3 for 'Promontory'. Fourteen entries possessed test weight values heavier than 61 lb/bu. All commercial entries produced test weight heavier than 59 lb/bu. Grain protein content averaged 14.2 percent. Grain protein content ranged from 12.5 percent for 'Jagalene' to 15.6 percent for 'MTS0826'.

SUMMARY:

Significant differences in yield among cultivars tested in 2011 were obtained under dryland conditions (Tables 7 and 8). The Experimental entry 'MT0871'

produced the highest yield of 67.5 bu/a, averaged across all four of the test locations harvested in 2011 (Table 7). 'Wahoo' was the highest yielding (66 bu/a) commercial cultivar across all locations in 2011. Two experimental Clearfield wheat entries 'MTCL1067' and 'MTCL1068' performed well in 2011 trials and were among the top yielding entries particularly at high yield potential test locations in 2011. However, at low productively site in 2011 these entries were among the lowest yielding entries (Table 7)

Since 2009, experiments representing 11 location-years of testing have uniformly tested 15 cultivars at several dryland in south central Montana (Table 8). Averaged over three years across all dryland locations, 'Decade' hard red winter wheat has been the highest yielding cultivar averaging over 64 bu/a. Seven other entries including 'Accipiter', Jagalene, 'Ledger', Norris, 'Pryor' and 'Yellowstone' have produced three year average yields across all locations, and ranged from 60 to 64 bu/a, equal to that of 'Decade'.

Table 1. Selected characteristics and traits of 25 commercial and experimental winter wheat cultivars performance tested at six off-station sites in south central Montana during 2011.

Cultivar	1/ Origin	Year of Release	2/ Market Class	3/ PVP	4/ Maturity	5/ Coleoptile Length	Chaff Color	6/ Winter Survival	7/ Straw Strength	Solid Stem Type	8/ Disease Resistance: Leaf Rust	Stem Rust	Stripe Rust	Dwarf Bunt	9/ Quality: Milling	Baking	10/ Clearfield Type
				Yes/No				1-5		Yes/No					1-5	1-5	Yes/No
Commercial																	
Accipiter	CDC	2008	HRW	Y	M-L	M	White	5	S	N	R	MR	S	S	2	3	N
AP503 CL2	AgriPro	2007	HRW	Y	M	M	White	2	S	N	S	MR	R	S	3	4	Y
Bynum§	MSU	2006	HRW	Y	M	L	Brown	2	M	Y	S	M	R	S	4	4	Y
CDC Falcon	CDC	1999	HRW	Y	M	S	White	4	S	N	R	R	S	S	3	3	N
Curlew	USU	2009	HRW	Y	M	S	Brown	2	S	N	S	S	R	R	4	3	N
Decade	MSU	2010	HRW	Y	M	M	White	4	S	N	S	R	R	S	3	4	N
Genou	MSU	2004	HRW	Y	M	M	White	2	M	Y	M	S	S	S	4	4	N
Jagalene	AgriPro	2002	HRW	Y	E	M	White	2	S	N	S	MR	MR	S	3	3	N
Jerry	NDSU	2001	HRW	N	M-L	M	White	5	M	N	R	R	S	S	3	3	N
Ledger	WestBred	2005	HRW	Y	M-L	M	White	2	S	Y	MS	S	S	S	4	3	N
Norris§	MSU	2005	HRW	Y	E	M	Brown	3	S	N	MS	S	S	S	3	3	Y
Pryor	WestBred	2002	HRW	Y	M	S	White	3	S	N	S	S	S	S	3	3	N
Rampart	MSU	1996	HRW	N	M	L	Brown	2	W	Y	S	MR	MR	S	4	4	N
Wahoo	UNL	2000	HRW	Y	E	S	White	4	S	N	MS	R	S	S	3	2	N
Yellowstone	MSU	2005	HRW	Y	M	S	White	4	MS	N	MS	S	R	S	3	4	N
Experimental																	
BZ9W05-2043	WestBred				M	S	White	3	S	Y	R	MR	R	S	4	3	N
MT0871	MSU		HRW		M	S	White	4	S	N	MR	R	MS	S	3	3	N
MTCL1003	MSU		HRW		M	S	White	2	S	Y	-	S	S	S	3	3	Y
MTCL1067	MSU		HRW		M	S	White	3	S	N	-	MS	R	S	3	3	Y
MTCL1068	MSU		HRW		M	S	White	3	S	N	-	R	MS	S	3	3	Y
MTS0713	MSU		HRW		M	M	White	2	S	Y	S	S	R	S	3	4	N
MTS0721	MSU		HRW		M	M	White	2	M	Y	S	R	S	S	4	3	N
MTS0808	MSU		HRW		M	M	White	3	S	Y	MR	R	R	S	3	3	N
MTS0826	MSU		HRW		M-L	M	White	3	MS	Y	MR	R	S	S	3	3	N
MTS0832	MSU		HRW		M-L	S	White	4	S	Y	S	R	VS	S	3	4	N

1/AgriPro=AgriPro Seeds Inc. Berthoud, Colorado; CDC=Crop Development Centre, University of Saskatchewan; MSU=Montana State University; NDSU=North Dakota State University; UNL=University of Nebraska-Lincoln; USU=Utah State University; WestBred=WestBred LLC, Bozeman, Montana.

2/ HRW=hard red winter wheat market class.

3/ Indicates a cultivar is protected under the Federal Plant Variety Protection Act of 1970 and amended in 1995.

4/ E=early maturity, M=medium maturity, L=late maturity.

5/ L=long coleoptile length, M=medium coleoptile length, S=short coleoptile length.

6/ Winter survival rated from 1 to 5 where 1=poor and 5=best winter survival, respectively, based on years of observations at Sidney, Moccasin and Williston.

7/ S=strong straw strength, MS=moderately strong straw strength, M=medium straw strength, MW=moderately weak straw strength, W=weak straw strength.

8/ R=resistant, MR=moderately resistant, MS=moderately susceptible, S=susceptible, VS=very susceptible.

9/ Milling and baking quality rated from 1 to 5 where 1=poor and 5=superior quality, respectively.

10/ Signifies a cultivar possessing the Clearfield trait imparting tolerance to products containing imazamox herbicide.

§ 'Bynum', and 'Norris' licensed for sale on an exclusive basis by WestBred LLC, Bozeman, Montana.

Table 2. Performance of 25 commercial and experimental winter wheat cultivars tested under no-till, dryland conditions near Rapelje, Montana during 2011. Cultivars listed alphabetically. (Exp. 113881).

Cultivar	Grain Yield 1/ 2011	2010-11	2009-11	Test Weight	Grain Moisture	Grain Protein 2/	Plant Height
	---------- bushels/acre ----------			lb/bu	%	%	inches
Commercial							
Accipiter	**45.5***	49.0	**53.3***	61.7	12.4	12.1	27.4
AP503 CL2	26.9	--	--	63.6	12.5	13.2	24.4
Bynum	32.4	35.0	41.5	61.8	12.1	13.3	28.4
CDC Falcon	**38.5***	40.9	43.8	61.5	12.9	11.8	24.8
Curlew	30.3	37.3	45.8	61.5	11.9	13.0	28.2
Decade	**42.6***	46.5	**55.0***	62.4	12.6	12.5	26.8
Genou	**37.5***	39.7	47.5	60.9	12.3	11.9	31.2
Jagalene	35.2	45.1	**50.6***	63.1	13.1	13.9	27.6
Jerry	**38.8***	43.3	47.3	61.0	12.9	13.2	29.8
Ledger	**44.6***	43.7	47.3	61.5	12.3	12.5	26.7
Norris	30.6	44.2	**53.4***	62.6	12.4	12.3	27.2
Pryor	28.5	45.4	**58.7****	61.1	13.4	12.0	23.4
Rampart	31.4	40.5	44.6	61.0	12.2	12.6	28.5
Wahoo	**47.5****	50.6	**54.8***	60.1	12.3	13.1	28.4
Yellowstone	**40.3***	49.8	**57.1***	60.8	12.8	12.7	28.6
Experimental							
BZ9W05-2043	**38.8***	--	--	61.4	12.1	11.9	28.1
MT0871	**46.4***	--	--	61.2	12.4	12.3	28.6
MTCL1003	23.7	--	--	59.8	12.6	14.4	26.4
MTCL1067	27.9	--	--	61.0	13.0	12.4	28.2
MTCL1068	33.0	--	--	59.8	13.0	11.7	28.5
MTS0713	30.4	38.9	46.5	61.9	12.6	12.9	25.8
MTS0721	**37.9***	48.4		62.5	12.5	12.9	27.5
MTS0808	**41.8***	--	--	61.9	12.4	13.0	27.4
MTS0826	**42.1***	54.2	--	62.3	12.2	12.7	29.0
MTS0832	**45.9***	46.0	--	60.5	12.7	11.7	28.1
Average	36.7	44.3	49.8	61.5	12.5	12.6	27.5
PLSD (p=0.05)	10.3	ns	10.4	1.2	0.7	ns	2.5
CV%	15.4	18.2	18.0	1.2	3.5	3.0	6.1

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 13 percent moisture content.
2 Grain protein values adjusted to 12 percent grain moisture content.
ns Indicates no significant difference between cultivars within a column of data based on Fisher's protected LSD (p=0.05).
** Indicates highest yielding cultivar within a column.
* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).

Rapelje Dryland Winter Wheat (Exp. 113881)

Planted:	September 30, 2010
Harvested:	August 11, 2011
Fertility:	11-52-00, 70 lb/a in-furrow at planting; 60 lb/a as 46-0-0, June 16, 2011
Herbicide:	n/a
Previous crop:	chemical fallow

Table 3. Performance of 25 commercial and experimental winter wheat cultivars tested under no-till, dryland conditions near Forsyth, Montana during 2011. Cultivars listed alphabetically. (Exp. 113882).

Cultivar	Grain Yield 1/ 2011	Grain Yield 1/ 2010-11	Grain Yield 1/ 2009-11	Test Weight	Grain Moisture	Grain Protein 2/	Plant Height
	---------- bushels/acre ----------			lb/bu	%	%	inches
Commercial							
Accipiter	40.0	48.6	44.2	63.6	11.2	15.5	30.2
AP503 CL2	33.4			64.0	10.6	17.2	29.0
Bynum	**45.1***	49.3	43.4	62.0	10.2	20.2	36.6
CDC Falcon	32.3	47.4	43.9	62.5	11.1	15.8	27.6
Curlew	42.2	57.7	51.3	62.7	10.6	16.8	34.0
Decade	40.6	62.1	56.3	62.3	11.7	18.6	29.5
Genou	43.3	51.1	47.1	62.9	10.7	17.4	36.4
Jagalene	43.5	57.9	51.7	63.8	11.1	17.8	31.5
Jerry	37.0	47.8	44.2	62.0	10.8	18.0	35.4
Ledger	40.6	50.9	46.9	62.6	10.4	18.1	29.5
Norris	39.4	49.9	45.6	63.8	10.4	15.9	33.1
Pryor	**45.4***	56.5	50.7	63.7	11.1	14.7	29.3
Rampart	37.9	47.0	42.5	62.4	10.5	18.9	36.9
Wahoo	**49.3***	54.0	50.8	62.0	10.9	16.8	33.3
Yellowstone	34.1	50.2	46.7	62.4	11.2	16.6	31.9
Experimental							
BZ9W05-2043	40.0			62.4	10.8	16.4	30.6
MT0871	**50.4***			63.0	10.8	16.5	31.8
MTCL1003	**46.3***			62.7	10.6	17.2	36.6
MTCL1067	42.3			62.8	10.9	16.6	34.5
MTCL1068	**51.8****			62.9	10.8	16.1	35.6
MTS0713	**50.6***	53.9	47.6	63.5	10.6	15.9	33.2
MTS0721	42.1	53.1		62.9	10.6	17.7	30.1
MTS0808	35.1			62.2	10.7	18.0	30.6
MTS0826	44.2	47.3		62.6	10.8	17.3	32.9
MTS0832	34.4	46.9		62.6	11.0	17.7	33.2
Average	41.6	51.8	47.5	62.8	10.8	17.1	32.5
PLSD (p=0.05)	7.0	ns	ns	0.5	0.3	1.5	2.5
CV%	9.7	11.6	13.2	0.5	1.9	5.2	4.7

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 13 percent moisture content.
2/ Grain protein values adjusted to 12 percent grain moisture content.
ns Indicates no significant difference between cultivars within a column of data based on Fisher's protected LSD (p=0.05).
** Indicates highest yielding cultivar within a column.
* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).

Forsyth Dryland Winter Wheat (Exp. 113882)

Planted:	October 4, 2010
Harvested:	August 3, 2011
Fertility:	11-52-00, 70 lb/a in-furrow at planting; 60 lb N/a as 46-0-0 on 6/13/2011
Pesticide:	Unisom (2-4-D)@15 oz./a; Tilt @ 4oz/a on June 7, 2011
Previous crop:	chemical fallow,

Table 4. Performance of 25 commercial and experimental winter wheat cultivars tested under no-till, dryland conditions near Hardin, Montana during 2011. Cultivars listed alphabetically. (Exp. 113884).

Cultivar	Grain Yield 1/ 2011	2010-11	2009-11	Test Weight	Grain Moisture	Grain Protein 2/	Plant Height
	---------- bushels/acre ----------			lb/bu	%	%	inches
Commercial							
Accipiter	**102.0***	85.2	77.0	63.3	9.7	11.0	41.9
AP503 CL2	**97.9***			63.6	9.4	11.6	37.9
Bynum	85.8	71.6	68.1	63.5	9.4	12.6	46.1
CDC Falcon	**103.4***	87.6	81.3	61.9	9.3	11.8	39.6
Curlew	76.9	60.5	61.0	63.0	9.3	13.3	45.5
Decade	**108.2***	87.8	82.5	63.0	9.6	11.4	39.1
Genou	74.7	74.8	67.2	62.7	9.4	12.6	42.3
Jagalene	**110.4***	85.9	83.5	63.7	9.5	11.2	40.2
Jerry	92.8	81.0	74.7	61.8	9.6	11.7	42.9
Ledger	92.8	77.7	72.3	62.4	9.2	11.4	39.1
Norris	97.0	73.6	72.9	63.1	9.5	12.3	46.5
Pryor	**102.0***	93.3	82.7	61.8	9.3	11.1	40.3
Rampart	78.6	74.4	68.2	62.0	9.5	12.4	43.7
Wahoo	**111.2***	79.4	76.7	59.5	9.2	11.0	41.3
Yellowstone	**106.5***	95.1	84.3	61.5	10.1	11.7	43.6
Experimental							
BZ9W05-2043	**110.6***			62.8	9.3	10.8	42.0
MT0871	**100.5***			62.0	9.6	11.2	42.1
MTCL1003	94.5			62.4	9.5	12.0	44.1
MTCL1067	**113.9****			62.2	9.7	12.7	45.7
MTCL1068	**101.7***			62.3	9.7	11.0	43.4
MTS0713	86.7	68.7	65.6	62.4	9.4	12.2	41.3
MTS0721	**103.5***	88.0		62.8	9.8	11.7	40.9
MTS0808	95.5			62.9	9.6	12.5	38.5
MTS0826	91.3	82.6		63.4	9.6	12.1	44.5
MTS0832	95.6	85.9		63.2	9.6	12.5	41.9
Average	97.4	80.7	74.5	62.5	9.5	11.8	42.2
PLSD (p=0.05)	16.7	ns	ns	0.9	ns	1.4	5.5
CV%	10.5	16.5	15.0	0.9	3.8	7.3	7.9

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 13 percent moisture content.
2 Grain protein values adjusted to 12 percent grain moisture content.
ns Indicates no significant difference between cultivars within a column based on Fisher's protected LSD (p=0.05).
** Indicates highest yielding cultivar within a column.
* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).

Hardin Dryland Winter Wheat (Exp. 113884)

Planted:	September 29, 2010
Harvested:	August 1, 2011
Fertility:	11-52-0, 70 lb/a, at planting; 100 lb N/a as 46-0-0 in fall;
Pesticide:	Headline 8 oz./a on June 15, 2011
Previous crop:	chemical fallow

Table 5. Performance of 25 commercial and experimental winter wheat cultivars tested under conventional, dryland conditions near Molt, Montana during 2011. Cultivars listed alphabetically. (Exp. 113885).

Cultivar	1/ Grain Yield			Test Weight	Grain Moisture	2/ Grain Protein	Plant Height
	2011	2010-11	2009-11				
	---------- bushels/acre ----------			lb/bu	%	%	inches
Commercial							
Accipiter	52.4	63.1	**54.8***	63.4	11.0	14.1	28.5
AP503 CL2	36.1			62.4	10.2	17.3	26.2
Bynum (CL)	27.9	46.2	43.0	61.3	9.3	18.6	28.6
CDC Falcon	37.8	54.6	46.9	62.2	10.1	15.3	26.6
Curlew	36.6	58.6	**50.7***	62.5	9.9	17.2	29.7
Decade	37.2	58.7	**49.8***	60.1	10.7	18.8	26.2
Genou	37.3	55.6	**52.9***	62.5	9.9	16.8	31.4
Jagalene	32.7	53.9	46.6	62.5	9.8	18.9	27.7
Jerry	39.9	51.9	44.1	61.8	10.2	15.9	32.5
Ledger	45.1	62.9	**56.7****	62.2	9.8	15.9	26.0
Norris (CL)	42.4	58.1	**50.6***	63.1	10.2	15.6	30.8
Pryor	36.8	54.1	**50.8***	62.1	10.5	16.3	26.2
Rampart	27.1	47.9	44.6	59.9	9.1	18.8	27.4
Wahoo	38.7	59.3	**53.5***	60.6	10.1	17.3	28.3
Yellowstone	42.1	59.7	**52.5***	61.7	10.7	14.8	28.5
Experimental							
BZ9W05-2043	36.9			61.2	10.3	17.2	26.4
MT0871	50.6			63.6	10.0	13.3	29.2
MTCL1003	40.9			61.2	10.7	15.6	31.0
MTCL1067	44.8			61.3	11.2	15.0	29.9
MTCL1068	39.4			61.5	10.2	15.1	28.8
MTS0713	39.4	57.5	**51.2***	63.1	10.0	15.9	30.6
MTS0721	38.3	57.4		61.8	9.8	17.3	27.3
MTS0808	44.7			62.6	10.3	17.0	27.1
MTS0826	39.0	56.1		62.4	10.1	15.5	29.3
MTS0832	51.7	59.5		63.3	10.5	15.1	29.2
Average	39.8	56.4	49.9	62.0	10.2	16.3	28.5
PLSD (p=0.05)	ns	ns	7.8	1.7	0.8	2.1	4.0
CV%	20.3	13.3	13.8	1.6	4.3	7.7	7.9

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 13 percent moisture content.
2 Grain protein values adjusted to 12 percent grain moisture content.
ns Indicates no significant difference between cultivars within a column based on Fisher's protected LSD (p=0.05).
** Indicates highest yielding cultivar within a column.
* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).

Molt Dryland Winter Wheat (Exp. 113885)

Planted:	September 30, 2010
Harvested:	August 11, 2011
Fertility:	11-52-00, 70 lb/a in furrow at planting; 65 lb/a 46-0-0 on June 14, 2011
Herbicide:	Bronate adv. @ 1 pint/a + Harmony extra 1 oz./ac on June 21, 2011
Previous crop:	summer fallow

Table 6. Performance of 25 commercial and experimental winter wheat cultivars tested under no-till, dryland conditions near Fort Smith, Montana during 2011. Cultivars listed alphabetically. (Exp. 113886).

Cultivar	1/ Grain Yield	Test Weight	Grain Moisture	2/ Grain Protein	Plant Height
	bushels/acre	lb/bu	%	%	inches
Commercial					
Accipiter	83.0	61.2	9.9	13.9	34.4
AP503 CL2	87.0	61.6	9.8	13.8	36.0
Bynum	**91.6***	62.8	9.9	15.5	43.3
CDC Falcon	81.5	60.8	10.2	13.3	31.6
Curlew	78.3	63.0	10.0	14.0	40.8
Decade	89.2	60.2	10.0	14.5	35.4
Genou	76.7	61.8	10.3	13.5	39.0
Jagalene	85.6	62.0	10.2	12.5	35.3
Jerry	79.9	60.4	10.3	14.2	41.2
Ledger	83.5	61.2	10.1	13.6	32.7
Norris	**91.4***	62.6	9.8	12.8	44.5
Pryor	83.7	60.9	9.9	13.0	32.8
Rampart	82.6	62.0	10.1	15.6	42.4
Wahoo	88.4	59.9	9.9	13.4	36.4
Yellowstone	**92.4***	59.4	9.7	14.9	36.5
Experimental					
BZ9W05-2043	89.3	59.9	9.5	14.6	37.5
MT0871	86.2	59.2	9.6	15.2	36.1
MTCL1003	89.1	60.6	9.5	15.7	43.4
MTCL1067	**98.0****	61.1	9.9	13.2	39.8
MTCL1068	**95.2***	58.5	9.6	15.0	41.1
MTS0713	77.2	60.1	10.1	14.7	34.6
MTS0721	**93.1***	61.1	9.7	15.0	36.6
MTS0808	88.3	61.0	9.8	15.0	35.2
MTS0826	82.0	62.0	10.1	15.6	42.4
MTS0832	83.6	60.9	10.0	13.8	41.6
Average	86.3	61.0	9.9	14.2	38.0
PLSD (p=0.05)	8.4	1.7	0.5	1.8	2.3
CV%	5.9	1.7	2.9	7.8	3.7

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 13 percent moisture content.
2 Grain protein values adjusted to 12 percent grain moisture content.

Fort Smith Winter Wheat (Exp. 113886)

Planted:	October 6, 2010
Harvested:	August 2, 2011
Fertility:	11-52-00, 70 lb/a at planting; 110 lb N/a + 20 lb/a S in March 2011
Pesticide:	RT3 16 oz./a preplant; powerflex@3.5 oz./a + bronate@16 oz./a + headline@3 oz./a on May 4, 2011
Previous crop:	fallow

Table 7. Grain yield[1/] of 25 commercial and experimental winter wheat cultivars tested at five locations in south central Montana during 2011. Varieties listed by declining average yield across all locations.

Cultivar	Rapelje No-Till Dryland	Forsyth No-Till Dryland	Hardin No-Till Dryland	Molt Conv. Dryland	Fort Smith No-Till Dryland	All Locations Average
			----------bushels/acre ----------			
MT0871	**46.4***	**50.4***	**100.5***	50.6	86.2	**67.5****
Wahoo	**47.5****	**49.3***	**111.2***	38.7	88.4	**66.0***
MTCL1067	27.9	42.3	**113.9****	44.8	**98.0****	**66.0***
Accipiter	**45.5***	40.0	**102.0***	52.4	83.0	**64.5***
MTCL1068	33	**51.8****	**101.7***	39.4	**95.2***	**64.5***
BZ9W05-2043	**38.8***	40.0	**110.6***	36.9	89.3	**63.6***
Yellowstone	**40.3***	34.1	**106.5***	42.1	**92.4***	**63.2***
MTS0721	**37.9***	42.1	**103.5***	38.3	**93.1***	**63.1***
Decade	**42.6***	40.6	**108.2***	37.2	89.2	**63.0***
Jagalene	35.2	43.5	**110.4***	32.7	85.6	**61.8***
MTS0832	**45.9***	34.4	95.6	51.7	83.6	**61.6***
Norris	30.6	39.4	97.0	42.4	**91.4***	**61.2***
MTS0808	**41.8***	35.1	95.5	44.7	88.3	**61.0***
MTS0826	**42.1***	44.2	91.3	39.0	82.0	**60.6***
Ledger	**44.6***	40.6	92.8	45.1	83.5	**60.4***
Pryor	28.5	**45.4***	**102.0***	36.8	83.7	**60.0***
CDC Falcon	**38.5***	32.3	**103.4***	37.8	81.5	58.8
MTCL1003	23.7	**46.3***	94.5	40.9	89.1	58.7
Jerry	**38.8***	37.0	92.8	39.9	79.9	57.3
AP503 CL2	26.9	33.4	**97.9***	36.1	87.0	56.8
MTS0713	30.4	**50.6***	86.7	39.4	77.2	56.7
Bynum	32.4	**45.1***	85.8	27.9	**91.6***	55.1
Genou	**37.5***	43.3	74.7	37.3	76.7	54.3
Curlew	30.3	42.2	76.9	36.6	78.3	52.6
Rampart	31.4	37.9	78.6	27.1	82.6	51.1
Average	36.7	41.6	97.4	39.8	86.3	60.4
PLSD (p=0.05)	10.3	7.0	16.7	ns	8.4	8.3
CV%	15.4	9.7	10.5	20.3	5.9	19.0

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 13.0 percent moisture content.
§ Tested under irrigated conditions at Huntley only in 2010.
ns Indicates no significant difference between cultivars within a column based on Fisher's protected LSD (p=0.05).
** Indicates highest yielding cultivar within a column.
* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).

Table 8. Performance of 25 commercial and experimental winter wheat cultivars tested under dryland conditions at five locations in south central Montana during 2011. Cultivars listed alphabetically.

Cultivar	1/ Grain Yield			Test Weight	Grain Moisture	2/ Grain Protein	Plant Height
	2011	2010-11	2009-11				
	---------- lb/bu ----------			lb/bu	%	%	inches
Commercial							
Accipiter	**64.5***	**63.3***	**60.8***	62.7	10.8	13.3	32.6
AP503 CL2	56.8			63.0	10.5	14.6	30.8
Bynum	55.1	54.8	53.9	62.3	10.2	16.0	36.5
CDC Falcon	58.8	58.9	56.4	61.8	10.7	13.6	29.8
Curlew	52.6	57.8	56.5	62.5	10.4	14.8	35.7
Decade	**63.0***	**66.5****	**64.4****	61.6	10.9	15.2	31.5
Genou	54.3	55.5	55.2	62.1	10.6	14.4	35.9
Jagalene	**61.8***	**63.7***	**62.2***	63.0	10.7	14.9	32.3
Jerry	57.3	57.3	55.1	61.4	10.7	14.6	36.3
Ledger	**60.4***	**61.4***	**59.5***	62.0	10.4	14.3	30.9
Norris	**61.2***	**61.6***	**61.3***	63.1	10.5	13.8	36.4
Pryor	**60.0***	**62.2***	**62.6***	61.9	10.8	13.4	30.5
Rampart	51.1	54.0	52.7	61.4	10.3	15.6	35.9
Wahoo	**66.0***	**65.9***	**64.2***	60.4	10.5	14.3	33.7
Yellowstone	**63.2***	**64.8***	**62.9***	61.2	10.9	14.2	33.9
Experimental							
BZ9W05-2043	**63.6***			61.6	10.3	14.2	32.9
MT0871	**67.5****			61.8	10.5	13.6	33.7
MTCL1003	58.7			61.3	10.5	15.0	36.2
MTCL1067	**66.0***			61.7	10.9	14.0	35.5
MTCL1068	**64.5***			61.0	10.7	13.8	35.4
MTS0713	56.7	58.0	56.9	62.2	10.6	14.3	33.1
MTS0721	**63.1***	**64.3***		62.2	10.5	14.9	32.4
MTS0808	**61.0***			62.1	10.6	15.1	31.6
MTS0826	**60.6***	**61.0***		62.6	10.6	14.7	35.9
MTS0832	**61.6***	**60.5***		62.1	10.7	14.1	34.8
Average	60.4	60.6	59.0	62.0	10.6	14.4	33.8
PLSD (p=0.05)	8.3	6.2	5.4	0.9	0.4	1.1	2.1
CV%	19.0	17.9	18.8	2.0	4.6	10.9	8.5
Location-Years	5	8	11	5	5	5	5

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 13.0 percent moisture content.
2/ Grain protein values adjusted to 12 percent grain moisture content.
** Indicates highest yielding cultivar within a column.
* Indicates cultivars yielding equal to highest yielding cultivar within a column based on Fisher's protected LSD (p=0.05).