

TITLE: North Central Montana Off-Station Spring Wheat Variety Performance Evaluations (NARC, 4W4144).

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OBJECTIVES:

Diverse cropping environments exist within the five-county area most closely served by Northern Agricultural Research Center. Winter wheat, spring wheat, barley, durum and oat production together in the five counties (Blaine, Chouteau, Hill, Liberty and Phillips) represents 29.7 percent of the 2007-2011 statewide totals (43 percent for winter wheat and 19 percent for spring wheat). 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 that of the Research Center. Growers in north central Montana are provided reliable, unbiased, up-to-date information to make comparisons among improved spring wheat varieties. This report provides producers in north central Montana the information necessary to select varieties best suited for their specific area and growing conditions.

METHODS:

Standard off-station variety performance trials were conducted in 2012 on chemical fallow at two locations in two northern Montana counties.

Dryland Spring Wheat Trials:

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

Both trials consisted of 21 entries and were seeded in replicated, 3-row, 22-foot plots on a 12-inch row spacing utilizing a self-propelled cone seeder with Atom Jet paired row openers. All rows of each plot were trimmed to a harvest length of 16.5 feet with a rotary mower. Plant height was measured and percent sawfly cutting was estimated for each plot immediately prior to harvest. A 'Wintersteiger Classic' plot combine, funded in part by Montana Wheat and Barley Committee, was used to harvest each 3-row plot. Seed was cleaned prior to measuring plot weight, test weight and moisture content. Other variables specific to each individual trial are listed with the current year data tables.

RESULTS:

Cropping environments in 2012 were fair across north central Montana. Both the Turner and Loring locations had higher than normal precipitation early in the spring; however, the rainfall was untimely and not spread across critical growth stages. At Havre, annual growing season precipitation (9/1/11 through 8/31/12) was 9.46 inches, 21 percent lower than the average for all years since 1916. April 1 through July 31 precipitation was 7.33 inches or 108 percent of the 97-year average. Heat units expressed as "Growing Degree Days" (GDD, base 50) from May through July totaled 1092, 85 percent of the average for the last 62 years (1951-2012). The last spring frost and first fall frost of 2012 were both later than the 97-year average resulting in 125 frost-free days. The minimum winter temperature was -22 degrees F on January 18. Overall, the growing season was warmer than normal. Crop outlook was initially very good with adequate fallow-stored soil moisture and generally favorable conditions. Spring seeded crop performance in some areas was poorer than expected due to lack of timely precipitation in June followed by steady winds and higher than normal temperatures. The April through July growing season saw an average daily temperature of 58.4 degrees F, 1.2 degrees above normal. July and August average temperatures were 3.5 percent higher than normal with the high for 2012 recorded on July 10, 24, 25 and August 7 at 98 degrees F. There were 29 days with temperatures 90 degrees F or above, with no days over 100 degrees F.

Following a substantially damaging hailstorm during the first week of June and another minor hail event in August, spring wheat yields at Turner averaged 21 bu/ac. Experimental line 'MT 1053' was the highest yielding entry at 24.4

bu/ac (Table 1). Publically available varieties 'Choteau', 'Corbin', 'Duclair', 'ONeal', 'Outlook', 'Reeder' and 'Vida', along with two experimental lines produced yields statistically equal to that of MT 1053. Sawfly cutting in the small plot situation ranged from minimal to severe with 1 percent cutting in 'Mott' and 77 percent cutting in 'Volt'.

Loring spring wheat yields averaged 26 bu/ac with experimental line MT 1053 producing the highest yield at 32.4 bu/ac (Table 2). Corbin, ONeal, Outlook and Vida produced yields statistically equal to that of MT 1053. Sawfly cutting was slight to moderate at Loring, ranging from 1 to 27 percent.

Stand percent, plant height, yield, moisture, test weight, protein and sawfly cutting data, where appropriate, for the 2012 Cederberg (Turner) and 2012 Flansaas/Lumsden (Loring) dryland spring wheat trials are summarized in Tables 1 and 2, respectively.

FUNDING SUMMARY:

Expenditure information for grant index 4W4144 is to be provided by Montana State University, Office of Sponsored Programs. There is no other grant support for this project.

MWBC FY2013 GRANT SUBMISSION PLANS:

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

This work has been strongly supported by producers near each of the locations, and by the Northern Ag Research Center Advisory Council. With budget and other resources allowing, it is planned to continue off-station cereal variety investigations in the five-county area. The Loring location is entering its eighteenth 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 growing conditions there are quite different. Cooperator and producer support in the Big Flat area have been outstanding through the years with 2012 marking 25 years at the present Turner site.

TABLE 1. Dryland Fallow Spring Wheat Cultivar Evaluation Nursery Grown Off-Station at the Cederberg Farm, Turner. Northern Agricultural Research Center. Havre, MT. 2012. (Exp# 12-9951-SW)

ID	Cultivar or Selection	Stand %	Plant Ht Inches	1/ Yield Bu/Ac	Moisture %	Test Wt Lbs/Bu	2/ Protein %	3/ Sawfly %
APNARC1	05S0168-23	87.3	21.0	18.9	8.6	61.6	14.7	36.7
AGRIPRO8	AP604CL	94.0	20.5	19.9	8.6	61.2	14.5	28.3
PI633974	CHOTEAU	95.0	21.2	22.5*	8.4	59.0	14.9	28.3
MT 1008	CHOTEAU/MT0515	81.0	20.2	23.4*	9.0	60.6	13.4	10.0
BZ996434	CORBIN	93.3	21.3	22.6*	8.8	60.4	14.3	18.3
PI660981	DUCLAIR	95.3	22.2	24.0*	8.5	58.9	14.4	30.0
CI 13596	FORTUNA	91.0	24.8	18.6	8.8	60.7	15.0	20.0
BZ992322	HANK	91.7	21.4	20.9	8.5	60.2	14.1	28.3
IMICHT79	IMICHT79	91.3	20.6	23.1*	8.5	59.7	14.6	16.7
BZ9M1044	JEDD	89.0	19.3	18.5	9.0	62.1	13.8	16.7
AGRIPRO6	KELBY	88.7	20.1	15.8	8.6	61.4	15.3	21.7
PI574642	MCNEAL	93.7	22.0	19.6	8.4	59.5	14.6	61.7
NDSW0449	MOTT	81.7	20.6	19.6	8.6	60.3	14.9	1.0
BZ999592	ONEAL	96.3	21.9	23.4*	8.8	60.8	14.1	35.0
PI632252	OUTLOOK	97.0	21.8	22.6*	8.3	59.7	14.0	36.7
ND 695	REEDER	92.7	20.3	22.8*	8.5	60.5	14.6	33.3
AGRIPR12	SY TYRA	92.0	19.7	19.6	8.9	61.6	13.7	23.3
PI642366	VIDA	91.3	21.3	23.4*	8.8	60.7	13.9	33.3
MT 1053	VIDA/MTHW0202	84.3	19.7	24.4**	9.1	61.1	12.9	38.3
ACS52610	VOLT	93.0	21.8	16.6	8.6	61.3	14.2	76.7
BZ92413R	WB GUNNISON	86.3	19.4	21.5	9.1	61.0	13.9	2.3
EXPERIMENTAL MEANS		90.8	21.0	21.0	8.7	60.6	14.3	28.4
LSD (0.05)		8.6	1.8	2.1	0.2	0.6	-	12.0
C.V.%		5.7	5.1	6.0	1.3	0.6	-	25.5
P-VALUE (Varieties)		0.0151	<.0001	<.0001	<.0001	<.0001	-	<.0001

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.

** = indicates highest value within a column.

* = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05).

Management Information (12-9951-SW)

Seeding Date: May 4, 2012
 Harvest Date: August 27, 2012
 Fertility: 70-40-25 side banded
 System: no till
 Herbicide: none
 Insecticide: none
 Previous Crop: Chemical Fallow - Durum
 Precipitation: not available

TABLE 2. 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. 2003-2012. (Exp# 9951-SW)

2/ VARIETY or SELECTION	No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre)							TEST WEIGHT (Pounds Per Bushel)								
		2008	2009	2010	2011	2012	AVE. for YEARS TESTED 3/	% of CHECK YIELD 4/	10-YR COMP. AVE. YIELD 5/	2007	2008	2009	2010	2011	AVE. for YEARS TESTED 3/	% of CHECK TEST WT 4/	10-YR COMP. AVE. TEST WT 5/
MT 0832 DUCLAIR (++)	3			36.7	31.3	24.0	30.7	127.4	37.0			54.8	59.9	58.9	57.8	97.1	57.0
BZ999592 ONEAL (P+)	5	20.5	47.8	37.1	30.1	23.4	31.8	126.6	36.8	57.9	61.6	57.8	61.9	60.8	60.0	101.4	59.5
PI642366 VIDA (++)	9	20.2	50.7	25.6	34.7	23.4	35.4	123.1	35.8	55.8	60.8	55.6	61.7	60.7	58.5	99.1	58.2
BZ9M1044 JEDD (P+)	5	20.8	40.6	41.5	26.5	18.5	29.6	117.9	34.3	58.2	62.1	57.0	61.4	62.1	60.2	101.6	59.7
BZ996434 CORBIN	6	19.7	38.2	32.7	32.5	22.6	28.4	114.4	33.3	56.6	61.4	55.6	61.9	60.4	58.5	100.6	59.1
PI633974 CHOTEAU (+)(saw fly res)	10	20.3	38.2	32.6	30.6	22.5	31.7	113.8	33.1	54.5	60.1	53.7	61.1	59.0	57.6	97.7	57.4
AGRIPRO8 AP604 CL	4		40.4	31.8	29.4	19.9	30.4	112.6	32.7		61.2	55.7	62.1	61.2	60.0	100.2	58.8
ND695 REEDER (+)	10	18.1	45.1	30.9	27.3	22.8	31.2	111.8	32.5	56.7	61.3	56.5	61.4	60.5	58.9	99.8	58.6
BZ992322 HANK (P+)	10	18.4	49.3	36.5	24.2	20.9	31.2	111.8	32.5	56.6	60.7	54.7	60.4	60.2	58.1	98.5	57.9
PI574642 McNEAL	10	19.4	41.4	32.7	28.0	19.6	31.0	111.3	32.3	55.7	60.6	55.2	60.2	59.5	58.0	98.3	57.7
BZ992588 CONAN (P+)(saw fly tol)	9	18.9	39.1	31.4	30.5		31.7	109.7	31.9	57.3	61.2	56.8	62.6		59.4	101.1	59.4
PI632252 OUTLOOK (++)	10	18.8	38.6	26.9	30.3	22.6	30.6	109.7	31.9	55.6	59.9	54.5	60.8	59.7	57.8	98.0	57.5
AGRIPRO7 KUNTZ (P+)	4	17.5	40.0	32.4	24.8		28.7	107.3	31.2	56.7	61.2	56.3	61.7		59.0	100.2	58.8
AGRIPRO3 FREYR (P+)	5	19.4	39.8	31.6			26.1	106.6	31.0	56.6	61.3	56.5			57.3	99.8	58.6
AGRIPRO6 KELBY (P+)	4	19.1	33.3	32.9	24.6		27.5	102.8	29.9	57.0	61.4	56.8	62.6		59.4	101.0	59.3
ACS53610 VOLT (P+)	5	16.2	42.5	27.2	26.3	16.6	25.8	102.6	29.8	56.7	62.2	56.8	62.2	61.3	59.8	101.1	59.3
NDSW0449 MOTT (++)	3			30.3	31.9	19.6	27.2	101.6	29.5			55.0	61.7	60.3	59.0	99.0	58.1
AGRIPRO1 NORPRO (P+)	4	17.2					24.6	97.7	28.4	55.6					55.3	96.2	56.5
CI13596 FORTUNA (saw fly res)	10	17.5	35.8	24.4	29.2	18.6	27.9	100.0	27.9	56.3	61.0	56.4	61.7	60.7	59.0	100.0	59.0
MEANS (For Entries Listed)		18.9	41.3	31.9	28.9	21.1			32.2	56.5	61.1	55.9	61.5	60.4			58.4
6/ Growing Season Precipitation (in.)		6.6	6.0	10.3	8.3	7.5	7.5										
Soil PAW (in.) to SD @ Planting		8.1	7.8	9.0	7.9	8.9	7.9										
Total Plant Available Water (in.)		14.6	13.8	19.2	7.9	8.9	13.4										
Soil NO3 (lbs.) to SD at Planting		n/a	94	162	51	15	97										
SD (Sampling Depth in Inches)		48	48	48	48	48	48										
Fertilizer Applied	(# N)	70	70	70	70	70	70										
	(# P ₂ O ₅)	40	40	40	40	40	40										
	(# K ₂ O)	25	25	25	25	25	25										

Check Variety is Fortuna.

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

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

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

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

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

6/ Seeding to 14 days prior to harvest maturity.

TABLE 3. Ten-Year Sawfly 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. 2003-2012. (Exp# 9951-SW)

2/ VARIETY or SELECTION	No. of YEARS TESTED	1/ SAWFLY RATING (% of cut and lodged stems)										AVE. for YEARS TESTED	% of CHECK SAWFLY 3/	10-YR COMP. AVE SAWFLY 4/
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012			
NDSW0449 MOTT (++)	3								3.7	5.0	1.0	3.2	17.1	2.2
BZ996434 CORBIN	6					5.0	11.7	3.7	10.3	21.7	18.3	11.8	85.5	10.8
BZ992588 CONAN	9	2.3	15.0	5.0	26.7	11.7	10.0	3.7	3.7	23.3		11.3	95.3	12.0
PI642366 VIDA (++)	9		18.3	0.0	53.3	38.3	20.0	2.3	18.3	26.7	33.3	23.4	100.0	12.6
CI 13596 FORTUNA (saw fly res)	10	3.7	11.7	5.0	23.3	16.7	8.3	1.0	8.3	28.3	20.0	12.6	100.0	12.6
PI633974 CHOTEAU (saw fly re)	10	3.7	15.0	5.0	21.7	6.7	13.3	3.7	13.3	36.7	28.3	14.7	116.6	14.7
AGRIPRO6 KELBY	5						21.7	7.0	8.7	30.2	21.7	17.8	135.1	17.1
MT 0832 DUCLAIR (++)	3								13.7	33.3	30.0	25.7	135.9	17.2
BZ9M1044 JEDD	5						23.3	3.7	3.7	43.3	16.7	18.1	137.4	17.4
BZ999592 ONEAL	5						21.7	7.0	2.3	40.0	35.0	21.2	160.6	20.3
AGRIPRO8 AP604 CL	4							13.3	20.0	38.3	28.3	25.0	199.1	25.2
ND 695 REEDER (+)	10	15.0	28.3	5.0	81.7	35.0	18.3	6.7	16.7	53.3	33.3	29.3	232.2	29.3
BZ992322 HANK	10	20.0	36.7	6.7	78.3	38.3	20.0	5.7	8.3	58.3	28.3	30.1	238.0	30.1
AGRIPRO1 NORPRO	4			11.7	71.7	21.7	23.3					32.1	240.6	30.4
PI632252 OUTLOOK (RWA res)	10	6.7	31.7	8.3	81.7	41.7	30.0	13.3	21.7	46.7	36.7	31.8	252.0	31.8
AGRIPRO7 KUNTZ	4							35.0	13.3	18.3	61.7	32.1	279.0	35.2
PI574642 McNEAL	10	15.0	43.3	16.7	73.3	56.7	46.7	18.3	25.0	80.0	61.7	43.7	345.7	43.7
AGRIPRO3 FREYR	6			8.3	90.0	41.7	31.7	18.3	31.7			36.9	353.8	44.7
ACS53610 VOLT	5							70.0	25.0	38.3	93.3	76.7	459.6	58.1
MEANS (For Entries Listed)		9.5	25.0	7.2	60.2	28.5	25.3	9.1	14.8	42.4	31.3			24.5
5/ Growing Season Precipitation (in.)		3.1	13.7	9.7	2.5	7.0	6.6	6.0	10.3	8.3	7.5	7.5		
Soil PAW (in.) to SD @ Planting		7.0	7.4	8.0	8.8	5.8	8.1	7.8	9.0	7.9	8.9	7.9		
Total Plant Available Water (in.)		10.1	21.1	17.7	11.3	9.6	14.6	13.8	19.2	7.9	8.9	13.4		
Soil NO3 (lbs.) to SD at Planting		160	160	84	64	81	n/a	94	162	51	15	97		
SD (Sampling Depth in Inches)		48	48	48	48	48	48	48	48	48	48	48		
Fertilizer Applied	(# N)	70	70	70	70	70	70	70	70	70	70	70		
	(# P ₂ O ₅)	40	40	40	40	40	40	40	40	40	40	40		
	(# K ₂ O)	25	25	25	25	25	25	25	25	25	25	25		

Long-term check variety is Fortuna.

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

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

3/ Percent of Fortuna cut for the same data years as those in which a given entry was tested.

4/ 10-Yr Comparable Average = (x/y) * z where x = average saw fly rating of a given entry for years tested, y = average saw fly rating for Fortuna for the same years, and z = 10-Yr average saw fly rating for the check variety Fortuna.

5/ Seeding to 14 days prior to harvest maturity.

TABLE 4. Dryland Fallow Spring Wheat Cultivar Evaluation Nursery Grown Off-Station at the Flansaas-Lumsden Farm, Loring. Northern Agricultural Research Center. Havre, Montana. 2012. (Exp# 12-9955-SW)

ID	CULTIVAR or SELECTION	STAND %	PLNT HT Inches	1/	MOISTURE %	TEST WT Lbs/Bu	2/	3/
				YIELD Bu/Ac			PROTEIN %	SAWFLY %
APNARC1	05S0168-23	88.1	20.1	26.4	8.3	59.7	14.9	20.0
AGRIPRO8	AP604CL	91.4	19.8	27.4	8.4	60.6	14.5	18.3
PI633974	CHOTEAU	90.4	19.9	25.1	8.3	59.7	15.1	6.7
MT 1008	CHOTEAU/MT0515	76.1	20.2	27.0	8.3	60.1	14.1	2.3
BZ996434	CORBIN	89.8	21.8	29.3*	8.5	60.9	14.1	3.7
PI660981	DUCLAIR	86.4	21.5	26.1	8.5	60.3	14.7	6.7
CI 13596	FORTUNA	88.7	23.3	22.7	8.5	59.8	14.8	6.7
BZ992322	HANK	79.5	21.0	25.4	8.4	60.5	14.4	11.7
IMICHT79	IMICHT79	83.5	19.7	27.0	8.3	60.4	14.8	2.3
BZ9M1044	JEDD	84.5	19.0	27.6	8.4	60.5	13.9	11.7
AGRIPRO6	KELBY	85.4	20.0	22.4	8.6	61.0	15.6	15.0
PI574642	MCNEAL	84.1	20.9	22.9	8.3	60.1	14.8	25.0
NDSW0449	MOTT	82.7	21.5	23.3	8.3	60.4	15.2	1.0
BZ999592	ONEAL	83.8	21.4	28.7*	8.4	60.4	14.3	8.3
PI632252	OUTLOOK	88.8	22.1	29.1*	8.4	60.0	14.0	16.7
ND 695	REEDER	85.8	22.3	26.6	8.1	60.2	15.1	15.0
AGRIPR12	SY TYRA	86.3	20.2	26.8	8.1	57.9	14.1	11.7
PI642366	VIDA	90.1	21.6	29.7*	8.4	60.8	14.0	10.0
MT 1053	VIDA/MTHW0202	87.2	21.0	32.4**	8.4	60.2	13.4	11.7
ACS52610	VOLT	92.1	21.3	21.5	8.5	60.6	14.5	26.7
BZ92413R	WB GUNNISON	68.9	21.4	23.1	8.3	59.4	14.5	1.0
EXPERIMENTAL MEANS		85.4	21.0	26.2	8.4	60.2	14.5	11.0
LSD (0.05)		12.2	1.6	4.2	0.4	1.2	-	5.9
C.V.%		8.7	4.6	9.7	2.6	1.2	-	32.4
P-VALUE (Varieties)		0.0937	0.0004	0.0002	0.5336	0.0711	-	<.0001

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.

** = indicates highest value within a column.

* = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05).

Management Information (12-9955-SW)

Seeding Date: May 4, 2012

Harvest Date: August 27, 2012

Fertility: 70-40-25 side banded

System: no till

Herbicide: Axial, 16.4 oz/ac; Brox-M, 16 oz/ac

Insecticide: none

Previous Crop: Chemical Fallow - Spring Wheat

Precipitation: not available

TABLE 5. 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. 2003-2012. (Exp# 9955-SW)

2/ VARIETY or SELECTION	No. of YEARS TESTED 3/	1/ YIELD (Bushels Per Acre)							TEST WEIGHT (Pounds Per Bushel)								
		2008	2009	2010	2011	2012	AVE for YEARS TESTED 3/	% of CHECK YIELD 4/	10-YR COMP. AVE. YIELD 5/	2008	2009	2010	2011	2012	AVE for YEARS TESTED 3/	% of CHECK TEST WT 4/	10-YR COMP. AVE. TEST WT 5/
PI642366 VIDA (++)	9	33.6	33.3	37.0	38.0	29.7	37.2	127.4	37.3	57.6	60.5	56.5	61.2	60.8	58.7	100.4	58.4
BZ999592 ONEAL (P+)	5	38.6	31.4	36.3	40.5	28.7	35.1	126.5	37.0	59.4	62.6	58.2	62.2	60.4	60.6	103.9	60.5
BZ9M1044 JEDD (P+)	5	39.5	31.2	36.2	32.5	27.6	33.4	120.5	35.3	59.6	62.4	57.8	62.8	60.5	60.6	104.0	60.5
BZ996434 CORBIN	6	34.7	30.0	30.5	36.6	29.3	32.1	116.8	34.2	58.1	61.4	55.8	61.5	60.9	58.8	100.8	58.6
MT 0832 DUCLAIR (++)	3			34.9	33.5	26.1	31.5	113.3	33.2			55.3	59.3	60.3	58.3	98.7	57.4
ND 695 REEDER (+)	10	36.9	30.4	32.9	34.9	26.6	32.9	112.3	32.9	58.0	61.5	56.7	61.7	60.2	58.5	100.5	58.5
AGRIPRO8 AP604 CL	4		33.9	29.8	31.9	27.4	30.7	112.3	32.9		60.8	55.4	62.1	60.6	59.7	101.3	58.9
NDSW0449 MOTT (++)	3			32.8	37.4	23.3	31.2	112.2	32.9			56.2	61.1	60.4	59.2	100.2	58.3
PI632252 OUTLOOK (++) (RWA res)	10	31.7	32.7	28.6	37.0	29.1	32.7	111.6	32.7	57.2	59.5	55.3	60.6	60.0	57.2	98.3	57.2
AGRIPRO1 NORPRO (P+)	4	33.7					30.2	111.5	32.6	57.9					55.7	97.5	56.7
AGRIPRO7 KUNTZ (P+)	4	34.5	30.4	30.1	32.9		32.0	110.3	32.3	58.0	61.4	56.5	61.9		59.5	101.8	59.2
PI633974 CHOTEAU (+) (saw fly res)	10	34.9	26.1	29.6	34.2	25.1	31.9	109.0	31.9	56.2	59.2	54.5	60.5	59.7	57.3	98.4	57.3
BZ992322 HANK (P+)	10	35.8	31.5	30.2	32.9	25.4	31.5	107.6	31.5	57.3	61.0	55.1	60.6	60.5	57.4	98.7	57.4
AGRIPRO6 KELBY (P+)	5	34.1	24.0	35.1	33.3	22.4	29.8	107.4	31.4	58.5	61.2	57.0	62.7	61.0	60.1	103.1	60.0
ACS53610 VOLT (P+)	5	30.0	27.0	34.7	34.6	21.5	29.5	106.5	31.2	58.2	62.1	57.8	62.5	60.6	60.2	103.4	60.1
AGRIPRO3 FREYR (P+)	5	32.4	28.4	26.1			27.5	106.3	31.1	58.2	62.0	56.3			57.8	101.0	58.7
PI574642 McNEAL	10	34.9	27.8	29.3	33.2	22.9	30.6	104.6	30.6	57.5	60.4	55.7	60.3	60.1	57.2	98.3	57.2
BZ992588 CONAN (P+) (saw fly tol)	9	30.9	25.3	32.8	32.4		31.2	100.0	29.3	58.4	61.6	57.4	61.6		58.9	101.5	59.1
CI 13596 FORTUNA (saw fly res)	10	29.1	26.2	26.4	34.2	22.7	29.3	100.0	29.3	57.7	58.5	56.4	61.0	59.8	58.2	100.0	58.2
MEANS (For Entries Listed)		30.8	33.9	29.0	31.7	34.8			33.1	54.7	58.0	61.0	56.5	61.5			58.2
6/ Growing Season Precipitation (in.)		8.9	5.3	11.6	n/a	n/a	7.4										
Soil PAW (in.) to SD @ Planting		8.2	10.5	7.7	7.1	8.8	8.1										
Total Plant Available Water (in.)		17.2	15.7	19.3	n/a	8.8	14.0										
Soil NO3 (lbs.) to SD at Planting		n/a	42	94	50	34	64										
SD (Sampling Depth in Inches)		48	48	48	48	48	48										
Fertilizer Applied	(# N)	70	70	70	70	70	70										
	(# P ₂ O ₅)	40	40	40	40	40	40										
	(# K ₂ O)	25	25	25	25	25	25										

Check Variety is Fortuna.

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

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

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

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

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

6/ Seeding to 14 days prior to harvest maturity.

TABLE 6. Ten-Year Sawfly 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. 2003-2012. (Exp# 9955-SW)

2/ VARIETY or SELECTION	No. of YEARS TESTED	1/ SAWFLY RATING (% Cut and Lodged)										AVE. for YEARS TESTED	% of CHECK SAWFLY 3/	10-YR COMP. AVE. SAWFLY 4/
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012			
NDSW0449 MOTT (++)	3								1.0	5.0	1.0	2.3	38.9	4.4
BZ9M1044 JEDD (P+)	5						1.0	2.3	2.3	10.0	11.7	5.5	79.6	9.1
BZ996434 CORBIN	6					2.3	2.3	2.3	5.3	10.0	8.3	5.1	80.7	9.2
BZ999592 ONEAL (P+)	4						1.0	3.7	2.3	16.7		5.9	85.5	9.8
CI 13596 FORTUNA (saw fly res)	10	13.3	20.0	30.0	8.3	3.7	4.0	5.3	11.7	6.7	6.7	11.0	100.0	11.0
PI633974 CHOTEAU (+)(saw fly res)	10	10.0	28.3	26.7	5.0	2.3	2.3	3.7	8.3	16.7	6.7	11.0	100.3	11.5
BZ992588 CONAN (P+)(saw fly tol)	9	30.0	16.7	35.0	13.3	1.0	2.3	1.0	1.0	13.3		12.6	110.4	12.6
AGRIPRO6 KELBY (P+)	5						5.3	2.3	3.7	15.0	15.0	8.3	120.4	13.8
PI642366 VIDA (++)	9		20.0	33.3	23.3	3.7	6.7	8.3	10.0	18.3	10.0	14.9	138.7	15.9
AGRIPRO7 KUNTZ (P+)	4						5.3	5.0	10.0	20.0		10.1	145.8	16.7
AGRIPRO8 AP604 CL	4							3.7	8.3	15.0	18.3	11.3	149.5	17.1
MT 0832 DUCLAIR (++)	3								10.0	15.0	6.7	10.6	175.9	20.1
AGRIPRO1 NORPRO (P+)	5			20.0	48.3	6.7	3.7				16.7	19.1	181.0	20.7
ND 695 REEDER (+)	10	26.67	68.3	33.33	55	10	3.7	3.7	10.3	18.3	15.0	24.4	222.8	25.5
BZ992322 HANK	10	25.0	86.7	31.7	63.3	20.0	2.3	6.7	5.0	11.7	11.7	26.4	240.7	27.5
PI632252 OUTLOOK (++) (RWA res)	10	35.0	66.7	38.3	68.3	10.0	8.3	8.3	13.3	15.0	3.7	26.7	243.5	27.9
AGRIPRO3 FREYR (P+)	5				71.7	13.3	6.7	6.7	11.7			22.0	333.4	38.1
ACS53610 VOLT (P+)	5						23.3	26.7	15.0	23.3	26.7	23.0	334.9	38.3
PI574642 McNEAL	10	60.0	63.3	88.3	71.7	16.7	6.7	21.7	20.0	20.0	25.0	39.3	358.7	41.0
MEANS (For Entries Listed)		28.6	46.3	37.4	42.8	8.2	5.3	7.0	8.3	14.7	12.2			19.5
5/ Growing Season Precipitation (in.)		5.6	10.9	n/a	2.4	7.4	8.9	5.3	11.6	n/a	n/a	7.4		
Soil PAW (in.) to SD @ Planting		8.3	4.9	9.1	8.3	8.3	8.2	10.5	7.7	7.1	8.8	8.1		
Total Plant Available Water (in.)		13.8	15.8	9.1	10.7	15.7	17.2	15.7	19.3	n/a	8.8	14.0		
Soil NO3 (lbs.) to SD at Planting		76	60	54	81	89	n/a	42	94	50	34	64		
SD (Sampling Depth in Inches)		48	48	48	48	48	48	48	48	48	48	48		
Fertilizer Applied (# N)		70	70	70	70	70	70	70	70	70	70	70		
(# P ₂ O ₅)		40	40	40	40	40	40	40	40	40	40	40		
(# K ₂ O)		25	25	25	25	25	25	25	25	25	25	25		

Long-term check variety is Fortuna.

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

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

3/ Percent of Fortuna cut for the same data years as those in which a given entry was tested.

4/ 10-Yr Comparable Average = (x/y) * z where x = average saw fly rating of a given entry for years tested, y = average saw fly rating for Fortuna for the same years, and z = 10-Yr average saw fly rating for the check variety Fortuna.

5/ Seeding to 14 days prior to harvest maturity.