

The 34th

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WESTERN TRIANGLE AGRICULTURAL RESEARCH CENTER

Montana Agricultural Experiment Station

Conrad, Montana

2011 Crop Year

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Summary of climatic data by month for the '10-'11 crop year (September thru August) at the Western Triangle Agricultural Research Center, Conrad, MT.

Month	Precipitation (inches)		Mean Temperature (°F)	
	Current Year	Average (26-yr)	Current Year	Average (26-yr)
September, 2010	1.54	1.20	51.7	56.8
October, 2010	.19	0.57	48.4	45.0
November, 2010	.49	0.28	25.3	32.4
December, 2010	.43	0.20	18.4	24.0
January, 2011	.08	0.19	17.1	22.9
February, 2011	.51	0.23	12.8	24.4
March, 2011	.32	0.41	24.0	32.9
April, 2011	1.47	1.01	36.3	42.8
May, 2011	3.83	1.93	46.8	59.4
June, 2011	5.36	3.00	54.8	59.6
July, 2011	.57	1.43	65.1	66.8
August, 2011	.44	1.23	68.0	66.0
Total	15.23	--		--
Average	--	11.55	40.8	43.9

Last killing frost in Spring (32°F)

2011----- May 18
Average 1986-2011----- May 19

First killing frost in Fall (32°F)

2011-----Oct 15
Average 1986-2011----- Sept 25

Frost free period (days)

2011----- 150
Average----- 129

Maximum summer temperature----- 97°F (July 17, 2011)

Minimum winter temperature----- -24°F (February 26, 2011)

2011 Winter Wheat Variety Evaluations in the Western Triangle Area.

Location: Western Triangle Agricultural Research Center (WTARC), Conrad, MT.

Personnel: John H. Miller, WTARC, Conrad, MT, Dave Wichman, CARC, Moccasin, MT, and Phil Bruckner and Jim Berg, MSU Plant Science Dept., Bozeman, MT.

The uniform, winter wheat intrastate and preliminary variety nurseries, along with four off station locations were grown 2011. Off station trials were grown north of Cut Bank, MT, north of Devon, MT, near the 'Knees' east of Brady, MT, and northeast of Choteau, MT in Choteau county.

Results: Winter wheat variety data are shown in Tables 1 thru 8.

The growing season in 2011 began with a cool wet spring, followed by a dry and warm summer at Western Triangle Ag. Research Center. Grain yields were about 20 bu/acre higher than average with good test weights, and grain protein levels were a bit below average. (Tables 1 thru 4) The harvest was about three weeks later than normal.

All off station plots were harvested and the data are presented in Tables 5 thru 8. The Cut Bank and Devon plots had stripe rust until shortly after heading when precipitation decreased and the temperature increased. The winter wheat plots at the Knees and Pendroy were farmer sprayed for rust.

Top yielding varieties at the Cut Bank were WB-Quake, MT0871, and Yellowstone. Judee, Yellowstone, and MT0871 were the high yielding varieties at Devon. Top yielders at the Knees include MT0871, Yellowstone, and MTCL1067, with Yellowstone, MT0871, and MTCL1068 being the top yielders at Pendroy. Yellowstone was in the top three at all off station locations.

Off station cooperators: Bradley Farms, north of Cut Bank, MT
Brian Aklestad, north of Devon, MT
Aaron Killion, east of Brady, MT
Lindsey Martin, northeast of Choteau

Detailed descriptions of most of the varieties tested are included in Extension Bulletin 1098 "Performance Summary of Winter Wheat Varieties in Montana", available at County Agent Offices. Additional observations concerning the varieties are presented in the following pages.

Winter Wheat Variety Notes & Comments

Western Triangle Agricultural Research Center, Conrad, MT

Winterhardiness ratings: 5 = very good; 1 = poor.

Coleoptile length: Long = 3.4" or more; Short = 3" or less.

Stem solidness scores of 19 or higher are generally required for reliable sawfly resistance.

Accipiter (Sask. DH0018196): First tested in 2008. High yield in 2008. 4" taller than Falcon. Similar to Falcon for test weight, head date and protein. Parentage = Raptor x Falcon.

Bauermeister (WA7939, 2005): Winterhardiness = 2. Medium height, med-strong straw. Medium coleoptile. Very late maturity. Very low test weight.

Bearpaw (MSU, 2011): Awned, white-glumed, solid-stem (stem solidness score = 21.8), semi-dwarf hard red winter wheat. Maturity similar to CDC Falcon, and a day earlier than Genou and Rampart. About 3.5 inches shorter than Genou and Rampart, with yields similar to CDC Falcon and higher than Genou and Rampart. Susceptible to strip and leaf rust. Resistant to prevalent races of stem rust and UG99.

Big Sky (MT9432, 2001): Nuwest/Tiber cross, hard red kernels, white chaff. Good winterhardiness (4). Strong, stiff straw, very good lodging resistance, height equal to Tiber. Medium coleoptile. Medium maturity, heading 1-2 days later than Rocky, but 2 days earlier than Tiber and Morgan. Yield about equal to Rocky, and 2-3 bu higher than Tiber. High test weight and protein. Post-harvest seed dormancy is high, like Tiber. Septoria and tan spot resistance is good. A good alternative to Tiber.

Bond (CO 2004): Winterhardiness = 2. Clearfield system IMI resistant. Stiff straw, medium height & coleoptile, early maturity. Above average yield. Average test weight. Resistant to biotype 1 Russian wheat aphid. Low protein and poor quality.

Buteo (CDC, WPB, Sask., 2006): Winterhardiness = 4. Standard height, medium coleoptile. Medium-late maturity. Below average yield. Above average test wt. Average protein.

Bynum (MSU & WPB, 2005): Clearfield system single-gene resistance to imazamox or 'Beyond' herbicide. Winterhardiness = 2. Medium strong straw, medium height, long coleoptile. Stem solidness = 20 (compared to 22 for Rampart), which typically provides a reliable level of sawfly tolerance. Similar in yield and other characteristics to Rampart. Sawfly resistant, low yield, high protein, and excellent baking quality.

Carter (WestBred, 2007): Winterhardiness = 3. Semidwarf height, stiff straw, short coleoptile. Stem solidness score = 15. Medium early heading. Average yield. Above average test weight. Average protein. Moderate resistance to stripe rust.

Darrell (S. Dak., 2006): Medium height and coleoptile. Medium-early heading. High yield. Average test weight and protein.

Decade (MSU/NDSU, 2009): White chaffed, hard red winter wheat, with winter hardiness almost equal to Jerry. High yield potential, medium to high test weight, early maturity, and medium to high grain protein.

Falcon (CDC, WPB, Sask. 1999): Good winterhardiness (4). Semidwarf, stiff straw, 4" shorter than Rocky. Short coleoptile. The first true winterhardy semidwarf available for irrigated conditions in Montana. Heading 1 day later than Rocky, 2 days earlier than Neeley & Tiber. Above average yield and test weight on dryland, good performance for irrigated or high rainfall conditions. Protein similar to Rocky. Not for stripe rust areas.

Genou (MSU, 2004): Sawfly resistant. Stem solidness not quite as solid as Rampart; and may be more sensitive to environmental factors than that of Rampart. Solid stem comparison: (max rating = 25): Rampart = 22, Genou = 19. Winterhardiness higher than Vanguard and Rampart, equal to Rocky. Medium stiff straw. Height similar to Vanguard, and 2" shorter than Rocky. Medium coleoptile. Maturity 1-2 days later than Rocky. Yield 7% higher than Vanguard & Rampart, 5% less than Rocky. Average test weight and protein.

Hawken (AgriPro, 2007): Semidwarf height, short coleoptile. Early maturity. Yield is below average. Above average test weight and protein.

Hatcher (CO 2004): Winterhardiness = 2. Strong straw, semidwarf height, medium coleoptile. Early maturity. Low protein. Resistant to biotype 1 Russian wheat aphid and Great Plains biotype Hessian fly. Very low quality.

Jagalene (AgriPro, 2002): Winterhardiness = 2. Semidwarf, stiff straw, medium coleoptile. Early maturity, 1 day earlier than Rocky. Shatter resistant. Average yield. Very high test weight. Avg protein, but higher than Rocky. Good milling quality. Good disease resistance package (stem & stripe rust, tan spot and Septoria).

Jerry (ND, 2001): Winterhardiness high (5). Medium-stiff, med-tall straw, medium coleoptile. Medium-late maturity. Yield is below average, except in winterkill areas where it's above average. Below-average test weight. Average protein. Has one of the worst sawfly stem-cutting ratings. Shatter susceptible.

Judee (MSU, 2011): Awne, white-glumed, solid-stem (stem solidness score = 20.1), semi-dwarf hard red winter wheat with good straw strength. Maturity similar to CDC Falcon, and a half day earlier than Genou and Rampart. About 2.5 inches shorter than Genou and Rampart, with yields similar to CDC Falcon and higher than Genou and Rampart. Winter hardiness is medium to low. Susceptible to prevalent races stem and leaf rust, but is resistant to stripe rust.

Ledger (WestBred, 2005): Winterhardiness = 2. Semidwarf height & stiff straw, 4" less than Rocky. Medium coleoptile. Stem solidness = 10, variable & sensitive to cloudy conditions; not a reliable level of sawfly tolerance. Early heading. Above avg yield & test wt. Avg protein and acceptable quality. Moderate stripe rust resistance.

Morgan (Sask & WPB, 1996): High winterhardiness (5). Standard height. Medium stiff straw. Very short coleoptile. Three days later to head and slightly later maturity than Rocky; heading similar to Neeley. Below average yield. Test wt 1-lb less than Rocky or Tiber. Protein slightly higher than Rocky, similar to Neeley. Milling and baking acceptable. Recommended for areas needing high levels of winterhardiness.

Neeley (Idaho, 1980): Winterhardiness medium (3). Medium short straw. Medium coleoptile. Medium-late maturity. Susceptible to stem rust. High yielder in good years, but does poor if stressed for moisture. Below average test weight. Good shatter resistance. Protein & quality are erratic, ranging from low to high. Not for stripe rust areas.

Norris (MSU & WPB, 2005): Clearfield system single-gene resistance to imazamox or 'Beyond' herbicide (which controls cheatgrass, goatgrass and wild oats). Winterhardiness = 3. Stiff straw, medium height, medium coleoptile. Early maturity. Above average yield and test weight. Average protein, good quality. Replaces MT1159CL.

Promontory (Utah, 1990): Red head. Winter hardiness poor (2 or less). Medium-short, medium-strong straw. Short coleoptile. Medium maturity. Excellent stripe rust & dwarf smut resistance; Stem rust susceptible. Average yield and above average test weight. Protein medium low. Has severe sawfly stem cutting ratings.

Pryor (WPB, 2002): Winterhardiness 3 = Neeley. Short stiff straw, 4" shorter than Neeley. Short coleoptile. Medium late maturity similar to Neeley & Tiber, 2 days later than Rocky. Above average yield. Average test weight and protein, good quality. Intended mainly for Central Montana as a replacement for Neeley. Not for stripe rust areas.

Rampart (MSU, 1996): Sawfly resistant (sister line to Vanguard). Solid stem rating = 22. Red chaff, upright head. Winterhardiness is marginal (2-). Should not be grown in areas where high levels of winterhardiness are

needed, unless protected by stubble. Height 1 inch shorter than Neeley, med-stiff straw. Very long coleoptile. Matures 1 day later than Rocky, 2 days earlier than Neeley. Some resistance to stem rust, and some tolerance to wheat streak mv. Medium shatter resistance. Yield is below average, but is above average under heavy sawfly conditions. Does not seem as prone to shatter as Vanguard. Good test weight, protein and quality. See Genou.

Ripper (Colorado, 2006): Semidwarf height, medium coleoptile. Early maturity. Above average yield and test weight. Average protein.

Rocky (Agripro, 1978): A selection from Centurk for soil borne mosaic resistance. Winterhardiness = 2. Medium weak straw, medium height. Medium coleoptile. Early maturity. High yield. Very susceptible to yellow berry expression under low nitrogen conditions. Medium protein. See Jagalene and Ledger for shorter-straw alternatives.

Tiber (MSU, 1988): Dark Red head, (blackish-red in years of favorable moisture). Winterhardiness = 3. Medium height with good lodging resistance. Stiff straw, which may cause it to thresh a little harder than weaker-strawed varieties. Med-long coleoptile. Very resistant to sprouting, causing some dormancy. Medium maturity. Susceptible to stem rust. Very resistant to shatter. Below average yield. Protein above average. Good milling and baking quality. Fdn seed being discontinued. See Big Sky for alternative.

Vanguard (MSU, 1995): Sawfly resistant. Good stem solidness. White chaff, nodding head. Winterhardiness marginal (2-). Straw slightly stiffer and 1 inch shorter than Rocky, but moderately susceptible to lodging under high-yield conditions. Long coleoptile. Medium head date, 1 day later than Rocky, 3 days earlier than Neeley. Good wheat streak mv tolerance. Susceptible to stem & stripe rust. Below average yield; but under heavy sawfly infestation, yield is above average. Medium shatter resistance. Good test weight. Protein high; quality adequate. Not a satisfactory variety for non-sawfly areas, and should not be grown where high levels of winterhardiness are needed unless protected by stubble. See Genou.

Wahoo (Nebr & Wyo, 2000): Winterhardiness = 3. Semidwarf, 2" shorter than Rocky, stiff straw. Short coleoptile. Very early maturity. High yield. Average test weight & protein, marginally poor quality.

Willow Creek (MSU 2005): Beardless forage winter wheat for hay. HRW class. Winterhardiness = 5. Very tall straw, lodging susceptible. Long coleoptile. Very late maturity. High forage yield. Tends to be safer than barley for nitrates, because earlier seasonal development escapes heat stress better. Low grain yield and test weight. High protein.

Yellowstone (MSU, 2005): Winterhardiness = 4. Medium height similar to Neeley, and taller than Falcon, and Pryor. Straw strength is excellent. Medium-short coleoptile length. Medium maturity. Broadly adapted state-wide, but is stem-rust susceptible (thus, not for District 6, eastern Montana). Moderate resistance to stripe rust. Very high-yielding, and 3% higher than Falcon. Below average test weight. Protein is medium. Excellent baking quality and good Asian noodle quality.

Hard White Winter Wheat

Protein of hard white wheat for bread baking needs to be higher than required for noodle markets. Some varieties are dual-purpose and can be used for both bread and noodles. Although not a concern for bread baking quality, varieties with low levels of polyphenol oxidase (PPO) are desirable for Chinese noodles, since high PPO levels are associated with noodle discoloration. Low PPO provides good noodle brightness and color stability. Some hard white varieties sprout more readily than hard reds, especially those developed from Australian germ-plasm. The pure white trait is difficult to maintain, as pollen from red wheats may pollinate a white variety, causing a mixture of red kernels. It is very important to clean the combine, storage bins and other grain handling equipment prior to harvest to avoid mixing hard white wheat with other wheat. Seeding equipment and seedbed must also be free of red wheat. It is important to have a market strategy in place before growing a hard white variety.

Alice (S. Dak., 2006): Hard white. Short straw, short coleoptile. Early heading. Above average yield, test weight and protein.

Golden Spike (UT, Gen Mills, 1998): Hard white, low PPO. Winterhardiness 3. Height similar to Rocky, med-stiff straw. Medium coleoptile. Medium maturity. Below average yield. Low test weight & protein.

Hyalite (MSU & WPB, 2005): Hard White, low PPO with good noodle brightness and color stability. Clearfield system single-gene resistance to imazamox or 'Beyond' herbicide. Winterhardiness = 3. Standard height, but stiff straw. Short coleoptile. Early maturity. Average yield and test weight. Red kernel occurrence is 0.7% (high, but still acceptable). Dual-purpose quality similar to NuWest & NuSky. Above average protein, good milling & baking quality. Stem rust resistant. Stripe rust susceptible.

MDM WA7936 (Wash., 2006): Hard white. Winterhardiness = 2. Medium stiff straw. Medium coleoptile. Very late maturity. Yield similar to NuWest. Low test weight.

NuDakota (AgriPro, 2005): Hard white. Winterhardiness = 2. Semidwarf height, stiff straw. Early heading. Average yield, test weight and protein. Medium PPO.

Nuwest (MSU, 1994): Hard white, low PPO. Dual purpose, noodle and bread. Winterhardiness = 4. One inch shorter than Rocky. Stiff straw. Very short coleoptile. Two days later than Rocky. Resistant to stem rust but susceptible to stripe rust, dwarf bunt, and WSMV. Susceptible to sawfly, RWA, and Hessian fly. Average yield and well adapted to Montana. Medium test weight and protein. Good resistance to preharvest sprouting -- (In 1993, everything sprouted - red or white). Contains 1 red kernel/1000. Protein medium to high. Good quality.

NuSky (MSU, 2001): Hard white, low PPO. (Sister line to the hard red var BigSky). Good dual purpose quality for noodles & bread. Winterhardiness 4. Height and straw strength similar to Nuwest & Rocky, med-stiff. Short coleoptile. Heading similar to Nuwest, Tiber & Neeley; and 3 days later than Rocky. Shatter resistant. Average yield. Test weight similar to Nuwest. Medium to high protein. Quality similar to Nuwest. High level of post-harvest dormancy (similar to Tiber), and thus does not have the sprouting problems common to some of the other hard white wheats. NuSky is a public release.

Wendy (SD, 2004): Hard white. Winterhardiness = 3. Semidwarf height, Short coleoptile. Early heading. Average yield. Above-average test weight and protein. Medium PPO.

Table 1. 2011 Intrastate Winter Wheat Variety Nursery, Western Triangle Ag. Research Center, Conrad, MT.

Variety and Class	Source	Solid Stem score*	Yield bu/ac	Test weight lb/bu	Heading date Julian	Plant height in	Protein %
SY Wolf	Syngenta (AgriPro), 2010		109.7	63.5	176.6	33.9	10.3
MT0871			105.4	61.0	179.0	37.2	9.3
MTW08168			104.0	61.0	182.7	40.2	10.3
MT08146			103.9	6038	179.4	35.6	9.0
Art	AgriPro, 2007		102.8	63.0	174.6	34.4	10.0
MTS0819		17.5	102.2	62.7	178.6	33.6	9.8
Pryor	WestBred, 2002		102.1	63.5	179.7	34.1	9.6
Robidoux	Nebraska, 2010		101.6	63.8	174.3	35.6	9.7
Settler CL	Nebraska (SD, WY), 2008		101.6	62.5	174.5	32.9	9.8
McGill	Nebraska, 2010		101.5	62.0	174.7	37.5	8.9
MT0954			101.3	62.1	178.9	38.4	9.3
Yellowstone	Montana, 2005		100.9	60.7	180.0	38.3	9.1
MT08189			100.8	61.6	180.7	37.6	9.6
MT0866			100.2	63.8	179.0	38.5	11.0
MT08172			99.7	59.2	180.7	36.8	9.7
Promontory	Utah, 1990		99.5	63.7	179.0	36.1	9.3
MT0978			99.4	61.7	179.7	36.6	10.3
Overland	Nebraska, 2007		99.0	63.5	176.5	38.0	10.0
MT0990			97.8	61.8	180.9	37.5	9.5
Judee	Montana, 2011	21.3	97.4	64.1	175.4	35.2	9.2
Jagalene	AgriPro, 2002		96.9	64.5	176.1	35.4	9.9
Broadview	Alberta, 2009		96.8	62.1	178.1	35.0	9.8
MTCL1068			95.6	61.1	178.8	38.5	9.6
MTCL1067			95.5	60.9	178.5	38.2	10.2
Accipiter	Saskatchewan, 2008		95.2	62.8	179.5	36.6	8.7
Curlew	Utah, 2009		94.7	62.2	177.9	38.5	10.0
MTS0808		21.3	94.2	62.2	178.0	36.2	10.1
Wahoo	Nebraska, 2001		93.3	60.8	176.3	36.7	9.5
Decade	Montana/North Dakota, 2010		91.6	61.6	174.9	34.1	10.9
Carter	WestBred, 2006	11.4	91.2	63.4	177.5	33.6	10.1
WB-Matlock	WestBred, 2010		90.8	63.4	179.3	39.8	11.0
Bearpaw	Montana, 2011	19.7	90.5	61.5	176.7	33.1	10.1
Ledger	WestBred, 2004	6.0	89.4	62.4	176.2	34.2	9.8
MTS0832		18.5	89.4	61.0	180.3	39.6	10.0
CDC Falcon	Sask/WestBred, 1999	5.8	89.2	61.9	178.5	33.6	9.7

Table 1 continued on next page

Variety and Class	Source	Solid Stem score*	Yield bu/ac	Test weight lb/bu	Heading date Julian	Plant height in	Protein %
Norris (CL)	Montana/WestBred, 2005		89.1	62.3	175.6	38.6	10.9
Boomer	WestBred, 2009		89.0	61.5	179.1	35.7	9.2
Rediant	Alberta, 2002		87.6	61.1	178.8	38.4	10.2
WB-Quake	WestBred, 2011	18.9	87.1	62.9	179.8	35.1	9.5
Hyalite (CL, HWW)	Montana/WestBred, 2005		86.0	62.0	174.8	37.5	9.5
Peregrine	Saskatchewan, 2008		85.2	62.5	178.8	42.5	10.6
Jerry	North Dakota, 2001		85.0	61.6	178.7	41.2	10.3
Genou	Montana, 2004	17.3	84.1	63.4	178.5	38.7	10.5
MTS0826		22.6	82.6	62.2	180.9	38.0	11.2
AP 503 CL2	Agripro, 2007		82.4	63.7	175.1	32.3	10.1
BZ9WM07-1516			79.9	62.2	173.6	29.1	11.0
MTCL1003		23.1	78.8	60.2	178.2	38.5	10.4
Rampart	Montana, 1996	20.3	76.3	63.1	178.4	39.2	11.5
Bynum (CL)	Montana/WestBred, 2005	18.5	72.8	62.6	176.9	36.8	11.9
Average		17.3	93.7	62.2	177.9	36.6	10.0
LSD (0.05)		4.5	10.9	1.3	1.6	1.9	
C. V. (%)		15.4	6.6	1.3	0.5	3.1	
P-value (Varieties)		<.0001	<.0001	<.0001	<.0001	<.0001	

Planted: 9/27/2010 on conventional fallow and harvested on 8/22/2011.

Fertilized with actual pounds/a of N-P-K: 150-22.5-20.

* Solid stem score of 19 or higher is generally required for reliable sawfly resistance.

HWW = Hard White Wheat

CL = Clearfield System

Table 2. 2011 Intrastate Winter Wheat Variety Test Condensed list, Western Triangle Ag. Research Center, Conrad, MT.

Variety and Class	Source	Solid stem score*	Yield bu/ac	Test weight lb/bu	Heading date Julian	Plant height in	Protein %
SY Wolf	Syngenta (AgriPro), 2010		109.7	63.5	176.6	33.9	10.3
Art	AgriPro, 2007		102.8	63.0	174.6	34.4	10.0
Pryor	WestBred, 2002		102.1	63.5	179.7	34.1	9.6
Robidoux	Nebraska, 2010		101.6	63.8	174.3	35.6	9.7
Settler CL	Nebraska (SD, WY), 2008		101.6	62.5	174.5	32.9	9.8
McGill	Nebraska, 2010		101.5	62.0	174.7	37.5	8.9
Yellowstone	Montana, 2005		100.9	60.7	180.0	38.3	9.1
Promontory	Utah, 1990		99.5	63.7	179.0	36.1	9.3
Overland	Nebraska, 2007		99.0	63.5	176.5	38.0	10.0
Judee	Montana, 2011	21.3	97.4	64.1	175.4	35.2	9.2
Jagalene	AgriPro, 2002		96.9	64.5	176.1	35.4	9.9
Broadview	Alberta, 2009		96.8	62.1	178.1	35.0	9.8
MTCL1068			95.6	61.1	178.8	38.5	9.6
MTCL1067			95.5	60.9	178.5	38.2	10.2
Accipiter	Saskatchewan, 2008		95.2	62.8	179.5	36.6	8.7
Curlew	Utah, 2009		94.7	62.2	177.9	38.5	10.0
MTS0808		21.3	94.2	62.2	178.0	36.2	10.1
Wahoo	Nebraska, 2001		93.3	60.8	176.3	36.7	9.5
Decade	Montana/North Dakota, 2010		91.6	61.6	174.9	34.1	10.9
Carter	WestBred, 2006	11.4	91.2	63.4	177.5	33.6	10.1
WB-Matlock	WestBred, 2010		90.8	63.4	179.3	39.8	11.0
Bearpaw	Montana, 2011	19.7	90.5	61.5	176.7	33.1	10.1
Ledger	WestBred, 2004	6.0	89.4	62.4	176.2	34.2	9.8
MTS0832		18.5	89.4	61.0	180.3	39.6	10.0
CDC Falcon	Sask/WestBred, 1999	5.8	89.2	61.9	178.5	33.6	9.7
Norris (CL)	Montana/WestBred, 2005		89.1	62.3	175.6	38.6	10.9
Boomer	WestBred, 2009		89.0	61.5	179.1	35.7	9.2
Rediant	Alberta, 2002		87.6	61.1	178.8	38.4	10.2
WB-Quake	WestBred, 2011	18.9	87.1	62.9	179.8	35.1	9.5
Hyalite (CL, HWW)	Montana/WestBred, 2005		86.0	62.0	174.8	37.5	9.5
Peregrine	Saskatchewan, 2008		85.2	62.5	178.8	42.5	10.6
Jerry	North Dakota, 2001		85.0	61.6	178.7	41.2	10.3
Genou	Montana, 2004	17.3	84.1	63.4	178.5	38.7	10.5

Table 2 continued on next page

Variety and Class	Source	Solid stem score*	Yield bu/ac	Test weight lb/bu	Heading date Julian	Plant height in	Protein %
AP 503 CL2	Agripro, 2007		82.4	63.7	175.1	32.3	10.1
MTCL1003		23.1	78.8	60.2	178.2	38.5	10.4
Rampart	Montana, 1996	20.3	76.3	63.1	178.4	39.2	11.5
Bynum (CL)	Montana/WestBred, 2005	18.5	72.8	62.6	176.9	36.8	11.9
Mean			93.7	62.2	177.9	36.6	10.0
LSD (0.05)			10.9	1.3	1.6	1.9	
C. V. (%)			6.6	1.3	0.5	3.1	
P-value (Varieties)			<0.0001	<0.0001	<0.0001	<0.0001	

Planted: 9/27/2010 on conventional fallow and harvested on 8/22/2011.

Fertilized with actual pounds/a of N-P-K: 150-22.5-20.

* Solid stem score of 19 or higher is generally required for reliable sawfly resistance.

HWW = Hard White Wheat

CL = Clearfield System

Table 3. Six-year averages, Winter Wheat varieties, Western Triangle Ag. Research Center, Conrad, MT. 2006 - 11.

Variety	Source	Class	Solid	6-Year Average					Winter survival class
			stem* score	Yield bu/a	Test wt	Height in.	Head date	Protein %	
Decade				79.3	61.7	32	167	12.1	
Pryor	WestBred			79.2	62.7	31	169	10.4	3
Wahoo	Nebraska			78.7	60.2	33	165	11.4	3
Judee	MSU		21.3	78.0	63.2	32	167	11.5	
Yellowstone	MSU			76.2	61.2	34	170	11.2	4
Norris	WestBred	CL		75.7	62.0	35	166	12.0	3
Bearpaw	MSU		19.7	75.1	61.7	30	168	11.8	
Ledger	WestBred		6.0	74.1	62.5	31	168	11.5	2
Genou	MSU		17.3	73.8	62.0	36	169	12.0	2
Jagalene	AgriPro			73.8	63.8	31	167	11.8	2
Falcon	WestBred		5.8	73.2	62.2	30	169	11.4	4
Hyalite	WestBred	CL HW		73.0	61.4	34	166	12.1	3
Carter	WestBred		11.4	72.6	62.2	29	167	12.0	3
Promontory	Utah			70.0	62.8	34	169	11.0	2-
Jerry	N. Dakota			66.6	61.2	37	169	12.1	5
Rampart	MSU		20.3	66.4	62.0	34	169	12.7	2-
Bynum	WestBred	CL	18.5	64.8	61.7	34	167	13.3	2
Mean				74.0	62.0	32.8	167.7	11.8	

HW = Hard White; CL = Clearfield herbicide system.

* Solid stem score of 19 or higher is generally required for reliable sawfly resistance.

Winterhardiness: 5 = high, 1 = low.

Table 4. 2011 Advanced Yield Nursery, Western Triangle Ag. Research Center, Conrad, MT.

ID or Variety	Yield bu/ac	Test weight lb/bu	Heading date Julian	Plant height in	Lodging %	Protein %
MT08177	123.7	61.1	179	36.1	0.0	11.4
MT0994	121.5	57.8	177	38.2	7.0	10.6
MT08172	118.9	59.9	176	37.3	1.1	12.0
MT08181	118.2	59.0	177	37.0	0.9	11.4
MT0977	115.9	60.2	178	35.6	0.9	11.6
MT08146	114.8	57.4	178	36.1	1.9	12.9
MT08189	114.8	60.0	178	36.5	1.5	11.8
MT08136	114.2	58.3	176	36.9	1.7	11.6
MT0951	113.2	60.3	174	37.3	3.3	11.8
MT0978	111.6	60.0	177	35.1	1.4	11.5
MT0972	111.5	61.2	179	32.6	0.7	12.4
MT0966	109.8	59.0	177	37.7	2.6	11.9
MT0993	109.6	59.3	178	35.6	0.9	12.2
Yellowstone	109.3	59.9	176	37.4	1.0	12.0
MT0948	107.8	59.8	177	36.9	3.9	12.2
MT0950	107.4	61.4	175	37.1	10.8	12.1
MT0990	107.2	60.1	178	34.8	0.0	11.6
MT08186	106.5	59.3	177	35.3	1.8	12.0
MT08180	106.3	61.6	179	34.8	1.0	11.7
MTS0921	104.7	60.6	181	35.7	1.5	12.4
MTS0924	103.9	58.5	178	34.3	1.9	12.3
MTCL1001	103.9	59.1	178	36.0	0.6	11.7
MTS0919	103.4	60.8	179	40.8	0.0	11.8
MTS0901	102.6	59.5	178	42.0	10.1	12.9
MTW08168	102.3	60.6	179	40.2	2.7	11.6
CDC Falcon	101.8	60.5	175	31.7	0.2	12.0
MT0954	100.5	59.4	177	38.2	5.6	11.2
MT0974	100.4	61.4	176	39.2	12.6	13.1
MTW0981	100.2	59.7	176	36.4	5.6	12.1
Genou	99.5	59.4	175	38.4	8.8	12.8
MT0949	96.0	60.6	175	36.1	3.3	12.3
MTW0980	94.4	58.5	175	32.7	22.5	12.0
MTS0915	93.7	60.6	176	36.0	22.3	12.6
MTS0925	92.6	56.8	178	34.0	1.1	13.0
MTS0916	88.6	59.0	176	32.1	0.9	12.4
Jagalene	86.9	59.4	177	33.5	1.2	12.6

Table 4 continued on next page

ID or Variety	Yield bu/ac	Test weight lb/bu	Heading date Julian	Plant height in	Lodging %	Protein %
Average	106.0	59.7	177.1	36.3	3.9	12.0
LSD (0.05)	11.7	1.6		1.9	11.1	
C.V. (%)	6.1	1.5		2.9	165	
P-value (Varieties)	<.0001	<.0001		<.0001	0.0064	

Planted: 9/27/2010 on conventional fallow and harvested on 8/22/2011.
Fertilizer, actual pounds/a of N-P-K: 150-22.5-20.

Table 5. Off-station winter wheat variety trial (Exp. 3864) located north of Cut Bank, MT. Glacier county. Western Triangle Ag. Research Center. 2011.

Cultivar	Stem Solidness Score*		Yield bu/ac	Test weight lb/bu	Plant height in	Protein %
WB-Quake	18.9	+	103.8	61.8	33.7	12.3
MT0871		+	101.5	60.5	33.0	12.1
Yellowstone			97.6	59.2	34.0	11.3
Judee (MTS0713)	21.3		96.6	62.9	30.0	12.3
MT S0808	21.3	+	92.7	61.0	31.0	13.7
AP 503 CL2		+	84.7	58.6	29.7	12.2
MTCL1067		+	83.8	58.4	37.0	12.1
MTCL1068		+	83.1	56.6	34.7	11.7
Rampart	20.3		78.0	59.7	36.0	12.5
Jagalene			75.0	58.1	33.3	11.5
MT S0826	22.6		71.8	58.1	34.7	11.8
CDC Falcon			67.4	59.0	27.7	11.3
Bearpaw (MTS0721)	19.7		65.3	55.0	30.3	12.1
Bynum (CL)	18.5		63.5	61.5	32.7	12.4
Ledger			61.2	56.6	30.0	11.2
Accipiter			58.9	56.2	30.3	11.4
Decade			57.4	53.5	29.3	12.8
Genou	17.3		57.2	58.0	32.3	11.5
Norris (CL)			56.8	55.9	34.3	12.3
Pryor			55.3	52.7	29.0	12.0
MTCL1003	23.1	+	49.7	53.4	36.0	12.2
Jerry			46.9	50.8	37.0	11.9
Wahoo			45.6	48.7	31.0	11.6
MT S0832	18.5		42.1	51.3	33.7	11.9
Average			70.7	57.0	32.5	12.0
LSD (0.05)			10.9	3.1	2.5	
C.V. (%)			9.4	3.4	4.6	
P-value (Varieties)			<0.0001	<0.0001	<0.0001	

Cooperator and Location: Bradley Farms, northern Glacier county.

Planted: October 4, 2010 on chem-fallow Harvested: September 28, 2011

Fertilizer, actual lbs/a: 161-20-20; 11-52-0 applied with seed and urea blended with potash were topdressed on 6/6/2011. Soil test values, Table 34.

Sprayed with Huskie at 11 oz/a and Axial XL at 16.4 oz/a on 6/13/2011.

Precipitation from 5/11/2011 until harvest was: 6.75 inches.

* = Solid stem sawfly-resistant (solid stem score of 19 or higher) and were determined at the on station intrastate winter wheat nursery. + = New to off station trial for 2010.

Conducted by MSU Western Triangle Ag. Research Center.

Table 6. Off-station winter wheat variety trial (Exp. 3865) located north of Devon, MT. Toole county. Western Triangle Ag. Research Center. 2011.

Cultivar	Stem Solidness Score*	Yield bu/ac	Test weight lb/bu	Plant height in	Protein %	Lodging %	
Judee (MTS0713)	21.3	42.9	58.1	26.0	12.7	1.7	
Yellowstone		39.9	56.3	25.7	12.5	10.0	
MT0871		+	38.4	56.6	24.3	12.0	10.0
WB-Quake	18.9	+	38.2	58.3	26.0	13.8	0.7
MTCL1067		+	38.1	56.4	27.7	12.7	16.7
Bearpaw (MTS0721)	19.7		37.4	59.1	23.7	12.6	0.0
MT S0826	22.6		36.4	58.0	26.3	13.2	0.0
CDC Falcon			34.6	58.0	22.7	12.5	5.7
Accipiter			34.3	56.8	24.0	12.7	6.0
Jerry			32.8	57.5	27.3	12.4	10.0
Decade			32.7	57.4	24.3	12.8	6.7
MTS0808	21.3	+	32.3	57.7	23.3	13.1	0.0
Jagalene			32.2	58.9	26.3	12.4	23.3
MTCL1068		+	32.0	53.5	27.3	12.6	20.0
Genou			29.2	59.0	27.0	12.5	0.7
Wahoo			28.9	54.4	25.0	12.7	12.3
MT S0832	18.5		28.2	55.2	28.3	11.8	0.0
MTCL1003	23.1	+	26.8	55.7	27.0	12.8	0.0
Bynum (CL)	18.5		26.6	59.0	27.7	13.3	0.7
AP 503 CL2		+	26.5	58.2	25.3	13.7	18.3
Rampart	20.3		24.8	57.8	26.3	13.2	0.0
Ledger			24.0	59.5	24.0	12.1	0.0
Pryor			21.5	57.1	24.7	12.2	4.0
Norris (CL)			21.4	56.5	25.0	12.1	13.3
Average			31.7	57.3	25.6	12.7	6.7
LSD (0.05)			10.3	2.3	2.6		6.4
C.V. (%)			19.9	2.5	6.1		58.4
P-value (Varieties)			0.0022	0.0002	0.0008		<.0001

Cooperator and Location: Brian Aklstad Farm, Toole county.

Planted: October 5, 2010 on chem-fallow. Harvested: August 16, 2011

Fertilizer, actual lbs/a: 161-22-20; 11-52-0 applied with seed and urea blended with potash were topdressed on 5/20/2011. Soil test values, Table 34.

Sprayed with Huskie at 11 oz/a and Axial XL at 16.4 oz/a on 6/13/2011.

Precipitation from 4/27/2011 until harvest was: 10.15 inches.

* = Solid stem sawfly-resistant (solid stem score of 19 or higher) and were determined at the on station intrastate winter wheat nursery. + = New to off station trial for 2010.

Conducted by MSU Western Triangle Ag. Research Center.

Table 7. Off-station winter wheat variety trial (Exp. 3862) located at the Knees. Chouteau

county. Western Triangle Ag. Research Center. 2011.							
Cultivar	Stem Solidness Score*		Yield bu/ac	Test weight lb/bu	Plant height in	Protein %	Lodging %
MT0871		+	65.6	58.2	31.0	12.9	2.7
Yellowstone			62.6	58.4	36.0	13.4	6.0
MTCL1067		+	62.5	58.3	36.7	13.0	5.0
MT S0808	21.3	+	60.7	59.3	32.3	12.9	1.7
CDC Falcon			54.9	58.8	31.0	13.4	5.0
MTCL1068		+	54.8	55.7	36.0	13.4	8.3
WB-Quake	18.9	+	54.7	58.5	34.0	13.3	6.0
Judee (MTS0713)	21.3		52.5	59.7	28.3	14.0	8.3
Bearpaw (MTS0721)	19.7		52.3	58.8	33.3	13.2	10.0
MT S0826	22.6		51.2	59.5	34.7	13.9	4.3
Ledger			51.1	59.5	31.3	12.6	25.0
Jagalene			51.0	60.4	33.7	12.3	9.3
Rampart	20.3		51.0	59.6	35.0	14.1	5.7
Accipiter			50.8	58.7	34.0	13.7	2.7
AP 503 CL2		+	50.2	59.1	30.7	14.4	14.0
Decade			49.2	58.2	33.3	13.2	2.3
Norris (CL)			49.0	59.5	36.7	12.7	7.7
Bynum (CL)	18.5		48.8	61.1	37.0	13.2	31.0
Pryor			47.9	58.0	31.0	13.9	1.3
Genou	17.3		46.3	58.8	37.0	13.9	10.7
MTCL1003	23.1	+	45.5	57.9	35.0	13.1	3.7
MT S0832	18.5		45.0	57.0	35.7	12.8	1.7
Jerry			44.3	58.1	33.7	13.0	4.7
Wahoo			43.6	56.7	33.7	12.6	3.3
Average			51.9	58.7	33.8	13.3	7.5
LSD (0.05)			4.5	1.2	3.3		12.9
C.V. (%)			5.3	1.2	6.0		104
P-value (Varieties)			<.0001	<.0001	<.0001		0.0044

Cooperator and Location: Aaron Killion, eastern Chouteau county.

Planted: October 1, 2010 on chem-fallow Harvested August 17, 2011

Fertilizer, actual lbs/a: 41-22-20; 11-52-0 applied with seed and urea blended with potash were topdressed on 6/6/2011. Soil test values, Table 34.

Sprayed with Huskie at 11 oz/a and Axial XL at 16.4 oz/a on 6/13/2011. Tebustar was flown on at a rate of 4 oz/a on July 4, 2011 to control rust.

Precipitation, rain gauge cracked.

* = Solid stem sawfly-resistant (solid stem score of 19 or higher) and were determined at the on station intrastate winter wheat nursery. + = New to off station trial for 2010.

Conducted by MSU Western Triangle Ag. Research Center.

Table 8. Off-station winter wheat variety trial (Exp. 3863) located North East of Pendroy, MT. Teton county. Western Triangle Ag. Research Center. 2011.

Cultivar	Stem Solidness Score*	Yield bu/ac	Test weight lb/bu	Plant height in	Protein %
Yellowstone		50.9	60.9	30.3	12.3
MT0871		48.7	60.0	29.0	13.0
MTCL1068		48.7	60.2	30.3	12.3
Wahoo		48.3	60.4	30.7	12.1
Genou	17.3	42.4	61.6	33.3	13.1
MTCL1067		42.1	61.2	29.7	12.0
Decade		42.0	62.1	27.3	13.2
Pryor		42.0	63.1	25.7	12.8
Jagalene		41.6	64.1	29.7	13.4
MT S0826	22.6	41.3	62.1	29.3	13.0
Norris (CL)		40.4	62.3	30.3	12.1
WB-Quake	18.9	39.2	61.8	26.3	13.3
Rampart	20.3	38.4	61.0	31.7	13.0
MTCL1003	23.1	38.2	59.7	29.0	13.3
MT S0832	18.5	38.0	61.1	28.3	13.0
Ledger		37.8	63.0	26.3	12.2
Accipiter		37.7	61.1	26.3	12.9
Jerry		34.6	60.9	28.7	13.0
MT S0808	21.3	34.3	61.4	27.0	13.3
CDC Falcon		34.1	61.0	25.3	13.6
Bynum (CL)	18.5	33.5	62.0	31.3	13.6
Bearpaw (MTS0721)	19.7	33.3	61.8	26.7	13.1
AP 503 CL2		32.7	62.7	26.7	13.3
Judee (MTS0713)	21.3	31.2	61.0	26.3	14.2
Average		39.6	61.5	28.6	13.0
LSD (0.05)		Ns	1.2	2.5	
C.V. (%)		18.2	1.1	5.4	
P-value (Varieties)		0.0563	<.0001	<.0001	

Cooperator and Location: Lindsey Martin, North East Teton county.

Planted: September 30, 2010 on chem-fallow Harvested: August 18, 2011

Fertilizer, actual lbs/a: 150-22-20; 11-52-0 applied with seed and urea blended with potash were top-dressed on 6/6/2011.

Sprayed with Huskie at 11 oz/a and Axial XL at 16.4 oz/a on 6/13/2011. The plot was sprayed with Monsoon at 4 oz/a on 6/25/2011 for rust control.

Precipitation: N/A.

* = Solid stem sawfly-resistant (solid stem score of 19 or higher) and were determined at the on station intrastate winter wheat nursery. + = New to off station trial for 2010.

Conducted by MSU Western Triangle Ag. Research Center.
2011 Spring Wheat & Durum Variety Evaluations Grown In the Western Triangle Area.

Location: Western Triangle Agricultural Research Center (WTARC), Conrad, MT.

Personnel: John H. Miller, WTARC, Conrad, MT, Dave Wichman, CARC, Moccasin, MT, Luther Talbert and Susan Lanning, MSU Plant Science Dept; and Joyce Eckhoff, EARC, Sidney, MT.

The advanced spring wheat and durum nurseries were planted on fallow and grown under dryland conditions in 2011. Off-station spring wheat variety nurseries were planted on chemical fallow and grown in Teton County near Choteau, Glacier County north of Cut Bank, Choteau County near the Knees and Toole County north of Devon. In addition the off-station nursery was planted on fallow and grown under irrigated conditions at the research center. The Choteau trial was lost due to drowning.

Results: The spring wheat data are presented in Tables 9 -18. The durum nursery data are shown in Tables 19 and 20.

The growing season began with a cool wet spring, followed by a warm dry summer at the Western Triangle Agricultural Research Center. Grain yields were 12 bu/acre higher than the six year average, and grain protein levels were slightly below average with test weights being about the same as the six year average. The spring wheat plants headed later and grew taller than the six year average. Harvest was about three weeks later than normal.

Durum grain yields were almost equal to the six year average, and grain protein levels were 0.4% above average with test weights slightly below the six year average. The durum plants headed 10 days later and grew slightly taller than the six year average (Tables 19 and 20). Tables 21 and 22 are dryland and irrigated Arizona Plant Breeders variety nurseries.

Yields ranged from 25 to 63 bu/acre at the Cut Bank location and 26 to 43 bu/acre north of Devon (Tables 15 and 16). Yields and the Knees ranged from 21 to 45 bu/a. The Choteau location was lost due to drowning.

Additional comments on spring wheat and durum varieties are presented in the following pages. Also refer to MSU Extension Bulletin 1093 for descriptions of many of the varieties tested.