Title: Off-station **Spring Wheat** variety evaluations in the Western Triangle Area.

Year: 2006

Location: Western Triangle Research Center, Conrad, MT.

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Dr. Luther Talbert & Susan Lanning, MSU Plant Science Dept.

Dryland off-station spring wheat variety trials were grown in Teton County near Choteau, Glacier County near Cut Bank, Toole County near Oilmont, and Chouteau County in the Knees Area. An irrigated spring wheat variety trial was grown at Conrad. These locations represent diverse environments with Teton having deep soil and typically favorable moisture; the Knees with deep soil, intermediate moisture and warmer temperatures; Oilmont having less than favorable moisture, and Cut Bank with a short, cool growing season. The Cut Bank, Knees and Oilmont trials were no-till planted on chem-fallow, while the Choteau location was continuous-crop.

Results: Data for the five locations are presented in Tables 1-10, and include the 2006 and multi-year averages. Table 11 is a summary of all the Western Triangle area spring wheat tests averaged over the past five years, and is equivalent to 25 tests on each variety.

Moisture conditions were favorable for spring wheat at Conrad, Knees and Cut Bank in 2006, while the Choteau and Oilmont locations suffered considerable stress from lack of moisture.

'Agawam', 'Vida' and 'Choteau' were the top-ranking varieties for yield across all locations over the past five years (Table 19). Other varieties with above-average yield included 'Outlook', 'Hank', 'Reeder' and 'McNeal'. In addition to ranking high for yield, Agawam, Choteau and Reeder also had above-average test weight. Agawam is in the Hard White class, and had the highest test weight of the varieties tested. Vida exhibits a "stay-green" trait, in which the plant has a longer period of time after heading to develop grain yield. Moisture depletion before completion of grain filling could affect test weight, but it is not certain if Vida's below-average test weight is due to the stay-green trait or to some other factor.

Agawam and Choteau exhibited good sawfly tolerance, and had stem-solidness ratings slightly higher than 'Fortuna'.

Future Plans: Variety trials will be repeated in 2007 at these same locations.

Table 1. 2006 **Spring Wheat** variety trial, Choteau, MT.

Variety	Class	Yield bu/a	Test Wt lb/bu	Height in.	Protein %
OUTLOOK		39.4	54.0	31	16.4
Vida MT0245		38.9	54.9	28	16.5
CHOTEAU	++	37.0	55.5	29	16.9
MCNEAL		36.1	52.3	30	17.5
MT 0564		35.2	55.4	28	17.1
ERNEST	+	34.7	56.9	34	17.4
GLENN		33.4	58.4	38	16.6
Reeder		33.4	55.1	31	16.8
Conan	+	33.2	54.8	27	16.9
AGAWAM	++ HW	33.1	57.4	28	16.4
MTHW0202	++ HW	32.9	54.5	28	16.8
MT 0515		32.5	55.8	28	17.0
WB 926		32.0	52.7	28	17.8
EXPLORER	HW	31.4	54.5	29	17.2
SCHOLAR	+	31.1	55.7	33	17.5
NORPRO		30.7	53.1	28	17.0
FREYR		29.8	54.8	30	16.3
FORTUNA	++	29.4	57.4	35	16.6
HANK		28.8	51.4	28	17.8
KNUDSON		24.3	53.8	30	17.7
mean		32.9	54.9	30.1	17.0

LSD (.05) = 6.1 bu. C.V.1&2 = 11.2 & 6.5

++ = sawfly resistant (solid stem score 19 or higher).

+ = partial sawfly resistance.

HW = hard white.

Cooperator & location: Roy Inbody, east of Choteau, MT

Planted April 20, 2006 on recrop. Harvested Aug 8, 2006.

Fertilizer, actual: 100-52-0

Conducted by MSU Western Triangle Ag Research Center.

Table 2. Four-year averages, **Spring Wheat** varieties, Choteau area, Teton Co. 2003 - 06.

Variety	Source	Class	4-Year Average Yield bu/a	Test weight	Height in.	Protein %
Vida MT 0245	MSU		52.0	56.7	34	16.2
Outlook	MSU		50.3	55.9	33	16.2
Agawam	WestBred	++ HW	49.2	60.3	32	15.4
Choteau	MSU	++	47.4	57.6	32	16.7
McNeal	MSU		47.3	55.7	34	17.0
Reeder	ND		45.8	57.3	34	16.9
Conan	WestBred	+	45.1	57.5	30	16.4
Hank	WestBred		44.6	54.5	31	17.5
WB 926	WestBred		44.5	55.2	31	17.3
Fortuna	ND	++	43.1	59.5	41	16.5
Explorer	MSU	HW	42.9	57.1	32	16.4
Ernest	ND	+	42.8	58.7	40	17.1
Norpro	AgriPro		42.5	54.2	32	16.8
MTHW 0202		HW	42.4	57.7	32	16.2
Knudson	AgriPro		40.6	57.6	35	16.9
Scholar	MSU	+	39.8	57.8	38	17.4
nursery mean			45.1	57.0	33.8	16.8

++ Sawfly resistant (solid stem score of 19 or higher).
+ Partial sawfly resistance
HW = Hard White
Cooperator & Location: Roy Inbody, Choteau, MT. Teton Co.
Conducted by MSU Western Triangle Agr Research Center.

Table 3. 2006 **Spring Wheat** variety trial, Cut Bank.

Variety	Class	Yield bu/a	Test Wt lb/bu	Height in.	Protein %
AGAWAM	++ HW	104.2	63.8	31	12.3
MT 0515		103.4	61.9	37	13.0
CHOTEAU	++	93.5	61.5	32	12.8
Vida MT0245		88.9	60.0	37	13.2
HANK		87.8	59.8	32	12.5
FORTUNA	++	87.8	62.9	44	13.4
WB 926		86.3	60.0	33	12.7
MTHW0202	++ HW	85.9	62.4	32	12.7
SCHOLAR	+	85.3	61.1	42	13.9
KNUDSON		81.7	60.5	34	11.9
Conan	+	80.3	58.9	33	13.7
EXPLORER	HW	78.8	60.5	34	13.5
FREYR		78.1	61.5	35	12.7
MT 0564		78.0	61.5	35	12.5
Reeder		77.7	60.4	36	13.2
OUTLOOK		76.8	58.7	35	12.6
ERNEST	+	75.5	62.4	43	12.4
GLENN		72.4	64.7	40	13.8
NORPRO		69.8	57.6	32	13.0
MCNEAL		65.3	59.0	36	12.7
mean		82.9	61.0	35.7	12.9

LSD (.05) = 10.4 bu. C.V.1&2 = 7.6 & 4.4

++ = sawfly resistant (solid stem score 19 or higher).

+ = partial sawfly resistance.

HW = hard white.

Cooperator & location: Kevin Bradley, north of Cut Bank, MT

Planted April 18, 2006 on chem-fallow. Harvested Aug 22, 2006.

Fertilizer, actual: 81-52-0

Conducted by MSU Western Triangle Ag Research Center.

Table 4. Four-year averages, **Spring Wheat** varieties, Cut Bank area, Glacier Co. 2003 - 06.

Variety	Source		Class	4-Year Average Yield bu/a	Test weight	Height in.	Protein %
Agawam	WestBred	++	HW	58.8	63.9	31	11.5
Vida MT 0245	MSU			55.1	60.5	34	11.9
Choteau	MSU	++		54.6	61.9	31	11.9
Fortuna	ND	++		53.5	62.1	41	12.6
Hank	WestBred			52.5	59.8	32	11.7
Outlook	MSU			51.7	59.4	34	11.4
MTHW 0202			HW	51.5	62.8	32	11.6
Explorer	MSU		HW	49.5	61.0	33	11.9
Knudson	AgriPro			48.9	61.3	34	11.7
WB 926	WestBred			48.7	60.2	31	12.2
Reeder	ND			48.7	60.8	34	12.1
McNeal	MSU			48.1	60.4	34	12.1
Conan	WestBred	+		47.5	59.9	31	12.5
Scholar	MSU	+		46.1	61.0	40	12.3
Ernest	ND	+		45.9	62.0	39	11.9
Norpro	AgriPro			45.4	58.9	32	11.7
nursery mean				50.2	61.0	34.1	12.0

++ Sawfly resistant (solid stem score of 19 or higher).
+ Partial sawfly resistance
HW = Hard White
Cooperator & Location: Kevin Bradley, north of Cut Bank, MT
Conducted by MSU Western Triangle Agr Research Center.

Table 5. 2006 **Spring Wheat** variety trial, Oilmont.

Variety	Class	Yield bu/a	Test Wt lb/bu	Height in.	Protein %
OUTLOOK		38.5	48.3	37	16.9
AGAWAM	++ HW	37.9	52.3	32	16.6
MT 0515		37.6	49.9	34	17.1
Vida MT0245		36.7	47.8	34	18.1
MT 0564		36.0	49.2	34	18.1
CHOTEAU	++	35.6	49.2	31	17.2
Reeder		34.3	49.2	40	17.6
Conan	+	33.0	49.7	33	18.1
MCNEAL		32.6	46.5	36	18.3
MTHW0202	++ HW	31.6	49.0	33	16.9
WB 926		31.4	46.8	33	18.9
HANK		31.0	46.0	30	18.7
EXPLORER	HW	29.6	47.8	30	18.3
ERNEST	+	29.4	48.5	41	18.0
NORPRO		29.2	45.6	32	18.0
FREYR		28.6	49.9	35	17.2
FORTUNA	++	27.6	50.5	40	17.1
SCHOLAR	+	27.3	48.0	43	19.2
GLENN		25.0	50.3	40	17.5
KNUDSON		24.6	49.5	35	17.8
mean		31.9	48.7	35.2	17.8

LSD (.05) = 5.8 bu. C.V.1&2 = 11.1 & 6.4

++ = sawfly resistant (solid stem score 19 or higher).

+ = partial sawfly resistance.

HW = hard white.

Cooperator & location: Terry Alme, east of Oilmont, MT.

Planted April 17, 2006 on chem-fallow. Harvested Aug 6, 2006.

Fertilizer, actual: 71-52-0

Conducted by MSU Western Triangle Ag Research Center.

Table 6. Two-year averages, **Spring Wheat** varieties, Oilmont area, Toole Co. 2003 & 2006.

Variety	Source	Class	5-Year Average Yield bu/a	Test weight	Height in.	Protein %
Outlook	MSU		29.7	46.6	34	18.2
Reeder	ND		28.2	48.2	35	18.4
Choteau	MSU	++	27.6	50.0	30	18.1
Hank	WestBred		26.9	46.3	29	19.6
McNeal	MSU		26.0	45.0	31	19.3
WB 926	WestBred		25.9	45.9	30	19.6
Conan	WestBred	+	25.8	48.7	30	18.7
Explorer	MSU	HW	25.7	47.6	30	19.0
Ernest	ND	+	25.1	49.7	37	19.1
Fortuna	ND	++	25.0	49.5	38	17.9
Scholar	MSU	+	22.9	47.8	38	19.8
nursery mean			26.3	47.7	32.7	18.9

++ Sawfly resistant (solid stem score of 19 or higher).
+ Partial sawfly resistance
HW = Hard White
Cooperator & Location: Terry Alme, Oilmont, Toole Co. MT
Conducted by MSU Western Triangle Agr Research Center.

Table 7. 2006 **Spring Wheat** variety trial, Knees area, MT

Variety		Class	Yield bu/a	Test Wt lb/bu	Height in.	Protein %
AGAWAM	++	HW	76.9	59.9	30	14.6
Vida MT0245			76.6	55.7	34	15.2
HANK			76.5	53.8	33	15.1
CHOTEAU	++		76.4	57.8	32	15.4
MT 0515			74.9	57.6	34	14.9
WB 926			73.4	53.5	33	15.9
MTHW0202	++	HW	73.0	56.3	32	15.3
OUTLOOK			72.7	53.2	33	15.4
MCNEAL			71.6	55.3	34	15.8
NORPRO			70.6	53.8	32	14.8
EXPLORER		HW	69.6	54.5	33	15.6
Reeder			69.3	55.7	35	15.7
FREYR			68.8	56.6	36	15.0
MT 0564			68.2	55.7	32	16.2
KNUDSON			66.5	57.3	36	15.0
SCHOLAR	+		65.2	56.5	38	15.8
GLENN			64.1	59.3	42	15.6
Conan	+		61.4	55.5	30	15.4
FORTUNA	++		61.0	59.0	42	15.8
ERNEST	+		59.7	57.1	40	16.3
mean			69.8	56.2	34.6	15.4

LSD (.05) = 9.5 bu. C.V.1&2 = 8.2 & 4.8

++ = sawfly resistant (solid stem score 19 or higher).

+ = partial sawfly resistance.

HW = hard white.

Cooperator & location: Dan Picard, western Chouteau Co.

Planted April 21, 2006 on chem-fallow. Harvested Aug 8, 2006.

Fertilizer, actual: 71-52-0

Conducted by MSU Western Triangle Ag Research Center.

Table 8. Five-year averages, **Spring Wheat** varieties, Knees area, Chouteau Co. 2002 - 06.

Variety	Source		Class	5-Year Average Yield bu/a	Test weight	Height in.	Protein %
Agawam	WestBred	++	HW	50.4	59.5	31	14.7
Vida MT 0245	MSU			49.9	56.1	33	15.3
Hank	WestBred			49.0	54.0	32	16.2
McNeal	MSU			48.9	55.3	33	15.8
Choteau	MSU	++		48.6	57.1	31	15.6
MTHW 0202			HW	47.5	57.5	31	15.4
WB 926	WestBred			47.3	54.2	31	16.8
Reeder	ND			47.0	56.2	33	16.1
Outlook	MSU			46.7	54.3	33	15.3
Explorer	MSU		HW	46.3	55.8	32	15.6
Norpro	AgriPro			46.3	54.0	31	15.3
Knudson	AgriPro			44.5	57.8	34	15.5
Fortuna	ND	++		44.2	58.1	39	15.8
Scholar	MSU	+		43.9	57.7	36	16.4
Conan	WestBred	+		41.9	56.0	30	15.8
Ernest	ND	+		40.6	57.4	37	16.1
nursery mean				46.3	56.1	33.2	15.8

++ Sawfly resistant (solid stem score of 19 or higher).
+ Partial sawfly resistance
HW = Hard White
Cooperator & Location: Dan Picard, Knees area, Chouteau Co. MT
Conducted by MSU Western Triangle Agr Research Center.

Table 9. 2006 **Irrigated Spring Wheat** variety trial, Conrad, MT.

Variety	Class	Yield bu/a	Test Wt lb/bu	Height in.	Head date	Protein %
AGAWAM	++ HW	90.6	64.2	32	172	13.0
MT 0515		89.0	62.5	33	176	13.6
CHOTEAU	++	87.6	61.4	31	176	13.9
MTHW0202	++ HW	84.0	63.0	30	171	13.7
HANK		81.0	60.4	31	174	13.8
Vida MT0245		80.3	59.1	33	176	13.8
MT 0564		77.5	61.0	32	174	13.6
Conan	+	76.8	60.0	33	173	13.8
OUTLOOK		76.5	58.6	35	176	13.8
Reeder		75.2	61.7	35	173	14.0
FREYR		75.0	61.5	36	174	14.0
GLENN		74.9	63.7	37	172	14.5
NORPRO		74.8	60.3	31	175	13.5
WB 926		74.7	59.9	32	172	14.2
FORTUNA	++	71.2	61.7	41	175	13.9
SCHOLAR	+	70.4	60.8	37	176	15.2
ERNEST	+	69.1	61.1	39	174	14.4
MCNEAL		67.2	59.5	36	176	13.8
KNUDSON		67.0	60.5	33	175	13.0
EXPLORER	HW	64.3	60.0	32	172	14.6
mean		76.4	61.1	34.0	174.1	13.9

LSD (.05) = 11.6 bu. C.V.1&2 = 9.2 & 5.3
++ = sawfly resistant (solid stem score 19 or higher).
+ = partial sawfly resistance.
HW = hard white.
Location: MSU Western Triangle Ag Research Center, Conrad, MT
Planted April 19, 2006 on fallow. Harvested Aug 14, 2006.
Fertilizer, actual: 100-52-0

Table 10. Five-year averages, **irrigated Spring Wheat** varieties, Conrad area, Pondera Co. 2002 - 06.

Variety	Source	Class	5-Year Average Yield bu/a	Test wt.	Height in.	Head date	Protein %
Agawam	WestBred	++ HW	85.0	63.6	34	179.2	13.5
Vida MT 0245	MSU		83.6	60.7	35	182.9	14.6
Hank	WestBred		83.2	60.2	33	180.8	14.7
MTHW 0202		HW	82.1	62.5	33	178.5	13.7
Choteau	MSU	++	81.5	61.5	33	182.0	14.7
WB 926	WestBred		80.3	60.7	33	180.0	14.6
Outlook	MSU		77.7	59.7	35	182.8	14.2
Reeder	ND		77.1	61.9	36	181.0	15.0
McNeal	MSU		77.0	60.4	35	182.8	14.4
Norpro	AgriPro		76.7	60.8	32	181.7	14.3
Explorer	MSU	HW	76.3	61.4	33	179.8	14.6
Scholar	MSU	+	73.1	61.5	40	183.2	15.4
Conan	WestBred	+	72.8	60.9	34	181.6	14.4
Knudson	AgriPro		72.3	61.5	36	182.2	13.9
Ernest	ND	+	68.4	61.5	42	181.8	15.4
Fortuna	ND	++	65.9	61.8	41	181.2	14.8
nursery mean			76.5	61.2	35.4	181.4	14.6

++ Sawfly resistant (solid stem score of 19 or higher).
+ Partial sawfly resistance
HW = Hard White
Location: MSU Western Triangle Agr Research Center, Conrad, MT

Table 11. Multi-Year x Location Averages - **Spring Wheat** Varieties.
Western Triangle Area

Variety	Source	Class	25-Year x Location Average * Yield bu/a	Test weight	Height in.	Protein %	Head date**
Agawam	WestBred	++ HW	55.5	60.1	31.4	14.1	179.2
Vida MT 0245	MSU		54.3	56.7	33.7	14.8	182.9
Choteau	MSU	++	52.7	58.0	31.4	15.1	182.0
Outlook	MSU		51.5	55.6	33.5	14.7	182.8
Hank	WestBred		51.4	55.4	31.5	15.5	180.8
MTHW 0202		HW	50.9	58.5	31.8	14.7	178.5
Reeder	ND		50.4	57.3	34.3	15.3	181.0
McNeal	MSU		49.8	56.1	33.2	15.2	182.8
WB 926	WestBred		49.4	55.7	31.4	15.7	180.0
Explorer	MSU	HW	48.7	57.1	31.5	15.2	179.8
Norpro	AgriPro		48.2	55.5	31.0	14.9	181.7
Knudson	AgriPro		47.2	57.8	34.0	14.8	182.2
Conan	WestBred	+	47.0	57.0	31.0	15.3	181.6
Fortuna	ND	++	46.7	58.6	39.6	15.1	181.2
Scholar	MSU	+	45.9	57.6	38.0	15.9	183.2
Ernest	ND	+	44.8	58.1	38.6	15.6	181.8
nursery mean			49.5	57.1	33.7	15.2	181.4

++ Sawfly resistant (solid stem score of 19 or higher).
+ Partial sawfly resistance
HW = Hard White
* Conrad 5-yr, Conrad Irr 5-yr, Choteau 4-yr, Knees 5-yr, Cut Bank 4-yr, Oilmont 2-yr.
Years included are 2002 to 2006.
** Head date, Conrad only.
Conducted by MSU Western Triangle Agr Research Center.