

2008 Performance of spring wheat varieties in central Montana.
By Dave Wichman

2008 will be remembered as a severe sawfly year in many wheat growing areas of Montana. There were even instances of severe sawfly cutting on barley. Sawfly stem cutting in the Denton and Geraldine spring wheat variety trials was moderate to severe, respectively. Sawfly has infested wheat crops on the Central Ag Research Center (CARC) for over 50 years. However, sawfly damage to CARC wheat crops, including the 2008 crop, has generally been miniscule. In 2008, wheat crops within a couple miles of CARC experienced severe cutting. We do not know why CARC escaped severe cuttings. Maybe next year we will experience severe cutting, not that we want to join club. A couple of possibilities are the diversity of annual and perennial plant species on the research center and burning crop residue has not been practiced on CARC.

Central Montana 2008 crop growing conditions were generally less than ideal for spring crops. Droughty conditions from 2007 persisted through early May and commence again in mid-June. Severe cold weather in late April stressed emerging seedlings. Late April wind driven snow accumulated in undulating fashion across research nurseries resulting in variable soil moisture accumulation, seedling growth, and seedling leaf freezing. The bottom line result was crop performance results that are weak for variety selection purposes as there were no statistical differences at Moccasin and Denton.

Moccasin and Denton were seeded no-till into continuous crop lentil stubble. Geraldine was seeded into tilled recrop after winter wheat. Yields were marginal at all three locations (Tables 1,3,5). Hank had the high yield, 24.6 bu/a, at Moccasin. O'Neal, Jedd and Vida produce over 18 bu/a at Denton. O'Neal was high yielder at Geraldine with a 29.1 bu/a yield. Sawfly cutting was severe at Geraldine and moderate at Denton. Harvest height was 3-4 inches so most of the sawfly cut stems were picked up. Test weights were above expectations for the dry summer with locations means of Moccasin- 58.5 lbs/bu, Denton – 60.0 lbs/bu and Geraldine 61.3 lbs/bu. The decent test weights may reflect spring stress conditions that reduced the wheat yield potential. The low protein levels at Geraldine suggest there may have been some volatilization of the 70 lbs of top dress N. Vida was the only variety with multi-year mean yields greater than McNeal at all three locations.

To access a Montana developed tool for crop variety selection and determining fertilizer use rates go to the web page: <http://www.sarc.montana.edu/php/varieties.php>

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Table 1 2008 Moccasin no-till CC spring wheat variety performance evaluations.
 Exp 387208 Central Agricultural Research Center. Moccasin, Montana

Cultivar/Line	Origin/Pedigree	Entry	Head Date	Plant height	Grain Yield	Test weight	Protein
			d of y	in	bu/ac	lb/bu	%
Fortuna	CI 13596	1	182	30	23.8	58.1	14.5
McNeal	PI574642	2	184	26	18.2	57.5	14.6
Conan	BZ992588	3	184	23	15.4	59.6	14.5
Reeder	ND 695	4	184	23	18.2	58.7	14.2
Outlook	PI632252	5	185	24	15.5	57.3	13.2
Choteau	PI633974	6	183	22	16.5	58.6	14.8
Vida	PI642366	7	185	23	15.5	58.8	12.8
Hank	BZ992322	8	181	23	24.6	56.9	13.5
NorPro	AGRIPRO1	9	183	23	21.1	59.9	13.7
Freyr	AGRIPRO3	10	183	24	13.7	59.5	13.7
Corbin	BZ996434	11	183	22	13.9	58.6	14.6
Kelby	AGRIPRO6	12	183	21	16.2	58.6	14.7
Kuntz	AGRIPRO7	13	183	24	19.5	58.4	13.7
Volt	ACS53610	14	183	25	22.9	59.8	13.9
Jedd	BZ9M1044	15	181	21	16.0	58.8	13.5
ONeal	BZ999592	16	182	24	16.1	59.4	13.7
PF906408	HANK*6/CHOTEAU	17	183	21	15.5	56.7	14.3
Explorer	PI619086	18	180	25	20.8	57.9	14.4
MTHW0471	MTHW9701/MTHW9904	19	185	24	17.6	58.6	14.1
MT 0415	MT9408/MT9406//REEDER	20	184	24	20.5	58.9	14.8
Mean			183.1	23.6	18.08	58.51	14.06
P value			0.000	0.001	0.212	0.000	
CV1			0.3518	8.055	26.81	0.8972	
LSD 0.05			1.065	3.1368	ns	1.099	

1/ fallen cut stems in 10 feet of a single row.

Seed Date: 15-Apr-08 in no-till CC lentil stubble. Soil: 2inch temp: 6 C Moist probe depth: 8"

Fertilizer: NPKS w/seed 10+10+10+05 Top dress N: 45 lbs N as urea

Comment: The lentil stubble had little to no winter snow catch.. Late April wind driven snow drifting was highly variable in nursery area. This impacted plant available soil water.

10-June hail, pre-jointing set the spring wheat caused some damage.

Table 2 Moccasin multi-year performance of spring wheat varieties under no-till CC.
Exp 9970 Central Agricultural ResearchCenter. Moccasin, Montana.

	2003	2004	2005	2006	2007	2008	average	McNeal Yld Same Yrs
	bu/a							
McNeal	23	28	28	25	33	18	25.9	25.9
Agawam			28	24	30		27.2	28.8
Choteau	21	28	22	25	32	17	24.1	25.9
Conan	17	28	30	24	31	15	24.2	25.9
Corbin					33	14	23.4	25.8
Ernest	18	24	28	23	29		24.4	27.4
Explorer	17	26	27	23	30	21	24.1	25.9
Fortuna	22	28	24	24	30	24	25.2	25.9
Freyr				21	33	14	22.4	25.5
Hank	17	30	28	25	32	25	26.1	25.9
Knudsen			23	24	29		24.9	28.8
NorPro			27	28	29	21	27.9	28.8
Outlook	22	31	26	22	32	16	24.6	25.9
Reeder	20	30	26	24	31	15	24.5	25.9
Scholar	19	28	29	25	29		26.0	27.4
Vida		30	31	28	31	16	27.0	26.6
WB 926	19	27	31	23	31		26.1	27.4
Means	19.3	27.9	27.6	24.6	31.2	18.1		

Varieties with means > than the mean yield of McNeal for the same years are in **bold**.

Table 3 2008 Denton spring wheat variety performance evaluations.
Exp 387208 Central Agricultural Research Center. Moccasin, Montana

Cultivar/Line	Origin/Pedigree	Entry	Sawfly cutting ^{1/}	Plant height	Grain Yield	Test weight	Protein
		#	#	in	bu/ac	lb/bu	%
Fortuna	CI 13596	1	0.7	28	17.0	59.6	14.6
McNeal	PI574642	2	10.7	24	17.1	58.7	13.9
Conan	BZ992588	3	0.3	20	14.6	60.3	14.0
Reeder	ND 695	4	11.3	21	16.0	60.7	12.7
Outlook	PI632252	5	2.3	20	14.3	59.0	12.8
Choteau	PI633974	6	0.3	21	13.9	59.6	14.5
Vida	PI642366	7	4.3	22	18.1	60.0	13.1
Hank	BZ992322	8	10.7	26	16.4	58.1	13.3
NorPro	AGRIPRO1	9	16.3	25	14.6	60.7	13.6
Freyr	AGRIPRO3	10	10.7	26	15.5	60.4	13.0
Corbin	BZ996434	11	0.7	22	16.2	58.8	13.9
Kelby	AGRIPRO6	12	19.7	22	15.4	61.2	15.0
Kuntz	AGRIPRO7	13	23.3	24	17.0	60.9	12.4
Volt	ACS53610	14	22.3	22	16.5	61.5	13.0
Jedd	BZ9M1044	15	9.7	21	18.3	61.2	13.2
ONeal	BZ999592	16	0.3	26	18.8	60.5	13.7
PF906408	HANK*6/CHOTEAU	17	0.7	22	17.3	59.1	13.3
Explorer	PI619086	18	7.3	25	16.7	60.0	14.4
MTHW0471	MTHW9701/MTHW9904	19	2.0	26	19.0	61.1	13.1
MT 0415	MT9408/MT9406//REEDER	20	11.0	23	18.3	59.3	13.9
Mean			8.2	23.3	16.56	60.01	13.6
P value			0		0.4329	0.0149	
CV1			50.41		15.37	1.356	
LSD 0.05			6.86		ns	1.703	

1/ fallen cut stems in 10 feet of a single row. 2/ Cutting height > 4 inches.

Seed Date: 29-Apr-08 no-till into RC lentil stubble.

Fertilizer: NPKS w/seed 10+10+10+05 Top dress N: 60 lbs

Soil: 2 inch temp 12 C Moist.probe depth: 14"

Table 4 Denton multi-year No-Till CC spring wheat varieties yield performance.
 Exp 9971 Central Agricultural Research Center. Moccasin, Montana.

Pedigree	2003	2004	2005	2006	2007	2008	Average	McNeal Yld Same Yrs.
	bu/a							
Fortuna	18	29	26	26	19	17	22.4	23.1
McNeal	15	32	26	24	24	17	23.1	23.1
Ernest	16	28	23	24	21		22.3	24.3
Westbred 926	17	35	29	24	24		26.0	24.3
Conan	17	32	25	24	22	15	22.5	23.1
Scholar	18	32	23	24	23		24.0	24.3
Reeder	17	36	26	25	21	16	23.5	23.1
Outlook	18	36	27	25	23	14	23.8	23.1
Choteau	16	34	24	22	22	14	22.0	23.1
Vida	17	37	29	27	25	18	25.3	23.1
Hank		34	28	25	24	16	25.3	24.6
NorPro			26	25	22	15	21.8	22.7
Knudsen			22	23	23		22.6	23.3
Freyr				24	24	16	20.9	21.8
Corbin					23	16	19.6	20.5
Explorer	18	33	24	23	23	17	22.9	23.1
Agawam			29	28	23		26.6	23.3
Mean	16.9	32.8	25.9	24.9	22.7	16.6		

Varieties with means > than the mean yield of McNeal for the same years are in **bold**.

Table 5 2008 Geraldine spring wheat variety performance evaluations.
Exp 387208 Central Agricultural Research Center. Moccasin, Montana

Cultivar/Line	Origin/Pedigree	Entry	Sawfly ^{1/} cutting	Plant height	Grain ^{2/} Yield	Test weight	Protein
		#	#	in	bu/ac	lb/bu	%
Fortuna	CI 13596	1	15	30	25.3	60.8	11.4
McNeal	PI574642	2	36	28	21.7	60.6	12.0
Conan	BZ992588	3	10	26	23.1	61.6	12.6
Reeder	ND 695	4	30	26	26.6	62.2	11.7
Outlook	PI632252	5	30	29	24.3	60.8	11.8
Choteau	PI633974	6	15	27	28.3	61.4	11.8
Vida	PI642366	7	11	27	27.7	62.1	11.7
Hank	BZ992322	8	53	26	24.8	60.5	11.1
NorPro	AGRIPRO1	9	53	25	19.2	60.5	11.4
Freyr	AGRIPRO3	10	53	28	20.3	61.6	12.4
Corbin	BZ996434	11	11	27	25.5	61.4	11.5
Kelby	AGRIPRO6	12	52	22	15.4	61.8	13.0
Kuntz	AGRIPRO7	13	60	22	18.5	60.5	11.3
Volt	ACS53610	14	51	24	22.0	62.3	11.9
Jedd	BZ9M1044	15	38	22	21.0	62.5	10.5
ONeal	BZ999592	16	15	28	29.1	62.0	10.8
PF906408	HANK*6/CHOTEAU	17	23	24	26.3	60.6	10.6
Explorer	PI619086	18	43	27	20.6	60.6	11.0
MTHW0471	MTHW9701/MTHW9904	19	28	28	19.6	61.5	10.7
MT 0415	MT9408/MT9406//REEDER	20	39	27	22.3	61.4	12.0
Mean			33.32	26.32	23.08	61.31	11.6
P value			0	0	0	0.015	
CV1			21.1	0	12.64	0.95	
LSD 0.05			11.6	0	4.823	1.216	

1/ fallen cut stems in 10 feet of a single row.

2/ Cutting height was 3 to 4 inches.

Seed Date: 29Apr-08 into tilled recrop where the winter wheat stubble had been burned.

Fertilizer: NPKS w/seed 10+10+10+05 Top dress N: 60 lbs

Soil: 2 inch temp: 11.5C Moist Probe depth 13"

Comment: Nursery was surrounded by barley. The sawfly cutting was the most severe observed in any CARC research plots in the past 24 years and maybe longer.

Table 6 Multi-year spring wheat variety performance near Geraldine.
Exp 997207 Central Agriucultural Research Center. Moccasin, Montana.

Variety	ID code	2005	2007	2008	3 Year	Ave. Yld
		Yield	Yield	Yield	Ave. Yld	
		bu/a				
McNeal	PI574642	13.2	30.9	21.7	22.0	22.0
Agawam	BZ996472	15.8	41.2		28.5	22.1
Choteau	PI633974	12.2	40.3	28.3	26.9	22.0
Conan	BZ992588	13.0	41.7	23.1	25.9	22.0
Corbin	BZ996434		38.5	25.5	32.0	26.3
Ernest	PI592761	12.4	35.7		24.1	22.1
Explorer	PI619086	12.2	33.9	20.6	22.2	22.0
Fortuna	CI 13596	13.8	34.0	25.3	24.4	22.0
Freyr	AGRIPRO3		44.3	20.3	32.3	26.3
Hank	BZ992322	12.3	37.2	24.8	24.8	22.0
Knudsen	AGRIPRO2	11.9	36.6		24.3	22.1
NorPro	AGRIPRO1	9.6	38.9	19.2	22.6	22.0
Outlook	PI632252	11.4	39.6	24.3	25.1	22.0
Reeder	ND 695	12.4	39.5	26.6	26.2	22.0
Scholar	PI607557	11.0	44.7		27.8	22.1
Vida	PI642366	15.3	49.5	27.7	25.9	22.0
Westbred 926	WB 926	13.2	42.0		27.6	22.1
Mean		12.6	39.79	23.08		

Varieties with means > than the mean yield of McNeal for the same years are in **bold**.