

**PROJECT TITLE:** Evaluation of winter wheat development lines for sawfly resistance and agronomic performance near Buffalo, MT.

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**FARMER COOPERATOR:** Greg Mathews – Buffalo, Montana

**OBJECTIVES:**

Evaluate winter wheat variety development lines for relative agronomic performance and susceptibility to sawfly cutting in central Montana.

**METHODS:**

Trial was seeded in no-till fallow adjacent to stubble of a sawfly infested spring wheat crop with a five row double disk drill designed for no-till applications with serrated offset disk openers. Row spacing is 11 inches (accommodates a 4 ft header). The target seed depth is 3/4 to 1 inch into the soil. Starter, “pop-up”, fertilizer is placed with the seed at a rate of NPKS: 10+10+10+05 lbs per acre. Top dress nitrogen, 60 lbs N /a, was applied post seeding by produced. Yield is determined from three replications, test weight from two reps, and protein content from one rep per nursery.

**RESULTS:**

In keeping with the 2008 of crop evaluation nursery blips, the winter wheat sawfly variety development nursery was hailed down to soil service on May 28<sup>th</sup>. The regrowth was generally good and yields, for most part, were better than expected. However, the hail storm runoff snaked through the south end of the nursery depositing debris and eroding some soil from the nursery area.

Grain yields averaged 38.7 bushels per acre with a high yield of 48.0 bu/a (Table 1). Test weights averaged 59.8 lbs/a with a range from 57.6 to 61.7 lbs/bu. Protein content ranged from 11.9 % to 14.7 % with a nursery mean protein content of 12.9 %. The mean height was 28.5 inches compared to 30.5” for Rampart and 25.3 inches for CDC Falcon. Thirty-three of 44 development lines had stem solidness ratings of  $\geq 21.0$  on a scale of 5 to 25.

**SUMMARY:**

While runoff water damage obscured any yield potential differences between the development lines and established varieties, this trial validates optimism for the potential to develop varieties with improved stem solidness with moderate heights and suitable grain protein levels. Having moderate to short statured solid stem wheat cultivars would ease difficulties with straw accumulation and bridging in future tillage and/ or seeding operations.

**FUTURE PLANS:**

This trial will be continued in 2009 provided funding is available. Efforts to find a more site with more consistent sawfly infestations will be continued.



Table 1 2008 Evaluation of winter wheat lines for sawfly tolerance.  
Exp 5873 Central Agricultural Research Center. Moccasin, Montana

Liner	Pedigree	Entry #	Kernel color	Plant height in	Stem solid (5-25)	Grain Yield bu/ac	Test weight lb/bu	Grain Protein %
Rampart	check	1	red	30.5	21.0	39.8	60.9*	13.1
Genou	check	2	red	30.5	22.5	36.4	58.5	12.8
CDC Falcon	check	3	red	25.3	5.0	46.7	60.7*	11.8
Rocky	check	4	red	33.1	5.4	45.1	61.6*	12.0
Neeley	check	5	red	30.8	5.0	42.8	60.7*	11.8
MTS04114	L'Govskaya 167/Rampart//MT9409	6	white	27.2	18.7	35.1	59.3	13.9
MTS04120	L'Govskaya 167/Rampart	7	red	31.1	21.7	37.8	59.7	13.9
MTS0531	L'Govskaya 167/Rampart//MT9409	8	white	27.6	21.0	41.1	60.0*	12.0
MTS0532	L'Govskaya 167/Rampart//MT9409	9	white	25.7	18.2	43.8	60.5*	13.0
MTS0608	Jerry/2*Rampart	10	red	30.2	22.7	41.2	59.1	14.7
MTS0621	Heyne/Rampart//MT9513	11	red	31.6	21.5	41.7	61.2*	13.9
MTS0633	XNH1013/MTW9532//MT9514	12	red	30.4	21.0	35.9	59.4	13.0
MTS0705	93X312E14/NuHorizon	13	red	33.3	24.5	42.5	60.9*	13.7
MTS0713	MT9524/G15048//Rampart	14	red	27.2	22.4	39.8	60.8*	12.5
MTS0721	DMS/Rampart//Pronghorn/3/2*Rampart	15	red	29.1	21.7	42.0	59.9	12.5
MTS0728	BigSky//MT00156/MTS0023	16	red	31.0	18.2	37.8	60.4*	12.9
MTS0801	MTS009/Arrowsmith	17	red	30.6	23.7	38.0	60.6*	12.8
MTS0802	92X73E70/TX97A0080	18	red	26.1	19.5	42.5	59.7	11.2
MTS0803	MTS0012/MTW0072	19	red	27.0	18.4	44.0	61.7**	12.9
MTS0804	MTS9720/MTSW9881//MTW0072	20	red	25.6	22.2	39.5	57.9	14.1
MTS0805	MTSW9881/2*NuSky	21	red	30.1	21.3	36.1	59.7	13.3
MTS0806	ID537/MTS9862//MTW0072	22	white	29.7	22.9	34.3	58.5	13.0
MTS0807	MT9712/Nuplains//MTS0028	23	red	29.5	23.7	40.5	57.1	14.7
MTS0808	MT9908//Nuplains/MTS9862	24	red	29.0	21.3	48.0	59.4	12.5
MTS0809	MT9908//Nuplains/MTS9862	25	red	25.8	22.9	37.9	59.1	12.7
MTS0810	MT9908//Nuplains/MTS9862	26	red	25.6	21.9	42.7	59.3	11.8
MTS0811	Rampart/N96S031//93X337D31	27	red	27.3	23.7	41.4	59.5	14.3
MTS0812	Rampart/N96S031//93X337D31	28	red	27.9	24.2	44.6	59.9*	12.0
MTS0813	Rampart/ID537//MT9926	29	red	29.0	24.7**	36.6	58.8	13.3
MTS0814	(Arrowsmith sib, NW97S195/Rampart//	30	red	28.9	19.7	39.8	60.0*	13.4
MTS0815	MTW9911/NW97S195//MTS009	31	red	30.6	21.5	38.1	60.7*	14.3
MTS0816	MTW9911/NW97S195//MTS009	32	red	28.3	22.6	44.7	61.6*	11.5
MTS0817	93X312E14/NuHorizon	33	red	26.4	22.7	37.6	59.7	12.6
MTS0818	93X312E14/NuHorizon	34	red	25.5	24.0	38.1	59.5	13.2
MTS0819	93X312E14/NuHorizon	35	red	25.4	20.7	44.2	60.5*	14.2
MTS0820	MTS9882//TX94V2327/MTS9869	36	red	26.1	21.7	40.1	57.6	13.4
MTS0821	TX95V9315/MT9712//MTS9869	37	red	23.5	24.2	35.6	59.6	11.9
MTS0822	Rampart/PI592446/MT9514	38	red	28.4	23.5	35.2	58.9	12.5
MTS0823	Rampart/PI592446/MT9514	39	red	28.0	22.5	36.3	60.5*	13.5
MTS0824	Rampart/PI592446/MT9514	40	red	30.7	23.8	36.8	59.0	12.3
MTS0825	MT9524/G15048//Rampart	41	red	30.5	23.5	44.7	60.1*	12.5
MTS0826	MT9524/G15048//Rampart	42	red	29.9	22.0	43.1	60.2*	12.0
MTS0827	MT9524/G15048//Rampart	43	red	29.5	21.8	45.6	60.3*	13.7
MTS0828	MT9524/G15048//Rampart	44	red	29.1	22.5	37.7	60.0*	14.0
MTS0829	Crimson/Heyne//MTS9869	45	red	26.5	23.5	34.7	60.8*	12.6
MTS0830	Rampart/Antelope	46	red	29.6	20.7	34.4	59.6	12.8
MTS0831	TX94V2327/MTS9869	47	red	25.6	19.4	37.9	58.6	13.8
MTS0832	92X73E70/MTW9911	48	red	29.6	19.8	44.8	59.4	12.9
MTS0833	MT0064/SD97W642//MTS0012	49	red	28.5	18.4	39.6	59.4	12.3
Mean				28.5	20.8	38.7	59.8	
P-value				<.0001	<.0001	0.1036	0.0017	
C.V. (%)				4.9	8.2	10.1	1.3	
LSD (0.05)				3.2	3.4	ns	1.8	

Seed Date: 21-Sept-07 no-till into spr wheat stubble

Soil: 2" temp: 10.5 C Moisture Probe depth : 8 inches

Fertilizer: NPKS w/seed 10+10+10+05

Top dress N:

Harvested: 15-August-08

Comment: Site was hailed severely May28th. Nursery had good recovery except where hail water pooled and cut through some plots. This resulted in sufficient variability to make yield difference insignificant. Sawfly cutting was minor.