PROJECT TITLE: Evaluation of agronomic winter wheat lines bred for increase stem solidness to resist sawfly cutting.

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OBJECTIVES:
To evaluate winter wheat lines for stem solidness, sawfly cutting, and agronomic characters to develop higher yielding sawfly resistant winter wheat varieties adapted to Montana cropping environments.

RESULTS:
Twenty seven of the 49 winter wheat lines evaluated for stem solidness had stem solidness ratings statistically similar to Rampart, the current standard (Table 1). Two of the lines with stem solidness similar to Rampart produced yields that were statistically higher than the Rampart's yield. Five lines had yields statistically higher than Genou and had stem solidness scores equal or greater than Genou. Many of the lines, along with the variety checks, exhibited some level of leaf firing, spotting or rolling (Table 2)

SUMMARY:
Rampart has set high standards for both stem solidness and wheat quality. Some of the development lines are able to produce good yields and quality along with possessing good stem solidness.

FUTURE PLANS:
This nursery will be continued in central Montana. This Moore site is experiencing a decline in sawfly damage. Possibly the use of solid stem wheat has contributed to sawfly decline. The site will be moved to the Buffalo area where sawfly are more prevalent and actually have a longer history of being a wheat pest.

Table 1 2007 Moore winter wheat sawfly nursery evaluations
Exp 5873 Central Agricultural Research Center. Moccasin, Montana

Line/Variety		Pedigree	Entry	Stem solid	Grain Yield	Test Weight	Grain Protein
				5 to 25	bu/a	lbs/bu	%
Rampart		check	1	**23.4**	39.5	60.3	14.0
MTS0710	99X158E78	Rampart//PI592446/MT9514	30	23.3	41.2	60.7	10.1
MTS0634	97X161cE62-2	XNH1013/MTW9532//MT9514	19	23.1	41.2	58.3	13.3
MTS0711	99X158E81	Rampart//PI592446//MT9514	31	22.9	38.4	59.3	13.7
MTS0718	99X213cE97	Morgan/20IWSSN101(L)//Paul	38	22.8	38.5	59.5	13.7
MTS0633	97X161cE44-1	XNH1013/MTW9532//MT9514	18	22.7	**47.2**	59.4	13.9
MTS0623	98X366E29	Heyne/Rampart//MT9513	13	22.4	42.8	60.2	14.1
MTS0717	99X213cE75	Morgan/20IWSSN101(L)//Paul	37	22.3	41.9	58.3	16.5
MTS0531	96X260E5-4	L'Govskaya 167/Rampart//MT9409	8	22.2	**51.6**	59.7	12.8
MTS0713	99X195cE24	MT9524/G15048//Rampart	33	22.2	**43.9**	59.6	15.2
MTS0715	99X197cE42	MT9710//Rampart//20IWSSN20(E)	35	22.2	41.3	59.2	14.7
MTS0722	01X239cC8	MTS0023*2/MT00156	42	22.2	39.4	58.3	14.6
MTS0714	99X195cE54	MT9524/G15048//Rampart	34	21.8	42.8	59.1	15.6
MTS0628	98X5E47-4	Rampart//MT9712/UT199838	16	21.8	41.1	59.7	13.7
MTS0636	98X2E26-1	MT9402/OR3940469//ND9272	20	21.6	41.7	59.8	14.6
MTS0723	01X253cC27	MTS0012//Yellowstone/Pryor	43	21.4	38.7	58.4	13.6
MTS0621	98X366E5	Heyne/Rampart//MT9513	12	21.3	42.3	59.0	14.0
MTS0704	01X177C20	NuSky/KS98HW183//92X30E7/KS98HW32	24	21.1	**46.7**	59.9	14.5
MTS0608	98X127E33	Jerry/2*Rampart	10	21.1	42.8	58.4	14.1
MTS0707	99X128cE58	ID512/Rampart//MT9409	27	21.1	41.2	57.2	12.0
MTS0716	99X197cE48	MT9710//Rampart//20IWSSN20(E)	36	21.1	37.6	59.2	14.6
MTS0719	99X231E89	Crimson/Heyne//MTS9869	39	21.0	39.0	61.6	14.0
MTS0721	99X96cE107	DMS/Rampart//Pronghorn/3/2*Rampart	41	20.9	**52.3**	59.7	12.0
MTS0725	01X258C11	MTS0023//Pryor/Genou	45	20.9	42.4	57.9	15.2
MTS0626	98X5E16-3	Rampart//MT9712/UT199838	15	20.8	34.3	58.5	15.8
MTS0625	98X5E7-2	Rampart//MT9712/UT199838	14	20.7	**45.6**	60.6	14.0
MTS0708	99X142cE76	Rampart//Morgan/TX96A0200	28	20.6	37.9	60.3	14.4
MTS0712	99X164E80	PI592456/MT9514/MTS9869	32	20.4	41.7	59.5	11.1
MTS0724	01X253cC35	MTS0012//Yellowstone/Pryor	44	20.1	39.2	59.4	13.9
MTS0709	99X142cE81	Rampart//Morgan/TX96A0200	29	20.0	40.9	60.2	14.7
MTS0729	01X238C56	BigSky//MT00156/MTS0023	49	19.9	40.1	61.6	13.8
MTS0532	96X260E8-4	L'Govskaya 167/Rampart//MT9409	9	19.8	**49.0**	57.2	16.0
MTS0720	99X275cE31	KS96HW114/MTW9727//Rampart	40	19.5	**45.0**	62.2	12.2
MTS0706	00X14E137	93X312E14/NuHorizon	26	19.2	39.5	54.4	16.1
MTS0705	00X14E59	93X312E14/NuHorizon	25	18.5	**50.6**	59.1	12.6
MTS0701	01X253cC48	MTS0012//Yellowstone/Pryor	21	18.4	40.7	58.0	14.7
MTS0726	01X283C7	MTS0023//KS98HW220-3/MTS0012	46	18.2	**50.1**	58.1	12.6
MTS0631	97X135E8-3	(Lew/Redwin, 91X107-C9)//2*Pronghorn	17	17.8	**44.5**	59.2	12.6
MTS0619	98X354E92	20thIWxSSN99(L)/MTW9727//MT9403	11	17.8	40.4	57.9	16.9
MTS0412C	95X338E69-3	L'Govskaya 167/Rampart	7	17.5	**49.9**	61.2	12.8
MTS0727	01X238C5	BigSky//MT00156/MTS0023	47	17.4	**46.1**	60.9	13.0
MTS0728	01X238C38	BigSky//MT00156/MTS0023	48	17.1	40.5	60.6	13.1
MTS04114	96X260E6	L'Govskaya 167/Rampart//MT9409	6	17.0	43.4	59.8	12.9
Genou		check	2	16.6	40.6	58.5	14.4
MTS0703	01X149C55	MT9908/KS96HW10-3//MTS0023	23	14.7	**48.1**	58.8	16.3
MTS0702	01X149C4	MT9908/KS96HW10-3//MTS0023	22	13.9	39.8	57.0	14.7
CDC Falcon		check	3	7.6	**50.9**	59.7	12.5
Rocky		check	4	5.9	**47.8**	59.9	13.5
Neeley		check	5	5.2	41.2	57.2	14.7
	Mean			19.4	43.4	59.21	14.0
	P-value			0.0001	0.0176	0.0009	
	CV 1			8.3	9.853	2.082	
	LSD (0.05)			3.2	8.599	2.479	

Seeded: 27-Sep-06 No-Till Recrop into spring wheat stubble
Soil: 2inch temp.: 14.5 C Moist Probe Depth: 12"
Fertlizer: 10-10-10-5 NPKS w/seed 120 N top dress urea.

Table 2 2007 Moore winter wheat sawfly nursery evaluations
Exp 5873 Central Agricultural Research Center. Moccasin, Montana

Line/Variety		Pedigree	Entry	Plant Height	7- July -07 Leaf Firing	Spotting	Rolling
			#	cm	0 to 5	0 to 5	0 to 5
Rampart		check	1	99	2.5	1.0	2.0
Genou		check	2	101	2.0	1.0	0.5
CDC Falcon		check	3	94	3.0	2.0	2.5
Rocky		check	4	108	4.0	1.0	1.5
Neeley		check	5	101	3.5	1.5	0.5
MTS04114	96X260E6	L'Govskaya 167/Rampart//MT9409	6	96	3.0	2.0	3.0
MTS04120	95X338E69-3	L'Govskaya 167/Rampart	7	101	1.5	2.0	0.5
MTS0531	96X260E5-4	L'Govskaya 167/Rampart//MT9409	8	96	3.5	1.5	3.5
MTS0532	96X260E8-4	L'Govskaya 167/Rampart//MT9409	9	102	3.0	1.5	1.5
MTS0608	98X127E33	Jerry/2*Rampart	10	103	2.5	1.5	1.5
MTS0619	98X354E92	20thIWxSSN99(L)/MTW9727//MT9403	11	106	2.5	1.5	2.5
MTS0621	98X366E5	Heyne/Rampart//MT9513	12	107	1.5	2.0	1.5
MTS0623	98X366E29	Heyne/Rampart//MT9513	13	100	3.0	1.0	2.5
MTS0625	98X5E7-2	Rampart//MT9712/UT199838	14	103	1.5	1.0	2.5
MTS0626	98X5E16-3	Rampart//MT9712/UT199838	15	95	2.0	1.5	1.5
MTS0628	98X5E47-4	Rampart//MT9712/UT199838	16	94	2.5	1.0	2.5
MTS0631	97X135E8-3	(Lew/Redwin, 91X107-C9)//2*Pronghorn	17	109	2.5	1.0	1.5
MTS0633	97X161cE44-1	XNH1013/MTW9532//MT9514	18	104	2.5	1.5	1.0
MTS0634	97X161cE62-2	XNH1013/MTW9532//MT9514	19	102	2.0	0.5	1.0
MTS0636	98X2E26-1	MT9402/OR3940469//ND9272	20	97	2.0	2.0	2.0
MTS0701	01X253cC48	MTS0012//Yellowstone/Pryor	21	96	2.0	1.5	1.0
MTS0702	01X149C4	MT9908/KS96HW10-3//MTS0023	22	90	3.5	1.0	2.0
MTS0703	01X149C55	MT9908/KS96HW10-3//MTS0023	23	110	3.5	1.0	1.5
MTS0704	01X177C20	NuSky/KS98HW183//92X30E7/KS98HW3	24	99	2.5	1.0	1.5
MTS0705	00X14E59	93X312E14/NuHorizon	25	108	2.0	1.5	1.0
MTS0706	00X14E137	93X312E14/NuHorizon	26	97	2.5	2.0	2.0
MTS0707	99X128cE58	ID512/Rampart//MT9409	27	102	2.5	1.5	2.5
MTS0708	99X142cE76	Rampart//Morgan/TX96A0200	28	103	3.0	1.5	1.0
MTS0709	99X142cE81	Rampart//Morgan/TX96A0200	29	108	2.0	2.0	0.0
MTS0710	99X158E78	Rampart//PI592446/MT9514	30	105	4.0	1.5	1.5
MTS0711	99X158E81	Rampart//PI592446//MT9514	31	101	3.0	1.0	1.0
MTS0712	99X164E80	PI592456/MT9514/MTS9869	32	81	2.5	1.5	0.0
MTS0713	99X195cE24	MT9524/G15048//Rampart	33	106	2.0	1.0	2.0
MTS0714	99X195cE54	MT9524/G15048//Rampart	34	99	2.0	1.0	0.5
MTS0715	99X197cE42	MT9710//Rampart//20IWSSN20(E)	35	103	3.5	2.0	1.0
MTS0716	99X197cE48	MT9710//Rampart//20IWSSN20(E)	36	93	2.0	0.8	1.8
MTS0717	99X213cE75	Morgan/20IWSSN101(L)//Paul	37	102	3.0	1.0	2.0
MTS0718	99X213cE97	Morgan/20IWSSN101(L)//Paul	38	99	2.5	1.0	4.0
MTS0719	99X231E89	Crimson/Heyne//MTS9869	39	96	1.0	1.0	1.5
MTS0720	99X275cE31	KS96HW114/MTW9727//Rampart	40	95	3.0	1.0	1.0
MTS0721	99X96cE107	DMS/Rampart//Pronghorn/3/2*Rampart	41	98	2.5	1.5	2.0
MTS0722	01X239cC8	MTS0023*2/MT00156	42	101	3.5	1.5	2.5
MTS0723	01X253cC27	MTS0012//Yellowstone/Pryor	43	109	4.0	1.5	2.0
MTS0724	01X253cC35	MTS0012//Yellowstone/Pryor	44	95	2.0	2.5	0.5
MTS0725	01X258C11	MTS0023//Pryor/Genou	45	105	1.0	2.0	1.5
MTS0726	01X283C7	MTS0023//KS98HW220-3/MTS0012	46	99	3.0	1.5	2.0
MTS0727	01X238C5	BigSky//MT00156/MTS0023	47	100	3.5	2.0	2.0
MTS0728	01X238C38	BigSky//MT00156/MTS0023	48	108	2.5	1.5	3.0
MTS0729	01X238C56	BigSky//MT00156/MTS0023	49	104	3.5	2.0	3.0
	Mean			100.4	2.61	1.42	1.69
	P-value			0.1948	0.0112	0.7293	0.0838
	CV 1			7.009	28.89	47.69	59.63
	LSD (0.05)			14.15	1.518	1.365	2.025