

Table 11. 2010 Advanced Winter Wheat Nursery Mill & Bake (Exp. 1401)

Location: Bozeman, MT

Sample No. i = lines in 2012 Intrastate	Variety	Pedigree	Class	PPO	Single kernel hardness	Wheat Protein, % (12% m.b.)	Flour Yield, %	Flour Protein, % (14% m.b.)	Color			Wheat Ash, %	Flour Ash, %	Mixograph Type	Mixing Tolerance	Mixo Mixing Time, min	Mixo Water Absorption, %	Bake Mixing Time, min	Bake Water Absorption, %	Loaf Volume	Crumb Grain Score
									L* Brightness	a* Green - Red	b* Blue - Yellow										
1	Genou	check	HRW		61.8	13.7	71.5	11.9	90.9	-1.45	10.0	1.54	0.39	M	3	4.7	65.4	12.8	75.6	1080	8
2	Yellowstone	check	HRW		59.8	12.9	69.8	11.2	90.5	-1.13	10.0	1.62	0.41	M	5	7.3	66.2	13.9	75.9	1100	8
3	CDC Falcon	check	HRW		53.5	13.2	65.2	10.9	90.8	-1.14	8.9	1.65	0.41	LM	3	5	63.1	9.0	72.8	1010	7
4	Jagalene	check	HRW		57.8	13.6	70.3	11.7	90.2	-1.25	10.3	1.62	0.40	M	2	4.4	65.4	7.4	75.6	1125	7
5	MT0954	MT9982//Paul/94X151E40	HRW		65.3	13.3	69	11.3	90.3	-1.50	10.7	1.66	0.38	M	4	4.9	65.2	7.8	73.9	1100	8
6	MT0978	MT9982//MTW0072/NW97S151	HRW		72.9	12.9	69	11.4	90.1	-1.19	10.4	1.65	0.41	M	3	3.6	64.2	4.7	71.9	1125	7
7	MT08146	MT9982*2/MT9904	HRW		58.8	12.6	70.2	10.8	90.5	-1.20	10.0	1.62	0.40	M	4	4.8	64.8	8.9	74.0	1075	8
8	MTW08168	MTW0047/2*MT9982	HWW		63.4	12.8	67.9	10.6	90.4	-1.44	11.0	1.68	0.40	M	5	5.5	63.5	10.6	73.2	1000	7
9	MT08172	MT9982*2/BZ9W96-895	HRW		63.9	13.9	68.6	11.9	90.0	-1.13	10.6	1.70	0.41	M	5	8.3	68.2	18.5	78.9	1110	8
10	MT08189	Yellowstone (L) plant seln	HRW		62.4	12.9	69.8	11.0	90.3	-1.26	10.5	1.61	0.40	M	6	5.9	63.3	9.8	73.0	1080	8
11	MT0990	Yellowstone (Loppo) plant selection	HRW		58.9	12.8	69.6	11.0	90.3	-0.97	9.5	1.62	0.41	M	4	6.8	66.3	12.2	76.0	1090	7
MIN					53.5	12.6	65.2	10.6	90.0	-1.50	8.9	1.54	0.38		2	3.6	63.1	4.7	71.9	1000	7
MAX					72.9	13.9	71.5	11.9	90.9	-0.97	11.0	1.70	0.41		6	8.3	68.2	18.5	78.9	1125	8
AVE					61.7	13.1	69.2	11.2	90.4	-1.24	10.2	1.63	0.40		4.0	5.6	65.1	10.5	74.6	1081	7.5

Table 12. 2010 Advanced Winter Wheat Nursery Mill & Bake (Exp. 1402)
Location: Havre, MT

Sample No. i = lines in 2012 Intrastate	Variety	Pedigree	Class	PPO	Single kernel hardness	Wheat Protein, % (12% m.b.)	Flour Yield, %	Flour Protein, % (14% m.b.)	L* Brightness	a* Green - Red	b* Blue - Yellow	Wheat Ash, %	Flour Ash, %	Mixograph Type	Mixing Tolerance	Mixing Time, min	Mixing Water Absorption, %	Bake Mixing Time, min	Bake Water Absorption, %	Loaf Volume	Crumb Grain Score
1	Genou	check	HRW		85.5	13.8	67	12.3	90.4	-1.33	10.1	1.48	0.40	MH	4	6.3	65.2	14.9	75.4	1105	8
2	Yellowstone	check	HRW		78.0	12.7	67.2	11.3	90.5	-1.27	10.6	1.53	0.38	M	6	10.9	65.0	16.9	76.7	1065	7
3	CDC Falcon	check	HRW		76.6	12.2	64.5	10.8	90.6	-1.17	9.7	1.36	0.38	M	4	7.3	61.9	11.4	71.6	1010	8
4	Jagalene	check	HRW		78.8	12.1	68.4	10.6	90.3	-1.47	11.2	1.29	0.39	M	4	5.3	62.4	7.8	72.6	990	8
5	MT0954	MT9982//Paul/94X151E40	HRW		82.3	11.5	65.9	9.9	90.5	-1.75	12.0	1.34	0.37	M	5	9.2	60.4	13.1	71.6	1050	8
6	MT0978	MT9982//MTW0072/NW97S151	HRW		88.6	13.1	66.3	11.8	90.2	-1.38	11.3	1.42	0.41	M	4	4.7	62.7	6.6	72.4	1150	7
7	MT08146	MT9982*2/MT9904	HRW		75.0	12.7	68.2	11.2	90.5	-1.37	11.1	1.37	0.39	M	5	6.4	62.5	12.6	72.7	1075	8
8	MTW08168	MTW0047/2*MT9982	HWW		73.1	13.1	66	11.4	90.4	-1.59	12.0	1.42	0.39	M	4	11.1	64.6	17.1	74.8	1035	7
9	MT08172	MT9982*2/BZ9W96-895	HRW		81.7	12.1	67.3	10.6	90.3	-1.40	11.4	1.37	0.37	M	4	14.0	62.9	19.9	74.6	1025	8
10	MT08189	Yellowstone (L) plant seln	HRW		75.9	11.9	68.1	10.5	90.3	-1.47	11.4	1.34	0.38	M	5	10.8	62.5	16.6	73.7	1025	8
11	MT0990	Yellowstone (Loppo) plant selection	HRW		75.6	12.5	67.3	10.9	90.4	-1.19	10.4	1.42	0.39	M	5	11.8	63.0	16.6	74.7	1130	8
MIN					73.1	11.5	64.5	9.9	90.2	-1.75	9.7	1.29	0.37		4	4.7	60.4	6.6	71.6	990	7
MAX					88.6	13.8	68.4	12.3	90.6	-1.17	12.0	1.53	0.41		6	14.0	65.2	19.9	76.7	1150	8
AVE					79.2	12.5	66.9	11.0	90.4	-1.40	11.0	1.39	0.39		4.5	8.9	63.0	14.0	73.7	1060	7.7

Table 13. 2010 Advanced Winter Wheat Nursery Mill & Bake (Exp. 1408)
Location: Huntley, MT

Sample No. = lines in 2012 Intrastate	Variety	Pedigree	Class	PPO	Single kernel hardness	Wheat Protein, % (12% m.b.)	Flour Yield, %	Flour Protein, % (14% m.b.)	L* Brightness	a* Green - Red	b* Blue - Yellow	Wheat Ash, %	Flour Ash, %	Mixograph Type	Mixing Tolerance	Mixing Time, min	Mixing Water Absorption, %	Bake Mixing Time, min	Bake Water Absorption, %	Loaf Volume	Crumb Grain Score
1	Genou	check	HRW		79.2	14.0	67.1	12.1	90.5	-1.55	10.7	1.73	0.41	M	4	4.7	65.8	12.1	74.5	1070	9
2	Yellowstone	check	HRW		79.4	13	65.1	11.4	90.4	-1.33	11.1	1.72	0.41	M	3	8.6	66.9	14.6	76.6	1045	8
3	CDC Falcon	check	HRW		71.1	12.7	61.7	11	90.6	-1.19	9.6	1.58	0.42	LM	4	6.6	63.8	11.9	73.5	1050	8
4	Jagalene	check	HRW		75.3	12.9	68.4	11.2	90.2	-1.41	11.1	1.57	0.41	M	3	5.0	64.4	9.2	74.6	1070	8
5	MT0954	MT9982//Paul/94X151E40	HRW		74.9	12.5	64.4	10.7	90.5	-1.69	11.8	1.55	0.39	M	5	7.7	64.5	13.7	74.7	1150	7
6	MT0978	MT9982//MTW0072/NW97S151	HRW		87.3	13.2	65.5	11.6	89.9	-1.46	12.0	1.60	0.44	M	3	4.3	65.2	6.4	74.9	1090	6
7	MT08146	MT9982*2/MT9904	HRW		78.1	13.2	65.2	11.5	90.2	-1.46	11.4	1.61	0.42	M	4	6.3	65.0	11.1	74.7	1140	7
8	MTW08168	MTW0047/2*MT9982	HWW		78.8	13	65.4	11.2	90.1	-1.74	12.9	1.71	0.40	M	4	5.2	64.6	11.2	74.8	1015	8
9	MT08172	MT9982*2/BZ9W96-895	HRW		81.6	13.2	65.6	11.5	90.3	-1.40	11.5	1.72	0.40	MH	6	7.7	65.9	11.8	75.6	1045	7
10	MT08189	Yellowstone (L) plant seln	HRW		78.0	12.1	67.2	10.6	90.3	-1.46	11.2	1.52	0.42	M	5	6	64.0	11.9	73.7	1030	8
11	MT0990	Yellowstone (Loppo) plant selection	HRW		79.0	12.3	66.3	10.9	90.4	-1.20	10.3	1.61	0.42	M	4	6.8	64.4	13.9	74.6	1090	7
	MIN				71.1	12.1	61.7	10.6	89.9	-1.74	9.6	1.52	0.39		3	4.3	63.8	6.4	73.5	1015	6
	MAX				87.3	14.0	68.4	12.1	90.6	-1.19	12.9	1.73	0.44		6	8.6	66.9	14.6	76.6	1150	9
	AVE				78.4	12.9	65.6	11.2	90.3	-1.44	11.2	1.63	0.41		4.1	6.3	65.0	11.6	74.7	1072	7.5

Table 14. 2010 Advanced Winter Wheat Nursery Mill & Bake (Exp. 1418)

Location: Conrad, MT

Sample No. i = lines in 2012 Intrastate	Variety	Pedigree	Class	PPO	Single kernel hardness	Wheat Protein, % (12% m.b.)	Flour Yield, %	Flour Protein, % (14% m.b.)	Color			Wheat Ash, %	Flour Ash, %	Mixograph Type	Mixing Tolerance	Mixo Mixing Time, min	Mixo Water Absorption, %	Bake Mixing Time, min	Bake Water Absorption, %	Loaf Volume	Crumb Grain Score
									L* Brightness	a* Green - Red	b* Blue - Yellow										
1	Genou	check	HRW		54.7	12.7	71.0	11.0	90.7	-1.23	9.2	1.50	0.39	M	3	4	64.1	10.9	73.8	1080	7
2	Yellowstone	check	HRW		54.8	12.0	68.9	10.3	90.3	-1.16	9.5	1.60	0.41	M	4	5.9	64.1	10.3	73.8	1080	8
3	CDC Falcon	check	HRW		56.3	12.1	67.2	10.0	90.9	-1.06	8.6	1.51	0.40	LM	3	4.5	63.5	8.4	73.7	1025	8
4	Jagalene	check	HRW		50.2	12.4	69.7	10.5	90.4	-1.24	9.9	1.57	0.39	M	2	3.8	63.5	6.0	73.7	1080	7
5	MT0954	MT9982//Paul/94X151E40	HRW		69.6	11.2	67.3	9.3	90.9	-1.62	10.6	1.63	0.37	M	2	4.1	61.1	6.8	70.8	990	8
6	MT0978	MT9982//MTW0072/NW97S151	HRW		63.5	11.5	68.0	10.0	89.2	-1.22	9.9	1.51	0.40	M	3	3.3	61.6	4.0	71.8	1000	7
7	MT08146	MT9982*2/MT9904	HRW		57.4	12.7	69.1	10.9	89.2	-1.17	10.0	1.58	0.39	M	3	5.0	65.3	8.3	75.0	1115	7
8	MTW08168	MTW0047/2*MT9982	HWW		56.0	11.7	67.3	9.8	90.6	-1.58	10.5	1.48	0.40	M	3	5.8	62.8	8.9	74.0	945	8
9	MT08172	MT9982*2/BZ9W96-895	HRW		52.3	11.8	69.0	9.9	90.5	-1.24	10.0	1.57	0.40	M	4	7.2	65.2	11.9	74.9	1040	8
10	MT08189	Yellowstone (L) plant seln	HRW		62.5	11.8	71.0	10.1	90.4	-1.40	10.5	1.50	0.39	M	4	6.4	63.6	10.6	73.8	1065	7
11	MT0990	Yellowstone (Loppo) plant selection	HRW		60.0	11.5	69.0	9.8	90.9	-1.07	9.3	1.52	0.41	M	4	6.1	63.7	10.4	74.9	975	7
MIN					50.2	11.2	67.2	9.3	89.2	-1.62	8.6	1.48	0.37		2	3.3	61.1	4.0	70.8	945	7
MAX					69.6	12.7	71.0	11.0	90.9	-1.06	10.6	1.63	0.41		4	7.2	65.3	11.9	75.0	1115	8
AVE					57.9	11.9	68.9	10.1	90.4	-1.27	9.8	1.54	0.40		3.2	5.1	63.5	8.8	73.7	1036	7.5

Table 16. 2010 Advanced Winter Wheat Nursery (Exp. 1401): Noodles

Location: Bozeman, MT

Sample No. i = lines in 2012 Intrastrate	Variety	Pedigree	Class	Noodle Color							Noodle Score	Texture Profile Analysis										
				L* at 0 hour (Brightness)	a* at 0 hour (Green - Red)	b* at 0 hour (Blue - Yellow)	L* at 24 hour (Brightness)	a* at 24 hour (Green - Red)	b* at 24 hour (Blue - Yellow)	24 hour L* Stability (0hr-24hr)		Springiness at 0 min	Cohesiveness at 0 min	Adhesiveness at 0 min	Hardness, g at 0 min	Chewiness at 0 min	Springiness at 5 min	Cohesiveness at 5 min	Adhesiveness at 5 min	Hardness, g at 5 min	Chewiness at 5 min	
1	Genou	check	HRW																			
2	Yellowstone	check	HRW	87.5	0.27	14.5	78.4	0.94	22.7	9.2	291	0.95	0.65	-49.9	1224	757.6	0.94	0.576	-35.6	1022	554	
3	CDC Falcon	check	HRW																			
4	Jagalene	check	HRW																			
5	MT0954	MT9982//Paul/94X151E40	HRW	87.0	-0.11	16.7	77.8	0.45	26.5	9.1	288	0.92	0.65	-49.5	1188	718	0.93	0.58	-24.8	972	526	
6	MT0978	MT9982//MTW0072/NW97S151	HRW	87.1	0.29	15.6	78.5	1.07	24.2	8.6	309	0.93	0.62	-39.6	1078	618	0.94	0.57	-23.8	862	461	
7	MT08146	MT9982*2/MT9904	HRW	87.5	0.31	14.4	77.9	0.97	23.2	9.5	287	0.96	0.62	-44.2	1135	669	0.92	0.56	-29.9	918	472	
8	MTW08168	MTW0047/2*MT9982	HWW	87.6	-0.13	15.6	79.4	0.50	25.0	8.2	313	0.95	0.61	-34.9	1164	676	0.94	0.56	-28.8	943	500	
9	MT08172	MT9982*2/BZ9W96-895	HRW	87.1	0.34	15.3	77.7	0.95	23.4	9.4	292	0.95	0.63	-36.7	1266	762	0.95	0.59	-38.6	1054	593	
10	MT08189	Yellowstone (L) plant seln	HRW	87.7	0.07	14.7	79.5	0.70	23.4	8.2	313	0.94	0.64	-58.1	1260	757	0.94	0.57	-33.2	1018	544	
11	MT0990	Yellowstone (Loppo) plant selection	HRW	87.7	0.38	14.0	79.7	1.13	22.4	8.0	312	0.95	0.63	-37.8	1198	718	0.92	0.58	-34.1	975	520	
	MIN			87.0	-0.13	14.0	77.7	0.45	22.4	8.0	287	0.92	0.61	-58.1	1078	618	0.92	0.56	-38.6	862	461	
	MAX			87.7	0.38	16.7	79.7	1.13	26.5	9.5	313	0.96	0.65	-34.9	1266	762	0.95	0.59	-23.8	1054	593	
	AVE			87.4	0.18	15.1	78.6	0.84	23.9	8.8	301	0.94	0.63	-43.8	1189	709	0.94	0.57	-31.1	971	521	

Table 17. 2010 Advanced Winter Wheat Nursery (Exp. 1402): Noodles

Location: Havre, MT

Sample No. i = lines in 2012 Intrastate	Variety	Pedigree	Class	Noodle Color							Noodle Score	Texture Profile Analysis												
				L* at 0 hour (Brightness)	a* at 0 hour (Green - Red)	b* at 0 hour (Blue - Yellow)	L* at 24 hour (Brightness)	a* at 24 hour (Green - Red)	b* at 24 hour (Blue - Yellow)	24 hour L* Stability (0hr-24hr)		Springiness at 0 min	Cohesiveness at 0 min	Adhesiveness at 0 min	Hardness, g at 0 min	Chewiness at 0 min	Springiness at 5 min	Cohesiveness at 5 min	Adhesiveness at 5 min	Hardness, g at 5 min	Chewiness at 5 min			
1	Genou	check	HRW																					
2	Yellowstone	check	HRW	86.8	0.32	16.61	77.8	1.05	25.2	9.0	294	0.972	0.62	-43.8	1260	759	0.93	0.58	-49.5	1014	541			
3	CDC Falcon	check	HRW																					
4	Jagalene	check	HRW																					
5	MT0954	MT9982//Paul/94X151E40	HRW	88.4	-0.42	17.2	81.4	-0.20	27.2	7.0	332	0.92	0.63	-38.6	1251	723	0.93	0.54	-35.2	1097	554			
6	MT0978	MT9982//MTW0072/NW97S151	HRW	86.7	0.23	17.4	77.6	1.14	26.6	9.1	282	0.94	0.58	-34.7	1086	593	0.89	0.53	-32.1	909	429			
7	MT08146	MT9982*2/MT9904	HRW	86.5	0.23	17.7	77.4	1.12	26.6	9.2	282	0.92	0.61	-48.2	1202	677	0.94	0.53	-32.2	996	496			
8	MTW08168	MTW0047/2*MT9982	HWW	86.8	-0.17	19.2	78.7	0.91	28.6	8.1	307	0.93	0.62	-48.1	1253	721	0.91	0.57	-39.4	999	511			
9	MT08172	MT9982*2/BZ9W96-895	HRW	88.1	0.02	16.3	80.4	0.48	24.7	7.7	332	0.94	0.61	-36.0	1277	736	0.96	0.55	-33.1	1031	544			
10	MT08189	Yellowstone (L) plant seln	HRW	87.8	-0.05	16.8	80.1	0.63	25.7	7.7	328	0.95	0.61	-37.4	1250	729	0.91	0.55	-35.3	1029	511			
11	MT0990	Yellowstone (Loppo) plant selection	HRW	87.5	0.44	15.4	79.3	1.40	25.0	8.2	312	0.93	0.62	-43.6	1270	730	0.92	0.55	-36.9	1049	532			
	MIN			86.5	-0.42	15.4	77.4	-0.20	24.7	7.0	282	0.92	0.58	-48.2	1086	593	0.89	0.53	-49.5	909	429			
	MAX			88.4	0.44	19.2	81.4	1.40	28.6	9.2	332	0.97	0.63	-34.7	1277	759	0.96	0.58	-32.1	1097	554			
	AVE			87.3	0.08	17.1	79.1	0.82	26.2	8.3	309	0.94	0.61	-41.3	1231	708	0.92	0.55	-36.7	1016	515			

Table 18. 2010 Advanced Winter Wheat Nursery (Exp. 1408): Noodles

Location: Huntley, MT

Sample No. i = lines in 2012 Intrastate	Variety	Pedigree	Class	Noodle Color							Noodle Score	Texture Profile Analysis											
				L* at 0 hour (Brightness)	a* at 0 hour (Green - Red)	b* at 0 hour (Blue - Yellow)	L* at 24 hour (Brightness)	a* at 24 hour (Green - Red)	b* at 24 hour (Blue - Yellow)	24 hour L* Stability (0hr-24hr)		Springiness at 0 min	Cohesiveness at 0 min	Adhesiveness at 0 min	Hardness, g at 0 min	Chewiness at 0 min	Springiness at 5 min	Cohesiveness at 5 min	Adhesiveness at 5 min	Hardness, g at 5 min	Chewiness at 5 min		
1	Genou	check	HRW																				
2	Yellowstone	check	HRW	86.0	0.38	17.2	77.0	1.56	26.3	8.9	311	0.95	0.61	-48.8	1373	789	0.92	0.55	-37.1	1125	563		
3	CDC Falcon	check	HRW																				
4	Jagalene	check	HRW																				
5	MT0954	MT9982//Paul/94X151E40	HRW	87.0	-0.16	18.0	78.2	0.69	28.6	8.8	310	0.96	0.62	-32.9	1338	801	0.91	0.54	-33.2	1120	552		
6	MT0978	MT9982//MTW0072/NW97S151	HRW	86.2	0.21	17.9	77.5	1.39	28.1	8.8	303	0.93	0.57	-37.1	1274	677	0.94	0.53	-35.3	1018	508		
7	MT08146	MT9982*2/MT9904	HRW	85.7	0.34	17.7	75.7	1.47	27.1	10.0	266	0.92	0.60	-53.0	1311	726	0.90	0.55	-38.2	1090	539		
8	MTW08168	MTW0047/2*MT9982	HWW	86.1	-0.21	20.1	77.8	0.98	29.7	8.3	302	0.92	0.58	-40.6	1286	690	0.93	0.53	-35.4	1063	525		
9	MT08172	MT9982*2/BZ9W96-895	HRW	86.8	0.26	16.7	77.8	1.17	25.4	9.1	287	0.92	0.61	-61.1	1364	765	0.94	0.57	-45.6	1164	618		
10	MT08189	Yellowstone (L) plant seln	HRW	87.6	0.08	15.9	79.4	1.00	25.0	8.2	310	0.96	0.59	-36.5	1303	731	0.91	0.54	-32.6	1079	529		
11	MT0990	Yellowstone (Loppo) plant selection	HRW	87.0	0.45	15.7	77.9	1.62	24.9	9.1	291	0.94	0.61	-40.3	1329	757	0.92	0.54	-32.1	1091	547		
	MIN			85.7	-0.21	15.7	75.7	0.69	24.9	8.2	266	0.92	0.57	-61.1	1274	677	0.90	0.53	-45.6	1018	508		
	MAX			87.6	0.45	20.1	79.4	1.62	29.7	10.0	311	0.96	0.62	-32.9	1373	801	0.94	0.57	-32.1	1164	618		
	AVE			86.6	0.17	17.4	77.6	1.24	26.9	8.9	298	0.94	0.60	-43.8	1322	742	0.92	0.54	-36.2	1094	548		

