

Table 11. 2008-2010 Montana Intrastate Winter Wheat (Exp. 35): Cereal Quality Evaluations

ID										Flour						L*		
	PPO			Hardness			Protein %			Yield %			Protein %			L*		
	2010	1yr	2yr	2010	2yr	3yr	2010	2yr	3yr	2010	2yr	3yr	2010	2yr	3yr	2010	2yr	3yr
	pending																	
Accipiter	1.222	1.021		74.5	73.2	75.2	11.1	11.8	11.9	62.8	65.7	64.7	9.4	10.3	10.4	90.7	90.7	90.6
AP 503 CL2	1.183	0.975		71.5	70.5	72.8	12.2	12.7	12.8	65.4	67.0	66.5	10.3	10.8	10.9	90.6	90.7	90.7
Art				71.1			12.4			64.2			10.3			90.9		
Bearpaw	1.040			77.8	74.1		12.1	12.8		66.9	68.7		10.4	11.1		90.6	90.7	
Boomer				73.4			11.8			64.3			10.2			90.7		
Broadview				65.6			11.9			64.1			10.4			91.1		
CDC Falcon	1.342	1.056		71.0	66.6	66.8	11.5	12.3	12.2	63.6	65.8	65.1	9.7	10.6	10.6	91.0	90.9	90.8
Curlew	0.412*			72.7	70.7		12.0	12.4		66.8	69.2		10.6	11.1		90.5	90.5	
Decade	1.208	1.000		71.6	69.3	72.3	12.0	12.9	12.9	66.1	68.0	67.9	10.2	11.2	11.2	91.1	90.9	90.9
Genou	0.994	0.863		75.3	72.9	74.5	12.0	12.6	12.8	66.5	68.8	68.8	10.6	11.3	11.6	90.8	91.0	90.8
Hyalite (CL)	0.442*	0.362*		73.5	71.8	72.8	11.7	12.6	12.5	66.4	67.5	67.2	10.0	10.9	10.9	91.0	90.9	90.8
Jagalene	1.222	1.056		73.0	72.1	74.4	11.8	12.6	12.5	68.9*	70.5*	70.1	10.3	11.0	11.0	90.5	90.4	90.4
Judee	1.151	0.906		74.4	74.4	76.4	11.8	12.5	12.6	63.6	66.2	66.0	10.1	10.9	11.1	90.7	90.6	90.5
Ledger	1.130	0.928		72.4	67.7	70.1	11.6	12.1	12.0	70.0**	71.3**	71.3**	10.0	10.7	10.6	90.7	90.7	90.6
MT0866				68.8			12.0			66.7			10.2			91.1		
MT0871				82.6			11.7			66.9			10.3			90.2		
MTS04114				67.9			12.1			66.8			10.4			90.8		
MTS04114L				68.4			12.7*			66.9			11.0*			90.8		
MTS0532				66.2	65.0	67.5	11.7	12.5	12.5	66.5	68.0	67.9	10.1	10.9	10.9	91.0	90.8	90.8
MTS0532L	1.215	1.010		65.9			12.2			66.4			10.7			91.0		
MTS0808				86.8			12.0			66.2			10.6			90.2		
MTS0819				83.1			11.5			64.3			10.0			90.6		
MTS0826				72.4			11.9			66.8			10.4			90.8		
MTS0832				81.3			11.5			66.1			10.2			90.8		
Overland	0.951			69.8	69.0		11.5	12.4		67.7	68.8		9.9	10.8		90.7	90.6	
Promontory	0.321**	0.270**		73.1	71.8	74.9	11.2	11.6	11.6	68.8*	70.3*	69.8	9.8	10.3	10.2	90.7	90.6	90.6
Radiant	1.109			73.5	70.9		11.4	12.2		66.8	68.8		9.9	10.7		90.9	90.9	
Rampart	0.863	0.716		75.8	71.8	74.1	13.1**	13.5**	13.5**	67.9	69.9	69.6	11.5**	12.1**	12.1**	90.5	90.5	90.5
Robidoux	1.026			68.1	66.0		11.3	11.9		65.3	67.4		9.6	10.3		90.9	90.9	
Settler CL	1.145			69.0	67.8		11.4	12.1		66.6	68.1		9.7	10.5		90.8	90.8	
WB-Matlock				70.6			12.2			65.7			10.6			90.8		
WB-Quake				73.8			11.8			68.6			10.5			90.9		
Yellowstone	0.805	0.727		75.5	75.2	77.2	11.7	12.2	12.2	67.4	69.0	68.3	10.1	10.7	10.6	90.5	90.5	90.5
Average	0.988	0.838		73.0	70.6	73.0	11.8	12.4	12.5	66.3	68.4	67.9	10.2	10.8	10.9	90.8	90.8	90.7
LSD (0.05)	0.270	0.171		5.2	3.5	3.0	0.7	0.5	0.4	1.7	1.1	0.9	0.6	0.4	0.3	0.3	0.2	0.2
C.V.	19.4	20.6		5.1	4.9	5.1	4.1	3.8	3.6	1.8	1.6	1.7	4.4	3.9	3.8	0.2	0.2	0.3
P-Value	<.0001	<.0001		<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001

*,**,ns denotes statistical significance at P <= 0.05, highest value, and non-significance within column, respectively

Table 11. 2008-2010 Montana Intrastate Winter Wheat (Exp. 35): Cereal Quality Evaluations

ID	Flour color						Whole Wheat Ash (%)			Flour Ash (%)			Mixograph					
	a*			b*			2010	2yr	3yr	2010	2yr	3yr	Tolerance			Mix time (min.)		
	2010	2yr	3yr	2010	2yr	3yr							2010	2yr	3yr	2010	2yr	3yr
Accipiter	-1.30	-1.18	-1.18	9.5	9.3	9.5	1.50*	1.39*	1.38	0.42	0.42	0.43	4.0	3.9	4.0	6.2	5.8	6.4
AP 503 CL2	-1.38	-1.28	-1.30	9.9	9.7	9.9	1.52*	1.42	1.40	0.40	0.40	0.40	3.8	3.6	3.8	5.2	5.0	5.0
Art	-1.86			11.8			1.69			0.40			2.0			3.2		
Bearpaw	-1.61	-1.53		10.8	10.4		1.52*	1.38*		0.40	0.40		3.3	2.9		5.5	5.0	
Boomer	-1.44			10.2			1.63			0.42			3.8			4.3		
Broadview	-1.42			9.4			1.60			0.41			2.5			2.8		
CDC Falcon	-1.25	-1.15	-1.15	9.3	9.1	9.2	1.55	1.43	1.40	0.42	0.43	0.42	4.0	3.8	3.9	5.8	5.2	5.4
Curlew	-2.01	-1.85		12.7	12.4		1.57	1.44		0.39*	0.39*		3.5	3.0		4.6	4.4	
Decade	-1.28	-1.13	-1.12	9.1	8.8	8.8	1.54*	1.41*	1.40	0.39*	0.39*	0.39*	5.3	4.9	4.8	6.9	7.4	7.9
Genou	-1.56	-1.48	-1.47	10.2	9.9	10.0	1.51*	1.38*	1.37*	0.41	0.41	0.41	4.0	4.1	4.2	5.6	5.4	5.3
Hyalite (CL)	-1.71	-1.51	-1.52	10.8	10.3	10.5	1.45**	1.36*	1.32**	0.40	0.40	0.41	3.8	3.9	4.1	5.4	5.2	5.4
Jagalene	-1.57	-1.45	-1.47	11.2	10.9	11.1	1.51*	1.41*	1.37*	0.40	0.40	0.40	3.3	3.4	3.6	5.0	4.6	4.8
Judee	-1.70	-1.57	-1.58	11.4	11.1	11.2	1.60	1.45	1.44	0.40	0.40	0.40	3.8	3.8	3.9	5.9	5.9	6.1
Ledger	-1.83	-1.73	-1.71	11.8	11.5	11.7	1.48*	1.39*	1.39	0.40	0.39*	0.40*	3.5	3.4	3.5	5.2	5.1	5.3
MT0866	-1.79			11.0			1.47*			0.40			4.3			7.0		
MT0871	-1.68			11.9			1.54*			0.43			3.5			5.4		
MTS04114	-1.75			11.3			1.50*			0.39*			3.8			5.1		
MTS04114L	-1.74			11.5			1.51*			0.38**			3.8			5.7		
MTS0532	-1.80	-1.63	-1.60	11.4	11.1	11.1	1.57	1.44	1.39	0.39*	0.39**	0.39**	4.3	4.0	4.1	5.8	5.8	6.3
MTS0532L	-1.67			10.9			1.56			0.38*			3.8			5.6		
MTS0808	-1.68			11.6			1.49*			0.43			3.8			5.2		
MTS0819	-1.94			12.0			1.55			0.39*			3.5			6.2		
MTS0826	-2.09			12.2			1.54*			0.40			4.0			7.4		
MTS0832	-1.86			11.6			1.48*			0.40			4.3			6.7		
Overland	-1.22	-1.22		9.6	9.7		1.60	1.52		0.40	0.40		2.8	2.5		3.4	3.3	
Promontory	-2.07	-1.92	-1.92	12.9	12.6	12.7	1.46*	1.36**	1.34*	0.41	0.41	0.41	3.5	3.3	3.3	4.8	4.7	5.0
Radiant	-1.77	-1.64		11.3	11.0		1.54*	1.41*		0.41	0.41		3.8	3.9		6.0	5.8	
Rampart	-1.78	-1.66	-1.66	12.0	11.5	11.6	1.57	1.42	1.39	0.41	0.41	0.42	3.8	3.6	3.8	5.8	5.6	5.6
Robidoux	-1.61	-1.49		10.6	10.2		1.59	1.45		0.40	0.40		3.8	3.6		5.7	5.9	
Settler CL	-1.36	-1.26		9.7	9.4		1.48*	1.42*		0.39*	0.39*		4.0	3.9		5.5	5.7	
WB-Matlock	-1.55			10.7			1.56			0.43			4.3			5.6		
WB-Quake	-1.73			11.2			1.47*			0.40			3.8			5.5		
Yellowstone	-1.39	-1.24	-1.26	10.6	10.3	10.4	1.57	1.42	1.39	0.41	0.41	0.41	4.8	5.1	5.2	7.9	8.1	8.5
Average	-1.65	-1.47	-1.46	11.0	10.5	10.6	1.54	1.42	1.38	0.40	0.40	0.41	3.7	3.7	4.0	5.5	5.5	5.9
LSD (0.05)	0.15	0.10	0.07	0.4	0.3	0.2	0.09	0.06	0.06	0.15	0.01	0.01	0.9	0.6	0.5	1.2	0.7	0.9
C.V.	6.6	7.2	5.7	2.6	2.6	2.3	4.4	4.2	4.9	2.7	2.4	3.1	17.4	17.5	14.8	15.5	13.8	17.9
P-Value	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.000	0.000	0.008	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001

*,**,ns denotes statistical significance at P <= 0.05, highest value, and non-significance within column, respectively

Table 11. 2008-2010 Montana Intrastate Winter Wheat (Exp. 35): Cereal Quality Evaluations

ID	Test Bake									0 hour								
	Absorption %			Bake			Loaf volume (cc)			L*			a*					
										2010	2yr	3yr	2010	2yr	3yr	2010	2yr	3yr
2010	2yr	3yr	2010	2yr	3yr	2010	2yr	3yr	2010	2yr	3yr	2010	2yr	3yr				
Accipiter	59.2	60.7	60.7	10.9	9.9	10.5	69.5	70.7	70.9	974	1039	1048						
AP 503 CL2	61.4*	61.9	61.8	8.2	7.3	7.4	72.1	72.2	72.0	1081**	1107*	1116**						
Art	57.7			4.3			67.4			875								
Bearpaw	60.7	61.6		7.8	7.9		71.2	72.1		950	1000		88.0	87.1*		-0.25	-0.07	
Boomer	59.6			6.6			69.8			974								
Broadview	59.8			3.7			68.4			984								
CDC Falcon	58.6	60.1	60.3	9.7	9.4	9.7	68.4	70.0	70.3	948	1024	1036						
Curlew	61.0*	62.0		7.6	6.9		70.7	71.4		1055*	1079*		86.9			-0.39		
Decade	62.0*	64.6**	64.9**	14.7	16.8	17.5	72.9*	75.2**	75.6**	993	1060	1065	88.7**	87.5*	87.4*	0.15	0.34	0.37
Genou	61.4*	62.3	62.6	11.3	11.3	10.9	71.4	72.3	72.6	979	1051	1068						
Hyalite (CL)	60.3	61.4	61.4	9.3	8.4	8.7	70.6	71.4	71.8	968	1003	1000	88.1*	87.0*	87.1*	-0.38	-0.08	-0.11
Jagalene	61.6*	62.3	62.0	9.4	7.9	7.8	72.0	72.5	72.3	1020	1069*	1062						
Judee	59.9	61.4	61.6	8.2	8.1	8.5	69.8	71.1	71.4	1048*	1098*	1114*	87.5	86.6	86.3	-0.23	0.03	0.05
Ledger	60.7	61.4	61.4	11.0	10.2	10.5	70.4	71.1	71.3	978	1038	1034						
MT0866	62.5*			14.2			74.5**			994			88.4*			-0.43		
MT0871	61.5*			8.7			71.8			983			87.9*			-0.23		
MTS04114	61.3*			10.1			72.0			1013			87.3			-0.32		
MTS04114L	62.1*			10.7			71.9			1060*			86.5			-0.15		
MTS0532	60.5	61.7	61.6	11.4	10.9	12.0	71.2	72.2	72.5	1009	1062	1072	87.5	86.4	86.4	-0.43	-0.18	-0.18
MTS0532L	62.2*			11.7			72.8*			1030			86.9			-0.24		
MTS0808	61.0*			7.7			71.7			1013								
MTS0819	59.7			9.3			71.4			999								
MTS0826	62.6*			16.2			72.7*			1028								
MTS0832	61.2*			11.1			72.1			1044*								
Overland	59.8	61.4		3.9	3.6		69.1	69.5		911	950							
Promontory	59.7	60.5	60.4	7.0	6.5	6.9	69.9	70.6	70.4	1018	1036	1039	88.1*	87.6**	87.5**	-0.72	-0.50	-0.48
Radiant	60.5	61.8		11.3	11.1		71.3	72.3		965	1038							
Rampart	62.7**	63.8*	63.7	12.3	11.8	11.5	72.8*	74.0*	73.8	1068*	1109*	1112*						
Robidoux	58.5	60.0		8.7	8.7		69.0	70.3		934	978							
Settler CL	60.1	61.3		9.6	9.6		70.7	71.5		938	961							
WB-Matlock	62.2*			9.2			72.4			968								
WB-Quake	62.0*			10.5			72.0			1009								
Yellowstone	62.2*	62.5	62.4	14.0	14.0	14.2	72.6*	73.3	73.3	976	1028	1042	87.7	87.2*	87.1*	0.18	0.31	0.34
Average	60.8	61.7	61.9	9.7	9.4	10.5	71.1	71.8	72.2	993	1038	1062	87.6	87.1	87.0	-0.25	-0.02	0.00
LSD (0.05)	1.8	1.2	1.0	2.3	1.9	1.7	2.0	1.4	1.1	50	40	34	0.9	0.5	0.5	0.18	0.12	0.10
C.V.	2.1	2.0	2.0	17.3	19.7	20.5	2.0	2.0	1.9	3.6	3.9	4.0	0.7	0.6	0.6	51	548	10662
P-Value	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.000	0.000	<.0001	<.0001	<.0001	<.0001

*,**,ns denotes statistical significance at P <= 0.05, highest value, and non-significance within column, respectively

Table 11. 2008-2010 Montana Intrastate Winter Wheat (Exp. 35): Cereal Quality Evaluations

ID	Noodle color															Noodle Score		
	24 hour																	
	2010	b* 2yr	3yr	2010	L* 2yr	3yr	2010	a* 2yr	3yr	2010	b* 2yr	3yr	0-24 hour stability ¹			2010	2yr	3yr
												2010	2yr	3yr				
Accipiter																		
AP 503 CL2																		
Art																		
Bearpaw	16.0	16.4		78.8	77.1		0.27	0.33		21.9	21.9		9.2	10.0		302	271	
Boomer																		
Broadview																		
CDC Falcon																		
Curlew	19.4			78.2			0.27			29.7			8.7			300		
Decade	13.3	13.9	14.1	80.3*	78.3	78.1	0.50	0.82	0.87	20.3	20.3	20.3	8.4*	9.3	9.3	312	284	282
Genou																		
Hyalite (CL)	16.4	16.5	16.8	80.2*	78.8	79.1*	0.42	0.82	0.79	25.2	24.6	24.5	7.9*	8.2*	7.9*	323*	301	307*
Jagalene																		
Judee	17.4	17.8	18.3	77.4	75.9	75.6	0.20	0.39	0.38	25.9	25.6	25.6	10.2	10.7	10.7	277	253	253
Ledger																		
MT0866	16.3			80.0*			0.31			25.0			8.4*			305		
MT0871	16.6			80.6*			0.57			25.3			7.3*			337*		
MTS04114	17.9			77.8			0.32			26.5			9.5			285		
MTS04114L	18.8			75.9			0.57			28.3			10.6			258		
MTS0532	18.1	18.5	18.8	77.6	75.9	75.7	0.35	0.49	0.38	26.3	25.9	25.8	9.9	10.5	10.7	279	252	248
MTS0532L	18.5			76.8			0.43			27.6			10.1			269		
MTS0808																		
MTS0819																		
MTS0826																		
MTS0832																		
Overland																		
Promontory	18.1	18.2	18.6	80.8**	79.9**	79.8**	0.52	0.50	0.45	28.5	28.1	28.2	7.3**	7.7**	7.7**	345**	322**	319**
Radiant																		
Rampart																		
Robidoux																		
Settler CL																		
WB-Matlock																		
WB-Quake																		
Yellowstone	14.7	15.0	15.2	79.2	78.5	78.5	0.7	0.97	1.08	22.8	22.4	22.5	8.6	8.7	8.6	309	295	296
Average	17.0	16.6	17.0	78.7	77.8	77.8	0.42	0.62	0.66	25.6	24.1	24.5	8.9	9.3	9.2	300	283	284
LSD (0.05)	1.2	0.7	0.6	1.9	1.0	0.8	ns	0.29	0.22	1.6	0.9	0.7	1.2	0.7	0.5	26	16	12
C.V.	4.7	4.2	4.3	1.6	1.3	1.3	65	46	42	4.3	3.6	3.4	9.5	7.3	7.2	6.1	5.5	5.3
P-Value	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.336	0.000	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001

*,**,ns denotes statistical significance at P <= 0.05, highest value, and non-significance within column, respectively

Table 11. 2008-2010 Montana Intrastate Winter Wheat (Exp. 35): Cereal Quality Evaluations

ID	Texture Profile Analysis																	
	0 minutes																	
	Springiness			Cohesiveness			Adhesiveness			Hardness			Chewiness			Springiness		
	2010	2yr	3yr	2010	2yr	3yr	2010	2yr	3yr	2010	2yr	3yr	2010	2yr	3yr	2010	2yr	3yr
Accipiter																		
AP 503 CL2																		
Art																		
Bearpaw	0.94	0.94		0.59	0.58		-38.5	-37.4		1153	1156		638	628		0.90	0.91	
Boomer																		
Broadview																		
CDC Falcon																		
Curlew	0.95			0.58			-34.4			1138			630			0.90		
Decade	0.94	0.95	0.95	0.61	0.61	0.61	-43.0	-45.0	-44.2	1227	1261	1274	699	729	739	0.92	0.93	0.93
Genou																		
Hyalite (CL)	0.94	0.95	0.94	0.60	0.60	0.60	-38.0	-38.4	-38.3	1214	1226	1238	687	691	696	0.92	0.92	0.92
Jagalene																		
Judee	0.94	0.94	0.95	0.60	0.59	0.60	-32.4	-35.4	-35.7	1202	1252	1266	673	701	715	0.93	0.92	0.92
Ledger																		
MT0866	0.95			0.60			-36.6			1268			719			0.91		
MT0871	0.94			0.60			-38.7			1184			674			0.92		
MTS04114	0.94			0.62			-45.0			1198			693			0.93		
MTS04114L	0.95			0.61			-43.7			1208			695			0.92		
MTS0532	0.93	0.94	0.95	0.62	0.62	0.61	-45.0	-44.0	-42.6	1187	1222	1226	688	711	720	0.93	0.94	0.94
MTS0532L	0.94			0.61			-44.5			1187			677			0.93		
MTS0808																		
MTS0819																		
MTS0826																		
MTS0832																		
Overland																		
Promontory	0.93	0.93	0.94	0.60	0.60	0.60	-34.7	-39.9	-37.5	1144	1173	1196	639	659	671	0.92	0.92	0.92
Radiant																		
Rampart																		
Robidoux																		
Settler CL																		
WB-Matlock																		
WB-Quake																		
Yellowstone	0.93	0.94	0.94	0.60	0.61	0.61	-38.0	-42.3	-40.6	1229	1275	1294	690	726	742	0.92	0.92	0.92
Average	0.94	0.94	0.95	0.60	0.60	0.60	-39.4	-40.4	-39.8	1195	1224	1249	677	692	714	0.92	0.92	0.92
LSD (0.05)	ns	ns	ns	0.02	0.01	0.01	ns	6.5	4.7	51	40	32	40	36	25	ns	0.02	0.01
C.V.	1.9	1.8	2.0	1.9	2.2	2.0	17.2	16.0	14.4	3.0	3.2	3.2	4.2	5.1	4.3	1.6	1.6	1.7
P-Value	0.846	0.757	0.395	0.001	<.0001	0.001	0.119	0.041	0.005	0.000	<.0001	<.0001	0.002	<.0001	<.0001	0.113	0.019	0.006

*,**,ns denotes statistical significance at P <= 0.05, highest value, and non-significance within column, respectively

Table 11. 2008-2010 Montana Intrastate Winter Wheat (Exp. 35): Cereal Quality Evaluations

ID	5 minutes											
	Cohesiveness			Adhesiveness			Hardness			Chewiness		
	2010	2yr	3yr	2010	2yr	3yr	2010	2yr	3yr	2010	2yr	3yr
Accipiter												
AP 503 CL2												
Art												
Bearpaw	0.52	0.53		-30.8	-32.3		922	942		437	450	
Boomer												
Broadview												
CDC Falcon												
Curlew	0.52			-32.6			903			424		
Decade	0.56	0.57	0.57	-37.8	-40.2	-40.7	992	1025	1043	510	543	552
Genou												
Hyalite (CL)	0.55	0.54	0.54	-36.9	-36.8	-37.0	972	990	1000	490	497	497
Jagalene												
Judee	0.54	0.54	0.54	-30.3	-33.4	-32.7	966	1008	1026	483	501	510
Ledger												
MT0866	0.54			-33.5			1035			510		
MT0871	0.54			-32.7			958			473		
MTS04114	0.55			-34.9			986			508		
MTS04114L	0.56			-36.5			994			507		
MTS0532	0.56	0.56	0.56	-38.0	-38.2	-37.2	978	1008	1018	514	531	535
MTS0532L	0.56			-38.0			969			503		
MTS0808												
MTS0819												
MTS0826												
MTS0832												
Overland												
Promontory	0.54	0.54	0.54	-31.1	-31.4	-33.1	934	949	968	461	468	478
Radiant												
Rampart												
Robidoux												
Settler CL												
WB-Matlock												
WB-Quake												
Yellowstone	0.55	0.55	0.55	-35.0	-37.7	-37.4	999	1042	1057	502	526	533
Average	0.55	0.54	0.55	-34.5	-35.7	-36.4	970	995	1019	486	502	518
LSD (0.05)	0.01	0.01	0.01	5.3	3.7	3.2	46	34	26	33	24	20
C.V.	1.7	1.6	1.7	10.7	10.2	10.8	3.3	3.4	3.2	4.7	4.8	4.7
P-Value	<.0001	<.0001	<.0001	0.024	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001

*,**,ns denotes statistical significance at P <= 0.05, highest value, and non-significance within column, respectively