PROJECT TITLE: 2008 Intra-State Winter Wheat Variety Performance

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OBJECTIVES:
To evaluate new and existing winter wheat lines and varieties in dryland under various growing conditions in Montana and Western North Dakota.

RESULTS:
The 2008 Intrastate Winter Wheat Evaluation nursery was grown at Bozeman, Havre, Huntley, Conrad, Kalispell, Moccasin, and Sidney, Montana and Williston, North Dakota. The Bozeman location was not harvested due hail.

Top yielding varieties across the seven harvested location were similar to 2007. New entry Accipiter along with Pryor and CDC Falcon were the top three varieties for yield. The 2008 overall mean yield, 57.8 bu/a, was 17 bu less than 2007 mean (Table 1). Test weights were above average at Kalispell, Huntley and Conrad and below average at Williston, Sidney and Moccasin (Table 2). Wendy de-throned Kagalene for high test weight with 62.5 overall mean. Grain protein overall mean,12.9%, is near average (Table 3). Rampart and Vanguard, once again, were near the top for overall mean protein with 13.9% and 14.1%, respectively. Plant heights were slightly below average with a 32.3 inch mean and a nine inch height difference between Tiber, the tallest at 36.9", and Alice, the shortest with a mean height of 27.3 inches (Table 4). Across the eight locations, heading dates were 11 days later than in 2007. Havre, Sidney, Williston, and Kalispell all had a mean heading date of 166 (Julian) while Bozeman's mean heading date was 179 (Table 5). Sidney and Williston experienced significant levels of winter stress with several varieties and lines having low winter survival scores (Table 6). The Huntley location experienced significant levels of frost damage on April 29. Two development lines had stem solidness scores above Rampart's score across four locations (Table 7). Variety stem solidness ranking ran from Rampart, at 21.4, to Bynum, Genou, Vanguard, Carter, down to Ledger, with 11.1 score. Stripe rust, stem rust, and physiological leaf spotting was assessed at the Bozeman locations (Table 8).

SUMMARY:

The environmental conditions were such that heading dates were, on average, 11 d later and yields 17 bu/a lower than 2007. Kalispell, Huntley and Havre had good winter wheat years and while the other locations had sub-par years. Winter kill at Sidney and Williston along with hail at Bozeman and Moccasin caused significant reduction in grain winter wheat yield. Summer drought further reduced central and eastern Montana yields. Yields at Kalispell were outstanding.

FUTURE PLANS:
MAES will continue to evaluate winter wheat lines and varieties in uniform statewide trials.

Table 1. 2008 Intrastate Winter Wheat Test (Exp. 35): Multi-Location Yield (bu/a)

Cultivar/Line	Bozeman hailed	Havre LAT	Sidney LAT	Williston LAT	Kalispell LAT	Moccasin LAT	Huntley LAT	Conrad LAT	7 Loc Avg.
	not harv.					hail, 6/11			
DH00-18-196 (Accipiter)		64.7	**30.4***	**43.2****	**142.4***	45.3	**86.0***	**59.6***	**67.4****
MT0495	hail	**75.8****	**33.9****	24.1	**141.7***	**50.9***	**94.5***	50.5	**67.3***
Pryor	no	68.3	**32.2***	23.5	**143.3***	**53.6***	**84.6***	**60.5****	**66.6***
MT0552	harvest	**71.0***	**29.4***	**34.9***	**138.2***	48.4	**87.4***	**56.2***	**66.5***
CDC Falcon		68.7	**29.5***	**38.9***	**138.8***	48.9	82.6	51.2	**65.5***
Yellowstone		69.1	**24.0***	26.7	**141.0***	**57.7****	82.3	**54.5***	**65.0***
Wahoo		**73.5***	22.6	20.2	132.7	43.9	**97.4****	**56.8***	**63.9***
Jagalene		67.2	22.5	22.9	**145.5***	47.1	**90.7***	50.3	**63.7***
MTS04114 (HWW)		**74.7***	**25.9***	21.0	**140.7***	38.3	**85.0***	**57.0***	**63.2***
MTS0531 (HWW)		**75.4***	21.6	16.3	**134.9***	39.9	**94.0***	**59.8***	**63.1***
MTW06118 (HWW)		68.2	**25.6***	9.9	**146.8****	49.2	**89.4***	51.5	**62.9***
MT06102		69.5	16.8	13.7	**136.7***	50.2	**95.1***	**53.7***	**62.2***
MTS0532 (HWW)		**72.2***	14.0	13.2	**141.5***	40.8	**90.5***	**58.4***	**61.5***
BZ9W02-2051		66.7	21.3	12.7	133.4	**53.4***	**88.2***	**52.3***	**61.1***
MT06103		68.5	18.0	10.4	**140.9***	48.5	**88.3***	**52.3***	**61.0***
Jerry		63.2	**33.6***	**38.4***	105.8	**52.4***	**83.7***	47.2	**60.6***
MTS0713		67.2	16.9	9.6	**146.0***	41.1	**85.6***	**56.5***	**60.4***
DH99-37-100 (Peregrine)		54.9	**31.4***	**35.5***	126.6	40.7	82.2	48.7	**60.0***
Norris (CL)		64.9	15.3	28.8	122.9	47.3	**85.1***	**54.6***	**59.8***
Neeley		62.2	**27.4***	21.2	119.4	48.2	**90.9***	47.5	**59.5***
NuWest (HWW)		63.1	**31.7***	23.2	110.5	48.9	**93.4***	45.9	**59.5***
NuSky (HWW)		57.2	**33.1***	20.4	119.7	47.4	**87.9***	49.2	59.3
Darrell		67.4	**24.9***	24.4	106.9	42.8	**88.9***	**54.7***	58.6
MT0686		64.1	20.5	18.6	109.0	46.3	**90.3***	**54.1***	57.6
Promontory	hail	65.5	15.0	15.8	**142.1***	48.6	68.1	47.9	57.6
Carter	no	64.9	16.9	21.4	126.4	40.3	74.3	**57.4***	57.4
Tiber	harvest	58.8	22.6	22.0	123.2	41.0	79.7	**53.1***	57.2
Wendy (HWW)		**72.5***	21.0	**34.0***	117.9	38.2	65.9	49.6	57.0
Hyalite (CL, HWW)		65.1	17.3	11.5	**134.8***	47.4	69.4	48.5	56.3
Ripper		68.1	7.0	4.4	**141.7***	43.3	82.0	47.7	56.3
Rocky		66.2	22.8	12.8	102.8	48.4	**83.8***	**55.1***	56.0
Ledger		58.7	16.1	10.2	**138.6***	46.3	75.6	46.0	55.9
Genou		60.9	15.8	12.8	127.1	41.7	76.8	51.4	55.2
MTS04120		62.0	18.1	7.0	**140.2***	40.2	62.4	**55.9***	55.1
Alice (HWW)		68.3	13.1	16.8	124.5	38.1	71.3	51.6	54.8
MTS0705		63.8	13.0	4.9	109.6	41.7	**89.5***	**60.1***	54.7
MT0688		62.4	20.9	4.8	111.3	48.0	82.6	49.9	54.3
Bond CL		65.5	2.9	5.5	126.8	45.7	77.5	50.6	53.5
Bill Brown		66.3	1.8	4.9	**140.6***	41.5	75.3	42.3	53.2
MTS0608		62.2	14.8	10.1	106.4	40.6	80.1	50.5	52.1
AP 503 CL2		62.9	16.0	10.9	116.7	39.4	64.8	47.4	51.2
MT0641		59.8	20.1	4.1	111.4	44.6	70.2	45.5	50.8
Hawken		65.8	6.6	3.5	128.9	39.4	67.7	39.0	50.1
Vanguard		52.9	14.0	11.6	111.6	38.7	67.2	49.9	49.4
MTS0633		55.2	16.7	2.0	118.0	34.6	65.2	**52.4***	49.2
WA8023		58.8	3.2	0.0	123.9	46.7	68.7	42.0	49.0
Bynum (CL)		59.7	8.1	4.7	115.2	35.0	59.5	42.6	46.4
Rampart		53.8	9.3	8.7	102.4	37.8	63.3	46.2	45.9
Average		**63.4**	**19.7**	**16.9**	**127.2**	**44.6**	**80.7**	**51.3**	**57.8**
LSD (0.05)		**6.9**	**10.6**	**11.2**	**12.6**	**7.5**	**13.9**	**8.8**	**7.9**
C. V. (%)		**6.1**	**32.0**	**40.9**	**5.9**	**9.6**	**10.0**	**10.3**	**13.0**
P-value (Varieties)		**<.0001**	**<.0001**	**<.0001**	**<.0001**	**<.0001**		**<.0001**	**<.0001**

** = indicates highest value within a column

* = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

Table 2. 2008 Intrastate Winter Wheat Test (Exp. 35): Mult-Location Test Weight (lb/bu)

Cultivar/Line	Bozeman hail	Havre LAT	Sidney LAT	Williston RCB	Kalispell Bulk	Moccasin RCB	Huntley LAT	Conrad 1 rep	7 Loc Avg.
						hail, 6/11			
Wendy (HWW)	hail	**61.7***	**60.4***	**61.7****	64.7	61.4	**64.0***	63.3	**62.5****
Jagalene	no	**62.1***	**60.9***	**60.6***	65.5	58.5	**64.5***	63.5	**62.2***
MT0552	harvest	60.3	**60.1***	**61.2***	65.6	60.5	63.2	62.4	**61.9***
Alice (HWW)		**62.5****	**60.0***	**60.9***	63.8	59.3	62.9	62.7	**61.7***
AP 503 CL2		**61.4***	**60.6***	**58.2***	64.6	59.4	**64.9****	63.0	**61.7***
Bill Brown		61.0	**60.0***	**60.0***	64.9	59.6	**63.7***	62.5	**61.7***
MT06103		60.1	**59.9***	**58.7***	64.7	61.1	**63.6***	63.0	**61.6***
Promontory		60.6	**61.0****	**58.3***	66.0	60.9	**64.2***	63.4	**61.6***
Ledger		60.6	**59.9***	**59.8***	64.9	59.5	63.0	62.9	**61.5***
MT06102		60.3	59.2	**59.5***	64.3	60.0	**63.6***	62.8	**61.4***
Norris (CL)		60.4	59.6	**59.8***	65.4	59.0	**63.5***	62.2	**61.4***
Rocky		60.6	59.4	**57.5***	64.5	60.8	**63.8***	63.3	**61.4***
MTS04114 (HWW)		61.0	58.7	**59.4***	64.7	60.1	63.1	62.3	**61.3***
Carter		59.7	**59.8***	**59.0***	65.0	59.3	62.7	62.9	**61.2***
Darrell		60.6	59.3	**60.4***	64.0	59.9	62.3	61.9	**61.2***
MTS0531 (HWW)		60.6	58.2	**58.6***	63.6	60.1	**63.5***	62.0	60.9
MTW06118 (HWW)		60.3	59.2	**57.6***	66.1	56.8	**63.3***	63.0	60.9
Ripper		60.1	**59.8***	**57.7***	63.9	59.5	62.9	62.3	60.9
MTS04120		59.3	59.1	**57.8***	65.6	57.0	62.9	62.4	60.6
MTS0713		57.9	58.9	57.0	65.2	58.4	**63.6***	63.2	60.6
MTS0532 (HWW)		60.0	57.8	**57.7***	64.6	58.1	**63.3***	61.8	60.5
Tiber		59.7	**59.8***	**59.1***	64.6	58.7	59.6	61.9	60.5
Hawken		60.8	**60.3***	54.2	64.6	56.5	**63.6***	62.7	60.4
MTS0705		58.3	59.2	56.4	64.7	57.5	**64.0***	63.0	60.4
NuSky (HWW)	hail	57.8	58.7	**58.6***	63.8	60.4	62.7	61.0	60.4
Rampart	no	59.1	59.4	**58.2***	63.9	57.5	63.1	61.8	60.4
MTS0608	harvest	59.3	59.0	56.1	63.7	58.9	63.0	62.2	60.3
Genou		58.6	58.6	**57.5***	65.0	56.8	63.0	62.1	60.2
Hyalite (CL, HWW)		59.2	59.7	**57.8***	63.9	56.6	62.9	61.5	60.2
MT0688		58.1	57.9	56.1	63.7	59.6	**63.5***	62.2	60.2
DH99-37-100 (Peregrine)		57.7	58.4	**59.0***	65.1	56.3	62.5	61.6	60.1
NuWest (HWW)		58.8	58.5	**57.7***	64.3	58.6	61.2	61.9	60.1
Vanguard		59.4	59.2	56.8	64.2	56.8	63.0	61.6	60.1
Bynum (CL)		60.2	59.0	52.7	65.2	57.3	**63.3***	62.0	60.0
BZ9W02-2051		59.3	57.9	56.3	65.8	56.0	62.4	62.1	60.0
Jerry		58.4	58.5	**59.3***	63.1	57.7	61.9	61.3	60.0
Pryor		58.5	58.4	**57.8***	64.3	55.6	61.8	62.5	59.8
Bond CL		60.2	**60.2***	49.9	63.4	59.5	**63.4***	61.3	59.7
DH00-18-196 (Accipiter)		58.6	56.0	**59.9***	65.2	54.3	62.1	61.5	59.7
MT0686		58.0	58.1	56.5	64.0	56.9	62.7	61.6	59.7
Yellowstone		57.5	58.3	**58.2***	63.5	58.0	61.0	61.1	59.7
CDC Falcon		59.3	56.7	56.9	64.2	56.0	62.2	61.7	59.6
Wahoo		59.2	57.3	56.9	63.9	57.3	62.0	60.6	59.6
MT0495		57.4	56.6	52.8	65.3	58.6	62.7	61.8	59.3
Neeley		58.0	58.3	56.1	64.1	58.2	58.9	61.8	59.3
MT0641		57.1	57.4	51.3	65.0	55.2	62.9	61.9	58.7
MTS0633		59.1	58.1	49.5	63.9	53.4	62.4	61.3	58.2
WA8023		55.5	56.7	-	63.8	55.5	58.2	58.6	57.5
Average		**59.4**	**58.9**	**57.5**	**64.5**	**58.2**	**62.8**	**62.1**	**60.5**
LSD (0.05)		**1.4**	**1.2**	**4.2**		**ns**	**1.6**		**1.4**
C. V. (%)		**1.3**	**1.3**	**3.7**		**3.6**	**1.5**		**2.1**
P-value (Varieties)		**<.0001**	**<.0001**	**<.0001**		**0.0684**			**<.0001**

** = indicates highest value within a column

* = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

Table 3. 2008 Intrastate Winter Wheat Test (Exp. 35): Multi-Location Protein (%)

Cultivar/Line	Bozeman hailed out	Havre Bulk	Sidney Bulk	Williston	Kalispell Bulk	Moccasin Bulk	Huntley Bulk	Conrad Bulk	5 Loc Avg.
	not harv.					hail, 6/11			
Vanguard		17.0	14.0	**14.9***	14.8	13.3	12.4	12.6	**14.1****
Rampart	hail	15.7	13.2	**15.4****	14.1	13.5	12.5	12.8	**13.9***
MTS0633	no	15.3	14.0	**14.8***	14.4	13.9	12.0	12.4	**13.8***
Bynum (CL)	harvest	14.6	15.4	**14.7***	13.7	12.8	12.4	12.6	**13.7***
Genou		15.8	14.5	**14.7***	12.8	13.4	11.9	12.0	**13.6***
MTS0608		15.3	14.0	**14.7***	14.0	12.7	12.2	11.7	**13.5***
Wendy (HWW)		14.3	14.1	14.1	12.7	13.5	12.9	11.8	13.3
Hawken		15.0	15.5	14.1	12.3	12.2	12.1	12.1	13.3
Jerry		15.8	13.3	13.9	13.8	12.7	12.2	11.6	13.3
Carter		15.7	13.7	14.5	12.2	13.1	12.1	11.8	13.3
Alice (HWW)		14.1	14.1	12.8	13.1	13.9	12.7	12.1	13.3
MTS0705		15.0	13.3	**14.8***	13.4	13.2	11.8	10.9	13.2
MT06102		14.6	13.2	14.3	12.9	12.2	12.8	12.3	13.2
Ripper		14.7	14.5	13.3	12.7	13.4	12.0	11.4	13.1
AP 503 CL2		15.2	13.9	13.7	12.4	12.9	12.1	11.7	13.1
MT06103		14.8	15.0	14.3	13.4	11.1	11.7	11.6	13.1
MTS0713		16.0	14.3	**14.6***	11.1	12.3	12.1	11.4	13.1
MT0552		15.0	14.3	14.4	11.7	11.3	12.7	12.0	13.1
Tiber		15.3	13.5	14.2	12.1	11.9	12.3	11.8	13.0
Darrell		14.6	13.0	13.7	13.7	12.4	12.2	11.3	13.0
MT0686		15.3	14.6	13.8	12.1	11.8	11.7	11.6	13.0
MT0641		15.1	14.1	**14.9***	11.3	12.4	10.9	11.8	12.9
Norris (CL)		14.5	13.5	13.3	12.6	12.5	12.1	11.8	12.9
Hyalite (CL, HWW)		14.2	14.1	13.7	13.0	11.0	11.3	12.1	12.8
Neeley	hail	15.6	13.1	14.2	11.3	11.9	11.9	11.2	12.7
Jagalene	no	14.4	13.6	13.8	12.6	11.6	12.1	11.1	12.7
MTS04120	harvest	15.1	13.9	14.2	11.4	12.4	10.5	11.5	12.7
MT0495		15.0	14.0	**15.3***	11.2	10.9	11.4	11.1	12.7
CDC Falcon		14.2	13.9	14.3	11.4	11.9	11.6	11.3	12.7
Wahoo		14.8	13.3	13.6	11.7	12.8	11.3	11.1	12.7
MTS0532 (HWW)		14.4	13.9	13.8	12.0	11.3	11.4	11.7	12.6
Ledger		13.9	13.6	13.9	11.9	12.6	11.2	11.0	12.6
MTS0531 (HWW)		13.9	13.9	13.9	12.3	11.5	11.3	11.0	12.5
Yellowstone		15.4	13.2	13.5	11.9	11.1	11.3	11.4	12.5
BZ9W02-2051		15.3	14.0	13.9	11.0	11.5	11.2	10.8	12.5
DH99-37-100 (Peregrine)		15.9	12.8	13.1	11.3	12.3	10.7	11.5	12.5
NuWest (HWW)		15.4	13.5	13.9	11.8	10.6	11.6	10.7	12.5
MTS04114 (HWW)		14.7	13.2	13.7	11.9	11.6	11.1	10.9	12.4
WA8023		14.9	13.7	-	11.2	10.8	11.6	11.2	12.4
MTW06118 (HWW)		13.9	15.0	13.6	10.9	11.4	10.5	11.2	12.4
NuSky (HWW)		15.3	13.9	13.8	10.6	10.0	11.1	11.7	12.3
Rocky		14.5	13.4	13.1	12.2	11.5	10.6	10.9	12.3
MT0688		15.0	13.6	13.6	11.6	11.0	10.6	10.5	12.3
Bill Brown		13.6	15.2	12.7	10.8	11.8	10.5	11.3	12.3
DH00-18-196 (Accipiter)		14.1	12.5	13.3	11.0	12.2	11.4	11.1	12.2
Bond CL		13.4	13.5	12.8	12.0	11.8	11.2	10.6	12.2
Promontory		13.5	13.1	13.5	11.0	11.1	11.0	11.0	12.0
Pryor		14.4	13.1	13.7	10.6	11.6	10.4	10.0	12.0
Average		**14.9**	**13.8**	**13.9**	**12.2**	**12.1**	**11.6**	**11.5**	**12.9**
LSD (0.05)				**0.8**					**0.7**
C. V. (%)				**2.8**					**4.8**
P-value (Varieties)				**<.0001**					**<.0001**

** = indicates highest value within a column

* = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

Table 4. 2008 Intrastate Winter Wheat Test (Exp. 35): Multi-Location Plant Height (inches)

Cultivar/Line	Bozeman LAT	Havre LAT	Sidney LAT	Williston RCB	Kalispell LAT	Moccasin LAT	Huntley LAT	Conrad 1 rep	8 Loc Avg.
						hail, 6/11			
Alice (HWW)	34.4	29.4	19.9	18.5	35.1	26.4	29.3	25	27.3
AP 503 CL2	37.0	31.4	22.3	22.1	35.5	25.5	29.3	26	28.6
Bill Brown	34.7	31.1	20.1	21.3	36.0	26.8	30.6	26	28.3
Bond CL	38.8	32.8	21.4	25.0	39.0	28.9	34.7	31	31.4
Bynum (CL)	43.6	36.7	24.7	24.4	41.4	29.6	34.6	31	33.3
BZ9W02-2051	38.9	34.7	25.4	24.6	37.6	27.6	35.6	29	31.7
Carter	34.2	31.8	21.7	22.7	34.7	25.6	30.4	26	28.4
CDC Falcon	34.7	31.1	24.6	23.8	35.4	27.1	31.6	27	29.4
Darrell	38.6	33.6	24.9	24.2	37.7	28.2	34.2	29	31.3
DH00-18-196 (Accipiter)	38.2	32.6	25.2	23.4	39.7	29.3	35.2	31	31.8
DH99-37-100 (Peregrine)	45.8	40.8	29.6	29.0	46.3	33.6	40.5	35	37.6
Genou	43.5	37.3	24.6	26.6	41.3	31.6	39.2	33	34.6
Hawken	33.8	30.3	20.4	21.5	33.5	25.9	29.6	25	27.5
Hyalite (CL, HWW)	39.1	35.3	26.5	25.2	39.7	30.2	34.7	28	32.3
Jagalene	37.7	31.8	23.2	23.2	37.0	28.7	35.2	28	30.6
Jerry	45.5	39.5	26.5	28.4	42.3	34.8	38.3	32	35.9
Ledger	37.8	31.8	22.9	23.6	37.6	28.7	32.7	27	30.3
MT0495	38.1	34.5	26.8	24.4	38.1	28.8	33.8	30	31.8
MT0552	36.2	32.6	24.1	23.4	38.1	27.9	33.5	26	30.2
MT06102	42.7	34.3	25.2	25.6	41.8	31.5	37.9	30	33.6
MT06103	42.3	35.2	24.8	23.0	40.6	32.4	36.8	33	33.5
MT0641	37.8	34.3	24.2	23.2	38.9	26.6	32.6	30	31.0
MT0686	44.1	37.6	24.2	25.8	44.2	33.4	38.1	35	35.3
MT0688	41.3	35.0	25.6	24.8	39.8	32.1	36.0	32	33.3
MTS04114 (HWW)	38.0	32.9	24.3	25.8	39.2	29.4	33.8	28	31.4
MTS04120	42.4	34.6	25.3	23.0	41.9	31.2	36.6	32	33.4
MTS0531 (HWW)	36.8	32.2	24.5	22.8	37.7	27.5	33.9	31	30.8
MTS0532 (HWW)	38.8	32.3	23.5	24.4	37.3	27.8	35.1	27	30.8
MTS0608	44.9	38.5	24.6	26.8	40.0	33.8	39.0	31	34.8
MTS0633	44.5	36.6	26.3	22.9	41.6	30.4	35.4	30	33.5
MTS0705	43.3	38.0	27.5	28.0	42.6	32.2	39.2	33	35.5
MTS0713	38.0	31.7	23.9	24.0	37.3	27.4	32.4	27	30.2
MTW06118 (HWW)	38.5	35.6	26.0	23.7	41.0	29.5	35.3	31	32.6
Neeley	43.4	37.7	27.6	25.2	40.4	33.3	38.9	35	35.2
Norris (CL)	44.7	34.5	24.4	23.8	41.7	31.4	35.8	32	33.5
NuSky (HWW)	41.5	35.9	28.9	30.1	41.7	33.0	37.4	31	34.9
NuWest (HWW)	40.9	37.0	27.1	28.6	42.8	31.7	38.2	31	34.7
Promontory	40.0	34.2	24.0	23.8	40.7	30.2	32.7	31	32.1
Pryor	35.2	34.9	24.6	23.0	35.1	27.6	31.8	28	30.0
Rampart	44.6	35.9	23.8	25.2	41.2	31.7	34.4	28	33.1
Ripper	34.1	29.0	20.2	20.3	34.4	25.4	30.0	27	27.6
Rocky	45.1	37.7	26.2	25.8	43.2	33.5	38.8	33	35.4
Tiber	46.3	38.4	28.0	27.6	45.7	32.1	41.5	36	36.9
Vanguard	45.8	38.3	24.5	25.2	43.1	31.6	36.4	28	34.1
WA8023	41.2	34.0	21.1	-	42.3	31.2	32.6	32	33.5
Wahoo	40.1	34.2	23.2	22.6	37.7	28.9	33.8	27	30.9
Wendy (HWW)	34.9	29.8	22.1	21.7	34.0	25.4	27.8	24	27.5
Yellowstone	39.3	35.9	25.8	24.8	40.3	32.0	35.0	32	33.1
Average	**40.0**	**34.9**	**24.6**	**24.4**	**39.5**	**29.8**	**34.9**	**29.9**	**32.3**
LSD (0.05)	**1.7**	**2.6**	**2.3**	**3.7**	**2.1**	**2.8**	**2.2**		**1.4**
C. V. (%)	**2.5**	**4.3**	**5.4**	**7.5**	**3.2**	**5.7**	**3.6**		**4.8**
P-value (Varieties)	**<.0001**	**<.0001**	**<.0001**	**<.0001**	**<.0001**	**<.0001**			**<.0001**

** = indicates highest value within a column

* = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

Table 5. 2008 Intrastate Winter Wheat Test (Exp. 35): Multi-Location Heading Date (Julian)

Cultivar/Line	Bozeman LAT	Havre LAT	Sidney LAT	Williston RCB	Kalispell LAT	Moccasin RCB	Huntley LAT	Conrad 1 rep	8 Loc Avg.
						hail, 6/11			
Alice (HWW)	175.7	161.3	163.3	159.0	160.3	172.3	164.3	169	165.7
AP 503 CL2	179.0	164.0	167.3	170.5	166.8	172.0	167.2	172	169.9
Bill Brown	176.3	161.4	163.3	162.0	161.5	173.0	165.3	169	166.5
Bond CL	174.6	159.8	167.0	167.0	158.4	160.3	162.0	168	164.7
Bynum (CL)	178.0	166.5	168.0	168.5	163.4	173.3	168.0	173	169.8
BZ9W02-2051	181.4	169.2	168.4	168.5	168.6	175.0	169.3	175	171.9
Carter	179.0	167.9	166.0	169.5	166.1	174.0	167.9	171	170.2
CDC Falcon	180.3	166.8	165.0	165.5	167.3	175.0	169.0	174	170.4
Darrell	176.7	164.4	164.3	162.0	162.5	174.0	165.1	168	167.1
DH00-18-196 (Accipiter)	182.1	170.6	166.7	163.5	169.3	177.7	170.2	175	171.9
DH99-37-100 (Peregrine)	182.1	169.6	168.7	168.0	169.0	174.7	169.2	173	171.8
Genou	180.3	168.7	169.3	169.0	167.5	174.0	169.0	173	171.3
Hawken	174.7	160.7	160.4	164.0	157.5	163.7	158.7	168	163.5
Hyalite (CL, HWW)	179.0	162.9	162.0	165.0	164.4	173.7	164.3	169	167.5
Jagalene	179.0	164.6	165.7	163.5	165.8	172.7	166.0	172	168.6
Jerry	181.0	169.1	168.3	165.0	168.0	175.7	169.7	174	171.3
Ledger	177.7	166.8	168.4	164.0	164.5	174.3	168.9	173	169.7
MT0495	180.7	167.3	167.4	169.0	167.2	174.3	168.8	172	170.8
MT0552	179.7	163.1	163.7	161.0	165.3	173.7	166.0	170	167.8
MT06102	177.0	164.5	167.7	168.5	164.3	174.0	167.1	170	169.1
MT06103	178.0	164.8	164.7	165.5	164.7	173.0	166.2	171	168.5
MT0641	178.7	167.3	165.0	172.0	164.2	174.0	167.5	172	170.1
MT0686	179.7	168.2	167.0	166.5	167.8	173.7	169.3	172	170.5
MT0688	179.0	167.9	167.7	170.0	167.9	174.7	167.9	172	170.9
MTS04114 (HWW)	179.0	166.8	166.7	168.0	167.7	173.7	166.6	173	170.2
MTS04120	181.0	167.4	167.7	169.5	167.9	176.0	169.4	173	171.5
MTS0531 (HWW)	179.0	166.0	167.0	168.5	167.5	174.3	165.9	174	170.3
MTS0532 (HWW)	179.0	166.4	167.7	168.5	166.9	174.3	166.7	172	170.2
MTS0608	181.0	168.4	169.0	170.5	166.0	175.3	167.6	174	171.5
MTS0633	181.0	170.0	169.0	171.0	168.3	174.3	169.7	175	172.3
MTS0705	181.0	169.5	169.0	170.0	169.9	175.7	169.6	173	172.2
MTS0713	179.3	166.7	167.9	168.5	167.8	174.7	168.7	172	170.7
MTW06118 (HWW)	181.0	167.8	164.7	168.5	167.8	174.0	168.2	172	170.5
Neeley	181.7	169.3	168.0	168.0	169.8	174.0	170.6	174	171.9
Norris (CL)	179.3	162.9	163.6	161.0	166.5	172.7	165.7	170	167.7
NuSky (HWW)	181.8	170.0	167.0	169.0	169.6	175.7	168.4	174	171.9
NuWest (HWW)	181.3	168.1	166.3	169.5	169.3	174.7	167.5	173	171.2
Promontory	180.9	168.0	167.0	163.0	167.8	175.7	167.9	174	170.5
Pryor	182.0	169.2	166.7	170.0	168.3	176.3	169.8	173	171.9
Rampart	180.3	168.1	169.7	164.0	167.9	176.0	169.8	174	171.2
Ripper	174.0	160.1	162.6	167.0	157.7	160.0	160.3	169	163.8
Rocky	179.0	165.3	165.7	169.5	167.9	174.7	166.7	171	170.0
Tiber	181.7	168.8	169.4	169.0	170.2	175.3	170.2	173	172.2
Vanguard	180.4	169.7	168.3	169.5	168.1	175.0	168.9	173	171.6
WA8023	183.3	171.8	172.1	-	170.5	179.3	171.1	176	174.9
Wahoo	177.4	162.0	164.1	162.0	162.9	169.0	165.0	168	166.3
Wendy (HWW)	176.0	160.2	159.7	157.5	159.0	163.3	164.5	168	163.5
Yellowstone	181.6	169.2	168.3	164.5	168.8	175.3	168.2	175	171.4
Average	**179.4**	**166.8**	**166.5**	**166.6**	**166.2**	**173.4**	**167.4**	**172.1**	**169.8**
LSD (0.05)	**0.9**	**1.6**	**2.9**	**4.5**	**1.1**	**3.1**	**1.1**		**1.6**
C. V. (%)	**0.3**	**0.5**	**1.0**	**1.4**	**0.4**	**1.1**	**0.4**		**1.0**
P-value (Varieties)	**<.0001**	**<.0001**	**<.0001**	**<.0001**	**<.0001**	**<.0001**			**0.0001**

** = indicates highest value within a column

* = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

Table 6. 2008 Intrastate Winter Wheat Test (Exp. 35): Multi-Location Winter Survival (%)

Cultivar/Line	Sidney		Williston		Average (2 locs)			Huntley[1/]
	LAT	LAT	RCB	LAT	'Early'	'Late'		LAT
	30-Apr	25-Jun	30-Apr	?				29-Apr
Alice (HWW)	2.8	22.9	7.0	7.7	4.9	15.3		**1.3***
AP 503 CL2	4.2	23.6	1.3	2.3	2.8	13.0		**1.3***
Bill Brown	1.7	9.2	1.7	1.0	1.7	5.1		**1.0***
Bond CL	0.3	6.6	1.0	0.7	0.7	3.7		**1.7***
Bynum (CL)	3.9	12.6	0.3	0.7	2.1	6.7		2.0
BZ9W02-2051	9.5	31.1	3.7	4.0	6.6	17.6		**1.0***
Carter	6.8	21.9	5.0	6.7	5.9	14.3		2.3
CDC Falcon	**11.7***	**36.7***	16.7	23.3	**14.2***	30.0		**0.6****
Darrell	7.5	31.7	13.3	10.3	10.4	21.0		2.0
DH00-18-196 (Accipiter)	9.3	**47.9***	**31.7****	**70.0****	**20.5****	**59.0****		**0.6****
DH99-37-100 (Peregrine)	8.7	32.0	16.7	31.7	**12.7***	31.9		**1.0***
Genou	2.5	18.3	2.7	2.3	2.6	10.3		1.7
Hawken	2.1	9.7	1.0	0.7	1.6	5.2		3.0
Hyalite (CL, HWW)	**12.3***	**41.7***	2.7	2.0	7.5	21.9		1.7
Jagalene	3.9	23.9	6.3	5.3	5.1	14.6		**1.3***
Jerry	10.4	**40.5***	18.3	30.7	**14.4***	35.6		**1.0***
Ledger	4.5	20.6	2.7	3.7	3.6	12.2		1.7
MT0495	7.6	**43.2***	5.0	8.3	6.3	25.8		**1.0***
MT0552	9.6	**51.7****	17.3	30.0	**13.5***	40.9		**1.4***
MT06102	3.1	15.7	3.3	4.3	3.2	10.0		2.0
MT06103	5.1	19.8	2.7	2.0	3.9	10.9		2.0
MT0641	8.8	30.8	0.3	0.7	4.6	15.8		**1.7***
MT0686	6.3	32.6	5.0	5.0	5.7	18.8		2.0
MT0688	4.8	27.2	1.3	0.7	3.1	14.0		**1.3***
MTS04114 (HWW)	9.4	31.8	8.3	7.0	8.9	19.4		2.7
MTS04120	5.1	22.5	1.0	2.0	3.1	12.3		2.1
MTS0531 (HWW)	5.5	21.2	5.3	4.3	5.4	12.8		1.7
MTS0532 (HWW)	3.0	21.2	2.0	2.7	2.5	12.0		2.0
MTS0608	3.2	20.1	2.0	2.0	2.6	11.1		2.0
MTS0633	5.4	19.5	0.0	0.7	2.7	10.1		2.0
MTS0705	2.9	21.6	1.0	2.0	2.0	11.8		2.0
MTS0713	5.0	24.0	1.3	1.0	3.2	12.5		2.0
MTW06118 (HWW)	7.5	29.7	2.0	2.0	4.8	15.9		**1.4***
Neeley	10.5	**43.3***	10.0	21.3	10.3	32.3		**1.0***
Norris (CL)	5.6	18.8	8.7	16.3	7.2	17.6		**1.7***
NuSky (HWW)	**14.9***	**43.1***	5.0	7.0	10.0	25.1		1.7
NuWest (HWW)	**12.1***	**46.1***	4.7	4.3	8.4	25.2		2.0
Promontory	4.2	25.1	3.3	4.3	3.8	14.7		**1.0***
Pryor	8.6	**41.8***	6.0	5.3	7.3	23.6		1.7
Rampart	3.3	10.2	2.3	3.3	2.8	6.8		2.0
Ripper	2.7	14.5	1.3	0.7	2.0	7.6		**1.3***
Rocky	5.0	22.3	1.7	1.3	3.4	11.8		2.0
Tiber	5.7	30.3	10.7	15.3	8.2	22.8		**1.6***
Vanguard	2.0	20.3	1.7	2.3	1.9	11.3		1.7
WA8023	1.2	5.7	0.3	0.0	0.8	2.9		**1.0***
Wahoo	6.4	28.9	5.0	5.3	5.7	17.1		2.7
Wendy (HWW)	8.2	19.8	20.0	29.0	**14.1***	24.4		**1.0***
Yellowstone	5.9	33.4	7.3	8.3	6.6	20.9		2.0
Average	**6.3**	**26.9**	**5.2**	**8.6**	**6.1**	**17.4**		**1.7**
LSD (0.05)	**6.5**	**15.1**	**7.6**	**15.4**	**7.9**	**16.6**		**0.7**
C. V. (%)	**59.8**	**32.3**	**78.8**	**110.1**	**64.6**	**47.6**		**26.2**
P-value (Varieties)	**<.0001**	**<.0001**	**<.0001**	**<.0001**	**0.0007**	**<.0001**		**<.0001**

** = indicates highest value within a column

1/ Frost Damage (0-3, 3 = worst)

* = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

Table 7 2008 Intrastate Winter Wheat Test (Exp. 35): Multi-Location Stem Solidness (5-25)

	Cultivar/Line	Bozeman	Havre	Moccasin	Conrad	4 Loc Avg.
+	**MTS0633**	**20.9****	**24.3****	**23.1****	**24.3***	**23.1****
+	**MTS0705**	**20.2***	**24.3****	**22.9***	**24.6****	**23.0***
	Rampart	16.1	**23.3***	**21.5***	**24.6****	21.4
	MTS0531 (HWW)	16.3	**24.1***	**21.4***	**22.7***	21.1
+	**MTS0608**	14.6	22.2	20.9	**24.1***	20.5
+	**MTS0713**	17.3	20.4	20.4	**22.9***	20.3
	Bynum (CL)	14.7	21.6	20.6	**23.7***	20.2
	MTS0532 (HWW)	15.2	22.3	20.1	**23.2***	20.2
	MTS04114 (HWW)	15.3	20.3	**21.1***	21.4	19.5
	Genou	12.8	21.3	19.4	20.4	18.5
	MTS04120	11.0	21.9	18.9	21.4	18.3
	Vanguard	13.1	19.5	19.3	20.1	18.0
#	**Carter**	11.8	13.0	15.5	15.9	14.1
	Ledger	8.9	10.3	11.8	13.5	11.1
	CDC Falcon	5.6	7.7	7.5	6.8	6.9
	Neeley	5.7	7.4	6.7	7.4	6.8
	Average	**13.7**	**19.0**	**18.2**	**19.8**	**17.7**
	LSD (0.05)	**1.8**	**2.0**	**2.2**	**2.1**	**1.0**
	C. V. (%)	**7.8**	**6.4**	**7.2**	**6.3**	**6.9**
	P-value (Varieties)	**<.0001**	**<.0001**	**<.0001**	**<.0001**	**<.0001**
	% stems with tunneling	**0.0**	**11.3**	**7.1**	**12.5**	

Locations were significant (P= <.0001) + = new for 2008, # = paid entry

** = indicates highest value within a column

* = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

Table 8. 2008 Intrastate Winter Wheat Test (Exp. 35): Bozeman and Kalispell Stripe Rust (%)

Cultivar/Line	Bozeman		Bozeman	Ft Ellis
	'Early' Stripe Rust	'Late' Stripe Rust	Physiol. Leaf Spot %	Stem Rust %
	9-Jul	16-Jul	9-Jul	6-Aug
Alice (HWW)	3.7	4.9	1.7	**MS**
AP 503 CL2	0.8	1.0	0.0	**MS**
Bill Brown	21.6	32.8	0.0	**S**
Bond CL	10.1	15.0	0.0	**S**
Bynum (CL)	0.0	0.0	0.0	**MS**
BZ9W02-2051	12.4	22.7	1.7	**S**
Carter	18.4	33.4	1.7	**MS**
CDC Falcon	11.9	15.9	23.3	**MR**
Darrell	8.2	11.8	0.0	**R**
DH00-18-196 (Accipiter)	8.9	26.2	8.3	**MS**
DH99-37-100 (Peregrine)	3.3	1.5	0.7	**MS**
Genou	4.9	5.5	0.0	**S**
Hawken	0.0	0.0	0.0	**MR**
Hyalite (CL, HWW)	5.6	14.1	0.3	**R**
Jagalene	1.9	1.5	0.0	**MR**
Jerry	3.3	3.2	2.0	**R**
Ledger	1.1	2.8	0.0	**S**
MT0495	0.0	0.0	0.0	**S**
MT0552	0.3	0.0	0.0	**R**
MT06102	1.7	2.6	3.3	**R**
MT06103	0.0	0.0	0.3	**R**
MT0641	0.0	0.0	0.0	**MR**
MT0686	1.3	1.9	3.3	**MR**
MT0688	3.1	0.6	0.3	**S**
MTS04114 (HWW)	0.0	0.0	2.3	**MS**
MTS04120	1.7	1.7	0.0	**VS**
MTS0531 (HWW)	0.3	0.5	0.7	**MR**
MTS0532 (HWW)	0.5	0.0	6.7	**MR**
MTS0608	2.6	3.3	0.0	**MS**
MTS0633	0.0	0.0	1.0	**MR**
MTS0705	0.8	2.3	0.0	**MR**
MTS0713	2.3	3.0	0.0	**S**
MTW06118 (HWW)	12.1	38.1	1.7	**MR**
Neeley	14.5	18.4	0.7	**S**
Norris (CL)	2.3	3.2	0.3	**S**
NuSky (HWW)	19.6	33.2	0.0	**R**
NuWest (HWW)	14.6	23.6	0.0	**R**
Promontory	1.4	0.0	8.3	**VS**
Pryor	9.6	10.3	0.0	**S**
Rampart	0.8	1.0	0.7	**MR**
Ripper	24.0	34.4	0.0	**S**
Rocky	0.4	0.3	0.7	**R**
Tiber	3.0	1.5	0.0	**VS**
Vanguard	2.1	2.1	0.0	**MS**
WA8023	0.0	0.0	0.0	**VS**
Wahoo	11.3	4.8	0.0	**R**
Wendy (HWW)	1.5	2.7	4.0	**MR**
Yellowstone	0.7	0.2	0.0	**MS**
Average	**5.1**	**7.8**	**1.5**	
LSD (0.05)	**13.6**	**20.7**	**3.5**	
C. V. (%)	**154**	**155**	**144**	
P-value (Varieties)	**0.0022**	**<.0001**	**<.0001**	

** = indicates highest value within a column

* = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)