

PROJECT TITLE: Intra-State Winter Wheat Variety Performance

PROJECT LEADER: P.L. Bruckner P, S&E, Bozeman

PROJECT PERSONNEL:

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G.D. Kushnak	WTARC, Conrad
G.F. Stallknecht	SARC, Huntley
B.N. Stougaard	NWARC, Kalispell
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OBJECTIVES:

To evaluate new and existing winter wheat lines and varieties in dryland fallow under various Montana growing conditions.

Results:

The 1995 Montana Intra-State Winter Wheat Nursery was seeded and harvested at seven rainfed locations in replicated multi-row plots.

Fall seeding was delayed at Havre, Conrad and Moccasin due to dry soil. The Conrad location emerged in the spring. None of the locations provided good winter hardiness test. With the exception of Sidney, all locations had cooler than average May - August temperatures. Conrad, Havre and Moccasin had above average growing season precipitation. A June 4 snow contributed to early lodging at Kalispell from which most of the varieties recovered.

Yield, test weight, heading date, plant height, winter survival, lodging, grain protein, and leaf disease information is presented in Tables 1-8. Yields were much above normal for the five arid locations and near average or above for Bozeman and Kalispell. Havre and Moccasin had above average test weights and Kalispell below average test weights. Good lodging evaluations were obtained at Bozeman, Kalispell, Sidney, and Huntley. Protein levels were generally down due to the higher than anticipated yields. The incidence of leaf diseases was wide spread, but no outstanding yield losses were attributed to diseases. WSMV was detected at Kalispell for the first time.

SUMMARY:

XNH1643, Judith and Promontory had the across locations high yield averages. Five varieties, topped by MT 9432, averaged more than 62 lbs/bu test weights. Three of the top 10 yielders, Vona, Big Horn and Yuma, had average plant heights of less than 33 inches. Three varieties, Ike, MT 88046 and Karl 92, averaged more than 13 % protein across the seven locations.

Future Plans:

The winter wheat breeder and research center scientists plan to continue to evaluate new winter wheat lines and varieties in uniform state wide trials and develop new lines.

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Table 1 1995 Intrastate Winter Wheat Test (Exp. 35): 7 Location Yield (bu/ac)

Cultivar/ Line	Bozeman LAT	Havre LAT	Sidney LAT	Kalispell RCB	Moccasin RCB	Huntley LAT	Conrad RCB	7 Loc Total	BYX	RSQ
XNH1643	117.2	85.6	71.8	108.9	69.8	108.2	112.3	96.3	0.86	0.92
Judith	127.8	79.1	62.2	125.0	56.9	96.0	100.0	92.4	1.24	0.98
Promontory	127.7	82.9	61.6	120.2	46.6	106.8	100.6	92.3	1.32	0.97
Vona	124.3	70.3	56.2	119.4	63.8	102.6	99.7	90.9	1.19	0.95
Kestrel	111.3	81.9	67.0	121.0	49.1	102.1	102.2	90.6	1.11	0.94
Bighorn	104.7	76.4	67.3	123.4	55.3	108.9	96.5	90.3	1.02	0.87
Manning	129.8	80.7	55.4	125.0	50.7	88.8	99.9	90.0	1.35	0.96
Quantum 547	112.3	67.6	74.8	121.0	53.1	90.8	110.5	90.0	1.08	0.89
Yuma	120.2	63.0	56.7	117.0	55.7	110.1	99.1	88.8	1.26	0.93
Jules	111.7	69.9	54.0	125.1	62.1	81.1	109.5	87.6	1.14	0.85
Neeley	120.9	81.4	64.5	108.1	62.5	83.4	92.1	87.5	0.92	0.92
MT9222	125.8	73.8	59.0	110.5	63.3	77.6	99.0	87.0	1.06	0.89
Quantum 542	124.2	69.1	69.8	108.1	57.7	88.6	91.1	86.9	1.02	0.95
Quantum 566	119.5	60.5	69.4	108.9	47.2	89.0	110.0	86.4	1.18	0.90
WI88-275	118.2	63.7	54.8	115.3	55.3	111.3	81.0	85.7	1.20	0.87
Arapahoe	110.9	67.9	67.6	110.5	35.8	100.7	105.4	85.5	1.22	0.90
MT91192	107.4	68.7	57.2	108.9	60.8	92.9	96.0	84.6	0.96	0.96
Winridge	119.6	65.6	58.6	122.6	51.6	87.2	87.4	84.6	1.23	0.95
Meridian	112.3	69.8	54.6	120.2	55.8	77.5	97.3	83.9	1.12	0.91
MT8719	115.4	74.1	61.4	111.3	39.8	93.9	88.9	83.5	1.19	0.97
Halt	113.6	58.3	62.6	104.0	49.7	105.9	86.5	83.0	1.10	0.90
Alliance	108.3	63.4	67.0	99.2	56.1	77.9	105.5	82.5	0.89	0.85
MT9432	99.5	82.0	62.0	102.4	54.1	86.1	90.9	82.4	0.78	0.92
Blizzard	118.2	81.7	56.8	100.9	54.5	74.8	85.0	81.7	0.94	0.85
NuWest	106.8	63.0	62.4	114.5	50.3	87.2	83.5	81.1	1.04	0.94
Tiber	104.7	78.9	55.5	100.9	53.5	94.4	78.4	80.9	0.87	0.89
Karl 92	101.9	59.1	53.4	101.7	50.0	107.5	88.4	80.3	1.04	0.85
AC Readymade	102.3	73.0	62.2	98.4	45.2	100.5	79.0	80.1	0.90	0.86
Lamar	113.6	63.5	60.0	92.0	49.4	82.7	96.2	79.6	0.98	0.92
MT88046	101.2	63.9	57.9	93.6	49.7	107.7	82.4	79.5	0.91	0.81
Redwin	98.7	65.5	61.1	102.4	49.8	97.5	77.8	79.0	0.88	0.89
Weston	115.7	63.6	49.1	87.9	59.2	85.9	88.1	78.5	0.94	0.86
Rocky	118.7	70.8	61.5	90.3	53.2	64.8	85.3	77.8	0.87	0.77
MTS92055	107.3	66.8	50.4	104.9	46.5	80.6	86.7	77.6	1.08	0.99
MTS92042	110.6	66.1	49.5	103.3	46.7	76.8	90.3	77.6	1.10	0.97
BZ6W90-422	124.2	45.9	36.1	112.1	40.4	95.7	88.5	77.6	1.58	0.95
MT91051	107.1	73.3	62.5	100.0	53.1	76.1	66.7	77.0	0.79	0.80
Vista	94.2	50.6	62.9	93.6	39.2	93.4	98.6	76.1	0.98	0.80
Norwin	95.6	71.9	55.4	94.4	52.8	75.7	85.8	75.9	0.75	0.95
MT8949	84.0	71.4	51.9	94.4	60.6	71.6	85.3	74.2	0.58	0.77
SDM00214	101.0	53.9	42.2	104.1	46.1	79.2	87.4	73.4	1.13	0.96
MTS92057	98.5	60.4	52.0	97.6	46.7	79.8	78.3	73.3	0.93	0.99
Centurk	106.4	65.2	60.2	83.1	52.4	57.6	83.9	72.7	0.72	0.71
Vanguard	97.4	57.2	50.8	109.7	34.7	78.1	75.6	71.9	1.14	0.94
W529	98.6	72.9	58.8	74.2	38.5	80.1	72.7	70.9	0.72	0.75
Ike	87.1	38.9	57.5	90.3	33.6	95.8	80.0	69.0	0.99	0.75
Agassiz	98.3	71.8	58.3	68.6	43.4	53.8	67.8	66.0	0.56	0.52
Roughrider	95.2	68.7	55.3	59.7	41.3	66.7	65.5	64.6	0.54	0.55
Norstar	83.0	66.8	59.4	79.1	37.6	55.2	69.1	64.3	0.58	0.71
Average	109.2	68.2	58.7	103.8	50.6	87.5	89.6	81.1	1.00	1.00
LSD (0.05)	10.9	9.6	6.9	18.7	13.9	21.2	11.6			
CV	5.8	8.2	6.8	11.1	17.0	14.0	8.0			

Table 2. 1995 Intrastate Winter Wheat Test (Exp. 35): 7 Location Test Weight (lb/bu)

Cultivar/ Line	Bozeman LAT	Havre LAT	Sidney LAT	Kalispell RCB	Moccasin RCB	Huntley LAT	Conrad 1 rep	7 Loc Total	BYX	RSQ
MT9432	62.5	64.7	61.5	61.0	62.7	62.0	61.5	62.3	0.61	0.69
Lamar	63.5	63.1	62.2	57.0	64.4	62.7	62.2	62.1	1.29	0.79
MTS92055	62.6	63.8	60.4	59.6	64.0	62.0	62.3	62.1	0.95	0.94
Redwin	61.5	64.0	61.5	61.9	62.1	62.9	60.3	62.0	0.29	0.17
MT8719	62.6	63.5	61.2	60.0	63.9	61.6	61.3	62.0	0.82	0.94
MTS92057	61.8	63.7	61.1	58.8	63.8	61.4	62.2	61.8	1.00	0.95
AC Readymade	61.5	64.1	62.0	59.0	62.2	63.2	60.6	61.8	0.77	0.58
Weston	63.7	64.1	60.5	57.5	63.5	60.6	62.0	61.7	1.36	0.91
Promontory	63.6	63.5	61.3	59.1	63.6	61.0	59.6	61.7	1.00	0.73
Vona	62.8	62.6	59.6	59.8	64.9	61.2	59.9	61.6	0.98	0.67
MT88046	61.5	62.3	61.3	57.3	63.3	62.7	62.3	61.5	1.00	0.70
Tiber	61.2	64.1	61.0	60.0	61.3	61.5	60.3	61.4	0.58	0.50
Bighorn	60.4	62.2	60.3	60.2	62.8	61.1	61.2	61.2	0.50	0.68
MTS92042	61.1	62.9	60.0	59.4	62.7	61.4	61.0	61.2	0.74	0.91
Norwin	62.1	63.4	60.6	58.3	63.0	60.2	59.9	61.1	1.05	0.91
Quantum 542	61.9	63.2	59.8	57.7	63.0	60.1	61.5	61.0	1.15	0.96
Yuma	61.6	61.8	58.8	58.7	64.3	60.8	60.8	61.0	1.01	0.76
Quantum 547	61.3	62.4	59.5	60.0	62.9	58.1	62.0	60.9	0.69	0.43
XNH1643	60.8	63.6	60.2	57.1	62.6	60.8	61.5	60.9	1.19	0.91
W529	61.2	64.0	60.7	56.3	62.0	62.1	60.1	60.9	1.30	0.80
Blizzard	61.7	63.9	58.5	59.4	62.6	60.3	60.2	60.9	0.99	0.75
Norstar	61.7	63.8	61.2	56.1	61.6	61.8	59.5	60.8	1.27	0.74
MT8949	58.8	63.4	60.2	59.3	62.3	60.3	61.6	60.8	0.70	0.49
Neeley	62.0	63.1	58.9	58.1	62.5	60.0	61.4	60.8	1.08	0.89
Alliance	60.4	62.4	60.0	57.0	64.0	59.8	61.1	60.7	1.25	0.88
Rocky	62.4	62.8	60.6	56.1	63.3	59.0	60.8	60.7	1.42	0.86
Vanguard	61.4	63.0	59.0	57.9	63.2	61.3	59.0	60.7	1.17	0.86
Kestrel	61.7	62.3	59.3	59.2	61.8	60.1	60.1	60.6	0.70	0.84
Karl 92	59.9	61.8	60.8	57.1	62.0	61.7	60.4	60.5	0.85	0.68
NuWest	61.1	62.2	60.0	60.3	60.4	59.5	59.8	60.5	0.30	0.30
Arapahoe	59.9	61.9	60.2	57.1	61.7	60.6	61.1	60.3	0.88	0.80
Vista	61.0	61.5	59.9	57.6	62.0	59.6	60.9	60.3	0.85	0.89
Centurk	62.2	62.0	60.1	54.9	63.8	58.8	60.4	60.3	1.63	0.86
Judith	61.1	62.3	56.8	59.1	61.4	60.5	60.7	60.3	0.78	0.51
MT9222	60.4	63.4	59.9	56.2	63.4	57.5	61.2	60.3	1.49	0.81
Quantum 566	59.7	61.6	59.8	58.4	62.1	58.7	61.3	60.2	0.71	0.64
MT91192	61.3	61.7	58.7	59.3	61.0	59.7	59.6	60.2	0.56	0.66
Ike	59.6	60.0	59.8	56.6	61.8	62.1	61.4	60.2	0.74	0.42
Agassiz	59.1	63.8	60.8	52.6	63.0	60.1	61.8	60.2	1.97	0.76
Roughrider	61.7	63.4	61.7	48.1	62.3	61.8	61.3	60.1	2.63	0.67
Halt	60.7	61.3	59.3	56.1	62.9	60.1	59.6	60.0	1.23	0.92
Meridian	61.1	62.7	58.4	58.7	60.7	59.4	58.9	60.0	0.78	0.67
MT91051	59.6	62.2	59.2	58.7	61.3	58.8	59.9	59.9	0.69	0.74
Manning	60.8	62.9	59.0	57.2	63.8	58.7	56.1	59.8	1.41	0.66
SDM00214	61.5	60.3	57.5	58.3	61.2	59.8	59.0	59.7	0.66	0.55
Winridge	61.4	62.3	58.3	58.8	60.0	59.2	57.5	59.7	0.67	0.42
WI88-275	60.6	61.4	56.2	56.8	62.6	60.0	59.6	59.6	1.25	0.77
Jules	59.3	61.8	56.8	58.0	63.1	57.1	60.6	59.5	1.11	0.58
BZ6W90-422	60.3	57.5	55.4	55.3	60.7	58.0	57.1	57.7	0.95	0.54
Average	61.3	62.7	59.8	57.9	62.6	60.4	60.5	60.7	1.00	1.00
LSD (0.05)	1.1	0.9	0.9	3.0	1.0	1.6				
CV	1.1	0.8	0.9	2.8	1.0	1.6				

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 Table 3 1995 Intrastate Winter Wheat Test (Exp. 35): 7 Location Heading Date (Julian)

Cultivar/ Line	Bozeman LAT	Havre LAT	Sidney LAT	Kalispell RCB	Moccasin RCB	Huntley LAT	Conrad Mean	7 Loc 1 rep	BYX	RSQ
Ike	165	164	164	152	168	157	175	163.5	0.97	0.94
Alliance	166	164	163	152	169	156	174	163.5	0.97	0.95
Karl 92	166	164	164	151	168	156	176	163.6	1.04	0.94
Halt	167	164	164	152	169	156	175	163.8	1.03	0.97
Vista	166	164	164	153	169	157	176	164.1	1.01	0.97
Vona	168	164	165	152	170	156	174	164.2	1.01	0.95
WI88-275	167	165	165	152	171	156	175	164.5	1.04	0.95
Yuma	167	164	165	152	171	158	176	164.7	1.04	0.97
Lamar	169	164	166	154	171	158	175	165.2	0.98	0.97
Arapahoe	168	164	166	154	171	159	176	165.5	0.98	0.99
MT88046	169	164	165	154	171	161	176	165.7	0.97	0.99
Quantum 547	168	164	165	155	171	161	176	165.7	0.93	0.99
Quantum 566	170	164	166	155	172	160	177	166.2	1.00	0.99
Judith	171	165	167	156	173	158	179	167.0	1.06	0.97
Quantum 542	170	164	166	155	173	162	179	167.0	1.07	1.00
Centurk	171	166	166	156	173	163	177	167.5	0.91	0.99
MTS92057	171	165	167	155	173	164	178	167.5	0.97	0.98
SDM00214	171	165	167	154	176	163	177	167.5	1.06	0.97
XNH1643	171	165	167	156	174	163	177	167.5	0.95	0.99
Rocky	171	165	167	156	174	164	177	167.6	0.94	0.99
Manning	172	165	167	156	175	164	176	167.8	0.92	0.96
MTS92055	172	166	167	157	173	164	178	167.9	0.91	0.98
MT9222	172	164	166	160	173	164	176	167.9	0.76	0.96
Promontory	171	166	167	156	176	164	177	168.1	0.94	0.96
Jules	172	165	167	157	175	164	177	168.2	0.92	0.99
Weston	171	165	169	156	175	164	179	168.4	1.02	0.99
Vanguard	172	166	168	157	175	162	180	168.5	1.04	0.99
MTS92042	171	165	168	159	173	164	179	168.5	0.90	1.00
MT8719	172	166	168	158	175	164	178	168.6	0.91	0.99
Bighorn	171	166	168	158	175	164	180	168.7	0.99	0.99
MT9432	172	166	167	158	175	164	180	168.9	0.98	1.00
MT91192	170	166	169	155	177	163	183	169.1	1.20	0.98
NuWest	173	166	168	157	176	164	180	169.1	1.06	1.00
BZ6W90-422	173	167	168	157	179	164	179	169.4	1.07	0.97
Roughrider	173	166	168	160	176	164	180	169.5	0.93	0.99
Kestrel	173	166	168	159	176	164	180	169.5	0.95	0.99
Redwin	173	166	167	160	175	165	183	169.7	1.02	0.97
Agassiz	174	165	169	161	175	165	180	169.8	0.90	0.97
MT8949	174	166	168	159	176	164	182	169.9	1.04	0.99
AC Readymade	174	166	168	159	175	165	182	170.0	1.01	0.98
MT91051	176	166	169	159	176	164	182	170.2	1.08	0.98
Tiber	174	166	169	159	176	165	182	170.2	1.05	0.99
Norwin	173	167	169	160	177	165	182	170.4	0.99	0.99
Neeley	175	167	169	159	178	165	183	170.8	1.09	0.99
Blizzard	175	167	170	160	178	165	183	171.1	1.07	0.99
Meridian	176	167	169	162	180	167	182	171.7	0.99	0.96
W529	177	167	170	162	180	166	186	172.5	1.12	0.96
Winridge	177	167	171	163	182	166	184	172.7	1.08	0.95
Norstar	178	168	171	163	181	167	186	173.3	1.10	0.96
Average	171.3	165.4	167.2	156.8	174.3	162.1	178.9	168.0	1.00	1.00
LSD (0.05)	1.6	1.1	0.8	1.7	1.4					
CV	2.3	0.4	0.3	0.7	0.5					

Table 4 1995 Intrastate Winter Wheat Test (Exp. 35): 7 Location Plant Height (in)

Cultivar/ Line	Bozeman LAT	Havre LAT	Sidney LAT	Kalispell RCB	Moccasin RCB	Huntley 1 rep	Conrad 1 rep	7 Loc Total	BYX	RSQ
Norwin	30	27	23	30	25	33	30	28.1	0.59	0.74
Karl 92	33	22	27	31	29	37	28	29.5	0.77	0.61
Halt	34	24	27	33	26	36	30	30.1	0.80	0.82
Vista	34	24	28	33	27	35	31	30.2	0.79	0.87
WI88-275	36	27	27	37	30	32	31	31.4	0.72	0.80
Bighorn	36	26	26	36	29	36	32	31.7	0.91	0.97
Yuma	36	26	27	35	28	37	32	31.7	0.90	0.93
Vona	36	24	28	37	30	38	33	32.3	0.99	0.91
Ike	36	25	30	35	30	38	33	32.6	0.81	0.80
SDM00214	34	29	26	37	31	37	34	32.7	0.77	0.89
Meridian	37	27	25	38	31	39	34	33.0	1.08	0.96
Jules	38	29	25	35	31	39	35	33.1	0.98	0.88
Alliance	36	27	30	36	32	40	34	33.6	0.82	0.81
Promontory	38	30	28	39	29	38	35	34.0	0.96	0.94
Manning	40	30	29	41	30	37	35	34.5	0.94	0.91
Quantum 547	38	30	29	40	33	38	34	34.6	0.85	0.91
XNH1643	40	30	30	40	32	37	36	34.9	0.87	0.95
BZ6W90-422	41	28	27	42	31	39	38	35.0	1.32	0.99
Judith	42	31	29	43	31	34	38	35.6	1.00	0.73
MT8719	39	31	29	42	31	40	38	35.8	1.02	0.96
Vanguard	41	32	29	43	33	37	37	35.9	0.93	0.87
Arapahoe	40	31	31	38	36	40	37	36.0	0.74	0.90
MT91192	42	31	27	41	32	42	38	36.1	1.19	0.96
MTS92042	41	31	29	43	34	36	40	36.3	0.98	0.83
Quantum 566	40	32	31	41	34	41	37	36.5	0.87	0.96
MT88046	40	27	33	39	35	42	39	36.5	0.96	0.83
MT9222	38	32	32	40	36	40	40	36.9	0.71	0.90
NuWest	41	31	30	43	33	42	41	37.2	1.13	0.98
MT8949	39	32	31	43	33	44	39	37.2	1.03	0.91
Neeley	41	33	30	43	36	38	41	37.4	0.87	0.86
Lamar	42	29	32	42	35	42	39	37.4	1.04	0.95
Centurk	42	30	33	43	35	42	39	37.6	1.00	0.93
MTS92055	43	30	31	43	34	42	43	38.0	1.23	0.97
Rocky	43	30	33	43	35	44	41	38.5	1.13	0.95
Kestrel	43	34	32	46	34	42	42	39.0	1.07	0.95
Quantum 542	43	33	33	43	37	43	41	39.1	0.95	0.98
MTS92057	43	35	33	41	37	43	42	39.1	0.82	0.91
AC Readymade	45	34	31	44	35	44	43	39.5	1.16	0.98
MT9432	43	34	32	45	36	45	44	39.9	1.16	0.97
Weston	44	33	33	43	38	45	45	40.0	1.10	0.92
Winridge	45	34	32	48	38	42	43	40.2	1.17	0.92
Redwin	46	34	32	47	36	47	42	40.6	1.28	0.98
Blizzard	46	33	33	46	37	44	46	40.6	1.23	0.96
MT91051	46	34	35	46	38	44	46	41.2	1.08	0.95
Tiber	47	34	34	47	37	49	45	41.7	1.30	0.97
Roughrider	47	36	35	47	39	47	49	43.0	1.19	0.94
Agassiz	52	37	36	46	38	47	47	43.3	1.16	0.88
W529	52	44	37	54	40	48	55	47.1	1.29	0.76
Norstar	48	45	36	57	40	50	55	47.3	1.33	0.71
Average	40.8	30.8	30.3	41.3	33.5	40.7	38.9	36.6	1.00	1.00
LSD (0.05)	1.0	2.6	2.0	2.2	2.5					
CV	0.3	4.9	3.9	3.3	4.6					

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 Table 5 1995 Intrastate Winter Wheat Test (Exp. 35): 4 Location Winter Survival (%)

Cultivar/ Line	Bozeman RCB	Havre LAT	Sidney LAT	Moccasin RCB	4 Loc Total	BYX	RSQ
Alliance	98	94	100	100	98.1	-0.55	0.19
MT8719	100	97	97	97	97.6	0.53	0.70
Jules	97	95	100	93	96.1	-0.38	0.11
Redwin	98	92	96	97	95.8	0.17	0.02
Roughrider	97	99	95	92	95.6	0.48	0.17
Quantum 566	98	93	95	95	95.5	0.44	0.30
Vista	97	92	97	95	95.2	-0.12	0.02
MT9222	98	94	93	93	94.7	0.87	0.79
Agassiz	95	95	95	93	94.6	0.08	0.06
Arapahoe	97	95	92	95	94.5	0.78	0.85
MT91051	98	91	92	97	94.5	0.85	0.36
Kestrel	93	93	98	93	94.4	-0.64	0.57
Judith	98	95	93	88	93.8	1.10	0.44
Ike	98	91	93	92	93.6	0.91	0.50
Norwin	95	91	95	93	93.5	-0.10	0.01
Rocky	95	93	92	93	93.4	0.45	0.89
Quantum 547	97	93	92	92	93.3	0.85	0.84
MT91192	92	95	91	95	93.3	0.01	0.00
MT8949	93	95	91	93	93.1	0.38	0.40
MT9432	98	93	92	88	93.0	1.25	0.58
Meridian	98	90	92	90	92.7	1.10	0.51
Centurk	95	90	93	92	92.2	0.34	0.14
Vona	95	94	88	92	92.1	1.13	0.93
Winridge	95	93	92	88	92.1	0.74	0.43
AC Readymade	95	92	92	88	91.8	0.62	0.33
Halt	93	93	88	92	91.6	0.83	0.78
Lamar	93	92	89	92	91.5	0.65	0.92
MTS92057	90	93	87	95	91.4	0.26	0.04
XNH1643	93	92	89	92	91.4	0.73	0.88
MT88046	95	92	89	90	91.3	1.08	0.98
NuWest	93	90	91	90	91.1	0.35	0.28
Neeley	90	92	91	92	91.1	-0.16	0.25
Karl 92	95	95	83	90	90.8	2.02	0.80
Manning	95	91	85	92	90.7	1.58	0.86
Quantum 542	93	90	88	90	90.3	0.86	0.93
Yuma	93	90	88	90	90.2	0.93	0.95
Tiber	93	90	90	87	90.1	0.70	0.42
Bighorn	97	90	85	88	90.0	1.90	0.97
Blizzard	93	92	85	88	89.7	1.36	0.93
MTS92055	97	89	85	88	89.7	1.86	0.91
MTS92042	95	92	82	88	89.3	2.15	0.95
Promontory	95	92	82	87	88.8	2.23	0.96
Norstar	92	87	90	85	88.3	0.40	0.11
WI88-275	92	87	84	88	87.6	1.21	0.83
Weston	92	92	66	88	84.5	3.96	0.66
W529	87	88	86	72	83.2	0.80	0.07
Vanguard	88	81	79	70	79.8	1.97	0.43
SDM00214	68	85	56	80	72.4	1.75	0.12
BZ6W90-422	90	82	36	82	72.2	8.30	0.71
Average	94.2	91.6	88.2	90.2	91.0	1.00	1.00
LSD (0.05)	5.8	5.1	8.7	10.1			
CV	3.8	3.4	6.0	6.9			

Table 6 1995 Intrastate Winter Wheat Test (Exp. 35): 4 Location Lodging Index (%)

Cultivar/ Line	Bozeman LAT	Sidney RCB	Kalispell RCB	Huntley RCB	4 Loc Total
SDM00214	4	0	0	0	1.3
Norwin	4	0	0	0	1.4
Karl 92	5	0	0	0	1.5
Redwin	9	0	0	0	3.0
Halt	-1	0	0	14	3.2
Vista	10	0	0	0	3.4
Vona	8	0	2	0	3.5
MT91192	11	0	0	0	3.6
WI88-275	3	0	0	12	3.7
MT88046	7	0	2	14	5.6
MT9432	3	0	3	18	5.9
AC Readymade	3	0	0	21	6.0
Meridian	21	0	0	0	7.0
Yuma	20	0	0	12	8.1
XNH1643	29	0	0	6	8.7
Judith	30	0	0	0	9.9
Tiber	20	0	5	20	11.4
Promontory	28	0	0	18	11.6
MT8719	26	0	0	23	12.0
MT91051	24	2	1	21	12.3
Ike	7	6	0	46	14.7
NuWest	26	0	0	33	14.8
Winridge	27	0	2	30	14.9
Bighorn	40	0	0	27	16.8
MTS92057	32	0	9	27	17.1
Arapahoe	23	0	1	50	18.5
BZ6W90-422	38	0	0	0	19.2
MT9222	31	0	0	47	19.5
Quantum 547	39	0	0	42	20.2
Kestrel	48	0	3	32	20.6
Neeley	45	0	19	0	21.1
Vanguard	35	0	29	0	21.5
MTS92055	34	0	20	48	25.4
Quantum 566	60	4	0	41	26.0
MTS92042	49	0	20	36	26.3
Blizzard	39	2	44	24	27.5
MT8949	30	0	27	54	27.7
Jules	47	0	4	63	28.6
Manning	79	0	2	50	32.7
Quantum 542	57	1	24	49	32.7
Lamar	38	3	57	43	35.1
Weston	47	0	61	35	35.6
W529	60	18	63	11	37.9
Alliance	23	2	0	90	38.2
Roughrider	60	11	68	54	48.3
Centurk	30	5	81	81	49.1
Rocky	52	0	58	90	49.8
Norstar	71	7	79	72	57.1
Agassiz	78	2	91	85	63.9
Average	30.8	5.3	15.9	29.2	20.1
LSD (0.05)	18.2	4.6	18.1		
CV	34.0	218.4	70.3		

Table 7 1995 Intrastate Winter Wheat Test (Exp. 35): 7 Location Protein (%)

Cultivar/ Line	Bozeman 1 rep	Havre 1 rep	Sidney 1 rep	Kalispell 1 rep	Moccasin 1 rep	Huntley 1 rep	Conrad 1 rep	7 Loc Total	BYX	RSQ
Ike	14.0	15.3	13.9	11.8	13.2	13.3	12.8	13.5	0.45	0.25
MT88046	15.5	13.1	14.3	11.5	11.4	14.2	12.4	13.2	1.19	0.85
Karl 92	15.0	14.4	13.5	11.3	11.9	12.5	12.4	13.0	0.70	0.40
Redwin	13.6	12.2	14.3	12.1	11.0	13.7	12.0	12.7	0.91	0.88
Vista	13.5	14.0	12.9	12.1	12.1	12.6	11.5	12.7	0.41	0.33
MTS92055	13.1	12.7	13.5	11.0	10.6	14.6	12.1	12.5	1.10	0.91
MTS92057	13.6	12.2	13.9	10.9	11.3	13.6	11.5	12.4	1.01	0.96
AC Readymade	13.5	12.0	14.5	10.5	10.7	13.5	11.6	12.3	1.21	0.92
Roughrider	13.5	11.6	13.3	10.8	11.0	14.1	11.5	12.3	1.05	0.91
Weston	13.1	11.9	13.6	11.3	10.7	13.6	11.3	12.2	0.97	0.96
Vanguard	12.6	12.2	13.3	11.2	10.4	13.7	11.8	12.2	0.91	0.92
Quantum 566	12.2	13.3	13.2	11.2	11.6	13.9	10.2	12.2	0.85	0.61
MT8719	13.5	12.4	13.2	11.2	10.3	13.8	11.2	12.2	1.08	0.95
MTS92042	13.1	12.1	13.6	11.0	10.0	13.7	11.0	12.1	1.18	0.98
W529	13.3	11.4	13.2	10.9	11.0	13.7	11.0	12.1	0.98	0.90
SDM00214	12.7	12.3	13.3	10.5	11.0	13.7	11.1	12.1	0.99	0.95
Agassiz	13.6	12.1	12.7	11.2	9.0	14.5	11.4	12.1	1.32	0.81
MT9432	13.0	12.4	13.6	10.1	9.7	13.5	11.5	12.0	1.31	0.98
MT9222	12.5	12.5	13.1	10.2	10.7	13.1	11.2	11.9	0.96	0.91
Norstar	13.0	9.9	13.4	11.0	9.8	14.2	11.1	11.8	1.22	0.72
Blizzard	14.3	11.3	12.6	11.0	9.9	13.3	10.5	11.8	1.16	0.78
Arapahoe	12.6	12.6	11.9	10.7	11.5	12.8	10.4	11.8	0.60	0.58
Centurk	12.7	10.9	13.1	11.6	9.3	13.9	10.4	11.7	1.18	0.78
Halt	12.6	12.8	12.4	10.5	9.8	12.0	11.6	11.7	0.75	0.65
Lamar	12.7	11.8	12.0	10.2	9.4	13.9	10.9	11.6	1.16	0.86
MT8949	12.0	10.5	13.8	10.6	9.9	13.8	10.4	11.6	1.23	0.82
Quantum 542	12.3	11.5	12.9	10.1	9.6	13.2	10.6	11.5	1.15	0.99
Rocky	12.4	11.1	12.2	10.5	9.7	14.2	10.3	11.5	1.16	0.83
Quantum 547	11.3	12.6	12.8	10.0	10.1	12.4	10.7	11.4	0.84	0.73
Tiber	12.7	11.3	13.2	9.4	9.2	12.9	10.1	11.3	1.40	0.99
Promontory	12.6	10.9	12.5	9.4	10.3	13.2	9.9	11.3	1.17	0.90
WI88-275	11.9	12.0	12.6	9.9	10.3	11.5	10.9	11.3	0.69	0.74
Judith	12.3	11.2	12.7	9.8	10.0	12.2	10.4	11.2	0.96	0.96
BZ6W90-422	10.8	11.8	12.8	10.0	10.0	12.2	10.9	11.2	0.74	0.70
MT91192	13.2	10.3	12.5	10.0	8.8	13.4	10.0	11.2	1.39	0.87
Neeley	12.9	10.8	12.9	9.3	9.4	12.1	10.0	11.1	1.24	0.92
Norwin	12.0	10.8	12.4	9.7	9.4	12.2	10.5	11.0	0.99	0.97
NuWest	12.3	9.9	13.2	10.0	9.1	12.7	9.7	11.0	1.29	0.87
Meridian	11.7	11.3	12.7	9.7	10.0	11.7	10.1	11.0	0.87	0.90
Manning	11.7	10.6	12.8	9.3	10.0	12.3	9.9	10.9	1.04	0.90
Alliance	11.5	11.4	11.4	9.8	9.9	11.8	10.5	10.9	0.64	0.90
Vona	11.6	11.0	11.6	10.2	9.6	11.5	10.5	10.9	0.62	0.93
Bighorn	11.5	10.8	12.7	9.7	9.3	12.4	10.1	10.9	1.06	0.96
Winridge	12.4	10.4	12.8	9.6	8.9	12.5	9.9	10.9	1.29	0.96
MT91051	12.1	10.2	13.0	8.9	9.3	12.3	9.8	10.8	1.30	0.91
XNH1643	10.6	12.1	11.3	8.9	8.9	11.8	10.0	10.5	0.88	0.67
Yuma	10.5	11.1	11.5	9.5	9.7	10.9	9.9	10.4	0.54	0.74
Kestrel	11.0	9.6	11.8	8.6	9.8	11.8	9.0	10.2	0.96	0.80
Jules	9.4	10.9	11.8	9.4	8.9	12.4	8.7	10.2	0.97	0.64
Average	12.6	11.7	12.9	10.4	10.2	13.0	10.8	11.6	1.00	1.00

Table 8

1995 Winter Wheat Disease Readings
Taken by Bill Grey, Bob Johnston and Don Mathre

	Septoria			Tan Spot	Stripe Rust	Leaf Rust	
	Kal	Havre	Mocc	Sid	Boz	Kal	Boz
AC Readymade	M	L-M	PLS	M	S	S	?
Agassiz	L	L-M	L	M	MR	I	MS
Alliance	L	L-M	M	M	S	HS	I
Arapahoe	M	L-M	M	M	S	R	MR
Bighorn	O	M	O-L	M	S	R	MR
Blizzard	L	L-M	M-H	M	I	S	I
BZ6W90-4	M-H	M	M-H	PLS	S	R	I
Centurk	L	M	L	M-H	S	I	I
Halt	O	M-H	L-M	M-H	S	HS	S
Hybritech542	O	M	M	M	S	S	I
Ike	O	M-H	M	M	S	R	MR
Judith	L	M	O-L	M-H	MS	MR	R
Jules	M	M	M-H	M-H	S	R	MR
Karl92	M	M-H	L-M	L	MR	R	I
Kestrel	H	L-M	PLS	M	R	R	MR
Lamar	M	M-H	M-H	M	S	R	I
Manning	O	L-M	M-H	M	I	HS	S
Meridan	M	L	M	M	S	HS	MS
MT7811	L	M	O	M	S	S	I
MT8719	O	L-M	M	VH	HS	R	I
MT88046	M	M	M-H	M-H	S	R	I
MT8949	O	M	PLS	VH	S	HS	I
MT91051	O	L-M	L	M	S	HS	I
MT91192	O	M	L	M-H	S	HS	I
MT9222	O	M	L	M	MR	S	I
MT9432	O	L-M	O-L	L	S	S	I
MTSF92042	O	L-M	L	M	S	HS	I
MTSF92055	L	M-H	M	M-H	S	HS	I
MTSF92057	O	L-M	L-M	L-M	S	S	I
Neeley	O	M	L-M	M-H	S	HS	I
Norstar	O	M-H	L	L-M	S	R	MR
Norwin	O	M	PLS	H	R	HS	S
Promintory	H	L-M	PLS	L-M	R	S	I
QT547	L	L-M	L-M	M	S	S	I

(Continued next page)

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 Table 8 (Cont.) 1995 Winter Wheat Disease Readings
 Taken by Bill Grey, Bob Johnston and Don Mathre

	Septoria			Tan Spot	Stripe Rust	Leaf Rust	
	Kal	Havre	Mocc	Sid	Boz	Kal	Boz
QT566	L	H	L	L-M	S	R	R
Redwin	M	M	PLS	PLS	S	S	I
Rocky	L	M-H	M	M	S	R	MR
Roughrider	M-H	M	H	HVH	S	HS	I
SMD00214	H	M	M	L-M	MR	S	MR
Tiber	M	L-M	L	L-M	S	HS	I
Vanguard	0	M	0-L	H	S	S	I
Vista	L-M	M-H	L-M	M	S	R	I
Vona	0	M-H	L	M-H	S	R	MR
W529	L	L-M	0-L	M	S	MR	MR
Weston	M	M	L	M	MR	HS	MS
WI88-275	0	M	L	M-H	R	MR	R
Winridge	0	M	M	M	MR	MR	MR
XNB1643	0	M	0-L	VH	S	HS	I
Yuma	0	M-H	M	M-H	S	R	I

Code:

Leaf Spots - Septoria and Tan Spot

- 0 - No disease
- 0-L - Very low level of disease
- L - Low level of disease
- L-M - Low-Moderate level of disease
- M - Moderate level of disease
- M-H - Moderate-High level of disease
- H - High level of disease
- VH - Very high level of disease
- PLS - Physiological leaf spot

Rust Reactions - Stripe and Leaf Rusts

- R - Resistant
- MR - Moderately Resistant
- I - Intermediate
- MS - Moderately Susceptible
- S - Susceptible
- HS - Hypersensitive Reaction