

PROJECT TITLE: Montana Intra-State Winter Wheat Variety Performance

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OBJECTIVES:

To evaluate the agronomic performance of new and existing varieties and experimental lines of winter wheat under various growing conditions and environments in Montana.

RESULTS:

The 1997 Montana Intra-State Winter Wheat Yield Trial was grown at seven rainfed (dryland) locations with 48 varieties/lines in replicated multi-row plots. Fall-winter moisture was adequate at most locations and most had average or above snow cover. Williston experienced severe spring drought and Havre's February- mid May precip. was below average. Summer precip. was above average at Kalispell, Conrad and Moccasin. **Yields** were 10 – 50% above average at Conrad, Kalispell, Bozeman, Moccasin, and Huntley. Havre yields were near average and Williston yields were < 50% of average. QT566 and XNH1824 were the only varieties ranking in the top 7 for yield at four locations and MT 9514 was the only variety to rank first at two locations. Morgan had the highest mean yield across the seven locations (Table 1). **Test weights** were above average at all locations except Williston where 14 varieties had test weights lower than 58 lbs/bu (Table 2). **Protein** levels were near normal for most locations with McGuire having the highest overall average at 13.3%. Moccasin had very low proteins because grain yields were 45% higher than expected on shallow soils. **Heading Dates** averaged 10 days from first to last with the widest range being 14 days at Moccasin (Table 4). **Plant height** overall means ranged from 41" for Norstar down to 26" for Norwin and Rampart and QT566 were intermediate for height at 32" (Table 5). **Winter kill** was severe at Williston and moderate at Moccasin (Table 6). **Sawfly** severely cut the Havre winter wheat nursery providing the opportunity to evaluate numerous winter wheat for resistance. Rampart and Vanguard had little sawfly stem cutting (data not presented).

SUMMARY:

The 1997 Montana Intra-State Winter Wheat Variety Trial provided relative performance at high yield levels. There was good winter hardiness evaluation at Williston. The Havre location provided an evaluation of sawfly resistance of forty-eight winter wheat lines.

FUTURE PLANS:

The Montana Intra-State Winter Wheat Variety Trial will be continued in 1998.

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Table 1. 1997 Intrastate Winter Wheat Test (Exp. 35): 7 Location Yield (bu/ac)

* = new for 1997

Entry	Cultivar/Line	Bozeman LAT	Havre LAT	Williston RCB	Kalispell LAT	Moccasin LAT	Huntley RCB	Conrad RCB	7 Loc. Average	BYX	RSQ
46	Morgan	100.8	49.6	23.7	121.6	70.0	96.7	75.5	76.8	1.14	0.98
42	* MT9514	110.6	48.0	26.1	114.7	78.2	82.8	73.5	76.3	1.04	0.89
7	Quantum 542	89.8	57.0	25.4	107.3	65.2	104.4	83.5	76.1	1.00	0.97
45	* XNH1824	104.3	45.5	25.5	108.1	72.8	101.5	73.5	75.9	1.09	0.98
44	QT566	90.5	49.1	27.6	116.4	68.2	94.5	81.6	75.4	1.03	0.98
11	Winridge	105.7	42.8	19.2	113.6	70.9	102.6	72.2	75.3	1.21	0.98
18	Kestrel	101.5	45.2	23.7	123.9	66.0	91.6	74.9	75.2	1.16	0.96
22	Promontory	99.6	43.1	15.8	126.1	62.8	102.5	76.2	75.2	1.31	0.98
1	Neeley	98.2	42.6	22.2	110.5	77.2	99.0	74.5	74.9	1.11	0.98
9	Blizzard	107.3	44.1	23.1	119.3	60.7	96.1	72.0	74.6	1.19	0.96
5	Judith	88.2	47.7	21.7	105.7	72.7	105.2	75.5	73.8	1.06	0.98
43	* MT9524	92.1	47.9	23.0	105.5	73.2	98.6	75.2	73.7	1.02	0.99
2	Rocky	92.5	50.2	20.7	109.9	65.3	99.7	76.1	73.5	1.08	1.00
20	NuWest	93.4	49.8	20.0	104.5	71.4	96.5	72.2	72.6	1.03	0.99
10	Manning	101.0	44.9	14.8	115.1	64.3	88.5	74.2	71.8	1.18	0.98
40	MT9432	89.2	45.5	23.7	103.6	63.7	99.9	75.7	71.6	1.02	0.99
38	MT91192	96.2	45.3	17.5	94.6	66.9	102.5	77.0	71.4	1.06	0.96
8	Bighorn	85.8	49.6	19.2	117.9	63.3	89.8	73.1	71.2	1.08	0.96
27	* ND9257	89.1	47.8	22.4	109.8	67.4	91.7	69.3	71.1	1.02	0.99
6	Centurk	88.2	49.8	15.5	104.3	65.8	94.6	77.2	70.8	1.06	1.00
23	Bonneville	104.4	46.4	21.5	111.7	55.9	85.9	69.9	70.8	1.09	0.93
37	Akron	87.6	45.3	21.9	92.9	66.6	101.3	78.2	70.5	0.97	0.96
41	MTW9441	79.3	52.7	21.1	103.2	64.6	96.6	76.0	70.5	0.96	0.97
28	* ND9272	83.1	42.1	15.7	109.0	69.0	98.4	73.9	70.2	1.12	0.99
29	Pronghorn	82.1	41.8	24.7	106.7	65.8	88.1	79.1	69.8	0.97	0.97
47	* S86-1533	95.3	45.3	20.7	99.3	68.1	93.3	66.8	69.8	1.00	0.97
3	Tiber	84.8	47.1	24.1	97.1	64.6	92.8	74.3	69.3	0.91	0.99
31	Allance	77.5	43.7	26.8	102.1	63.3	92.8	78.8	69.3	0.91	0.96
32	Niobrara	76.0	45.7	21.7	93.6	68.5	99.5	78.9	69.1	0.92	0.94
19	Erhardt	83.9	46.9	20.4	108.4	63.5	88.8	71.4	69.0	1.00	0.98
26	* SD89153 (Crimson)	84.8	42.0	20.7	108.7	66.0	89.8	71.2	69.0	1.03	0.98
34	Jules	86.0	46.2	26.3	97.7	67.0	83.5	76.3	69.0	0.86	0.98
35	Yuma	80.9	45.8	14.8	98.4	65.9	96.8	79.4	68.9	1.03	0.97
12	Vanguard	85.5	48.3	21.7	100.1	57.6	84.5	73.8	67.3	0.92	0.98
39	MT9222	78.3	44.2	21.7	86.3	66.5	96.4	69.7	66.1	0.87	0.95
24	Elkhorn	94.4	42.6	20.2	86.2	63.2	84.7	68.4	65.7	0.90	0.95
13	Rampart	84.5	45.2	17.1	94.4	59.8	81.3	76.5	65.5	0.93	0.98
33	Nekota	65.1	37.7	17.1	107.9	63.4	92.6	72.2	65.1	1.03	0.92
30	Vista	73.1	42.4	19.5	97.9	57.5	85.2	79.1	65.0	0.92	0.95
25	* SD89119 (Tandem)	74.2	42.0	19.1	94.9	59.0	91.0	73.6	64.8	0.93	0.97
17	Norstar	92.8	41.3	24.8	93.8	56.2	83.4	60.1	64.6	0.90	0.95
36	Halt	71.3	44.3	19.6	88.2	59.2	89.7	74.2	63.8	0.85	0.95
14	Agassiz	88.3	50.5	18.9	76.5	59.9	83.7	64.4	63.2	0.78	0.89
21	McGuire	82.8	39.1	16.6	103.4	51.9	84.8	60.0	62.7	1.03	0.98
4	Redwin	66.6	40.7	21.9	98.2	57.6	77.2	61.7	60.5	0.83	0.94
16	Roughrider	80.0	47.5	21.2	71.3	57.9	79.5	65.2	60.4	0.69	0.91
15	Norwin	71.7	42.4	18.8	74.5	55.5	83.5	66.0	58.9	0.75	0.94
48	BZ9W92-712-a	73.2	47.2	8.9	75.6	51.4	83.6	70.2	58.6	0.85	0.91
	Average	88.0	45.7	20.6	102.3	64.5	92.3	73.2	69.5	1.00	1.00
	LSD (0.05)	10.9	7.3	5.7	17.5	8.5	9.1	10.0			
	CV	7.0	9.4	17.0	9.9	7.6	6.1	8.4			

Table 2. 1997 Intrastate Winter Wheat Test (Exp. 35): 7 Location Test weight (lb/bu)

* = new for 1997

Entry	Cultivar/Line	Bozeman LAT	Havre LAT	Williston bulk	Kalispell bulk	Moccasin LAT	Huntley RCB	Conrad bulk	7 Loc. Average	BYX	RSQ
43	* MT9524	62.0	64.4	60.9	62.7	63.3	62.4	62.9	62.7	0.67	0.84
26	* SD89153 (Crimson)	62.7	63.6	59.9	62.4	63.9	62.8	63.2	62.6	0.75	0.71
40	MT9432	62.7	63.9	60.5	62.3	62.6	62.4	62.8	62.5	0.66	0.92
19	Erhardt	61.5	64.1	58.7	61.3	62.8	61.6	63.3	61.9	1.15	0.93
6	Centurk	61.9	64.7	58.9	61.1	60.8	61.2	63.0	61.7	1.18	0.92
22	Promontory	62.1	64.6	59.8	59.1	62.3	61.7	62.2	61.7	1.04	0.73
2	Rocky	61.8	64.5	59.0	60.7	60.4	61.4	63.3	61.6	1.18	0.88
3	Tiber	60.4	63.7	59.7	61.3	62.6	62.0	61.1	61.6	0.75	0.66
17	Norstar	61.4	62.3	58.7	62.0	62.4	61.4	62.3	61.5	0.71	0.65
23	Bonneville	59.8	63.7	57.7	61.5	62.7	62.1	62.7	61.5	1.24	0.79
48	BZ9W92-712-a	61.6	64.8	57.5	59.1	62.7	62.7	62.4	61.5	1.53	0.85
9	Blizzard	61.3	63.7	58.4	61.6	61.4	61.8	61.7	61.4	1.00	0.89
25	* SD89119 (Tandem)	60.5	64.0	60.0	60.6	60.8	61.1	62.0	61.3	0.84	0.83
7	Quantum 542	61.2	63.3	58.4	60.7	60.7	61.4	62.5	61.2	1.02	0.95
13	Rampart	61.5	63.4	58.2	60.7	61.4	61.0	62.0	61.2	1.05	0.96
21	McGuire	61.2	63.3	57.8	62.2	60.9	61.5	61.6	61.2	1.00	0.76
33	Nekota	58.9	64.1	60.1	61.4	60.6	60.4	63.0	61.2	0.89	0.54
12	Vanguard	61.2	63.1	58.8	60.5	61.1	60.8	62.2	61.1	0.90	0.97
16	Roughrider	61.5	63.0	58.0	60.3	61.7	60.8	62.3	61.1	1.05	0.91
29	* Pronghorn	60.5	63.8	59.2	60.8	60.2	60.2	63.3	61.1	1.03	0.78
14	Agassiz	60.4	63.3	58.2	60.3	61.3	60.8	62.5	61.0	1.10	0.97
37	Akron	59.4	63.7	58.5	60.8	61.2	60.6	63.0	61.0	1.15	0.85
39	MT9222	61.5	63.0	59.4	60.5	60.4	60.7	61.8	61.0	0.73	0.86
41	MTW9441	60.5	63.4	59.7	59.8	60.6	61.4	61.3	61.0	0.76	0.80
46	* Morgan	60.8	63.2	58.5	60.8	61.3	60.6	62.1	61.0	0.96	0.96
8	Bighorn	58.9	63.7	59.4	60.6	60.5	61.0	61.8	60.9	0.91	0.71
15	Norwin	60.6	63.9	59.0	57.8	61.2	61.4	62.1	60.9	1.15	0.71
1	Neeley	60.9	62.4	57.0	60.5	62.8	60.8	61.5	60.8	1.08	0.70
4	Redwin	58.5	63.1	59.7	61.6	62.9	61.8	57.7	60.8	0.41	0.08
35	Yuma	60.9	64.0	58.6	58.9	60.2	60.7	62.0	60.8	1.16	0.87
20	NuWest	60.6	63.2	58.8	59.8	60.5	61.2	60.8	60.7	0.87	0.89
45	* XNH1824	61.8	63.6	59.1	58.5	59.9	60.2	61.1	60.6	0.94	0.65
10	Manning	60.5	63.5	58.9	58.7	60.4	60.3	61.2	60.5	0.99	0.83
24	Elkhorn	60.9	62.0	56.5	60.3	60.8	60.6	62.1	60.5	1.15	0.82
31	Alliance	60.0	63.7	58.7	59.2	59.5	59.7	62.7	60.5	1.15	0.79
42	* MT9514	61.9	61.8	57.3	60.8	59.8	59.7	61.5	60.4	0.87	0.63
44	QT566	59.7	63.1	57.4	60.2	59.4	60.4	62.6	60.4	1.24	0.88
11	Winridge	60.7	61.8	57.2	61.6	60.7	60.9	59.2	60.3	0.71	0.42
27	* ND9257	59.6	62.4	57.8	60.6	59.6	60.1	61.9	60.3	0.96	0.85
28	* ND9272	59.4	62.6	57.6	60.3	59.5	60.5	62.0	60.3	1.06	0.86
30	Vista	59.9	62.7	58.7	59.2	59.6	59.3	62.8	60.3	0.98	0.72
18	Kestrel	60.4	62.0	57.5	60.1	59.5	60.3	60.6	60.1	0.86	0.88
32	Niobrara	58.9	63.2	58.5	58.6	59.6	59.5	61.5	60.0	1.05	0.80
47	* S86-1533	60.2	62.2	57.6	59.5	59.8	60.1	60.4	60.0	0.89	0.95
5	Judith	59.3	62.3	58.9	59.1	59.6	60.0	60.0	59.9	0.67	0.76
36	Halt	59.5	63.1	58.3	57.3	58.7	59.9	62.7	59.9	1.21	0.67
38	MT91192	60.3	61.3	56.5	58.1	60.5	59.9	60.5	59.6	1.03	0.82
34	Jules	59.4	63.4	57.1	56.8	59.7	59.4	59.5	59.3	1.29	0.78
	Average	60.7	63.3	58.4	60.3	61.0	60.9	61.9	60.9	1.00	1.00
	LSD (0.05)	0.9	0.7			0.8	0.8				
	CV	0.8	0.6			0.8	0.8				

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 Table 3. 1997 Intrastate Winter Wheat Test (Exp. 35): 6 Location Protein (%)

* = new for 1997

Entry	Cultivar/Line	Bozeman bulk	Havre bulk	Kalispell bulk	Moccasin bulk	Huntley bulk	Conrad bulk	6 Loc. Average	BYX	RSQ
21	McGuire	13.9	14.4	13.4	9.5	15.5	13.1	13.3	1.34	0.98
4	Redwin	13.3	13.4	12.8	9.6	14.5	13.0	12.8	1.08	0.97
13	Rampart	13.6	13.3	12.8	9.9	14.4	12.5	12.8	1.01	0.97
25	* SD89119 (Tandem)	13.7	13.3	12.9	9.9	13.7	13.1	12.8	0.93	0.95
19	Erhardt	13.1	13.2	12.4	9.6	14.1	12.7	12.5	1.01	0.98
23	Bonneville	12.7	13.6	12.0	9.4	14.2	12.9	12.5	1.09	0.96
12	Vanguard	13.0	13.7	11.8	9.5	14.3	12.2	12.4	1.11	0.97
14	Agassiz	13.3	12.8	12.3	8.8	14.1	12.9	12.4	1.19	0.95
16	Roughrider	12.9	13.1	12.4	9.2	14.0	12.3	12.3	1.08	0.98
24	Elkhorn	12.8	12.7	12.1	9.7	13.6	12.5	12.2	0.87	0.97
26	* SD89153 (Crimson)	13.6	13.0	12.5	8.7	13.6	11.7	12.2	1.19	0.94
40	MT9432	13.0	13.1	12.1	9.2	13.7	12.0	12.2	1.05	0.99
36	Halt	12.7	13.2	11.7	9.3	13.5	12.1	12.1	1.00	0.99
30	Vista	12.6	14.4	11.7	9.6	13.0	11.2	12.1	0.95	0.76
9	Blizzard	13.3	12.3	12.2	8.6	14.0	12.3	12.1	1.19	0.93
3	Tiber	12.8	12.5	11.7	9.6	13.7	11.4	12.0	0.90	0.93
29	* Pronghorn	14.5	12.7	11.6	8.4	13.2	11.7	12.0	1.27	0.86
33	Nekota	12.7	13.1	12.0	9.6	12.9	12.0	12.0	0.84	0.97
39	MT9222	13.3	12.6	11.7	8.7	12.9	12.0	11.9	1.07	0.95
43	* MT9524	12.9	12.7	11.7	8.9	13.5	11.6	11.9	1.07	0.98
17	Norstar	12.1	12.5	11.5	8.5	13.6	12.5	11.8	1.12	0.94
45	* XNH1824	13.1	12.5	11.5	8.6	13.0	12.3	11.8	1.09	0.95
7	Quantum 542	12.7	12.7	11.3	8.9	13.0	11.1	11.6	1.01	0.97
28	* ND9272	11.8	12.8	11.6	8.7	13.1	11.6	11.6	1.01	0.96
44	QT566	13.0	13.1	11.6	8.6	12.9	10.6	11.6	1.11	0.89
1	Neeley	12.6	12.4	11.0	7.9	13.3	11.7	11.5	1.27	0.99
6	Centurk	12.2	12.0	11.3	9.1	12.8	11.6	11.5	0.84	0.98
8	Blghorn	12.0	12.5	11.4	9.3	12.9	11.0	11.5	0.83	0.95
20	NuWest	12.3	12.5	11.4	7.9	13.0	11.9	11.5	1.21	0.98
27	* ND9257	12.0	12.1	11.0	8.8	13.2	11.9	11.5	0.97	0.96
41	MTW9441	12.1	12.6	11.4	8.2	13.3	11.6	11.5	1.17	0.99
48	BZ9W92-712-a	11.7	12.2	11.6	11.4	12.1	10.1	11.5	0.17	0.11
38	MT91192	12.5	12.5	11.1	8.0	13.0	11.4	11.4	1.20	0.99
2	Rocky	12.6	12.4	11.5	7.6	12.6	11.3	11.3	1.24	0.96
15	Norwin	11.8	12.3	11.1	8.7	12.2	11.6	11.3	0.87	0.97
5	Judith	11.6	12.5	10.8	8.4	12.8	11.9	11.3	1.03	0.95
46	Morgan	11.9	11.8	10.6	9.1	12.8	11.4	11.3	0.82	0.94
11	Winridge	11.9	11.7	11.2	8.9	12.4	11.4	11.2	0.80	0.98
10	Manning	11.8	12.5	10.7	9.0	11.8	10.6	11.1	0.77	0.87
47	* S86-1533	11.9	11.6	10.5	8.7	12.3	11.7	11.1	0.85	0.93
22	Promontory	11.4	11.9	10.5	9.6	12.0	10.6	11.0	0.58	0.88
32	Niobrara	12.0	12.2	10.3	8.0	12.4	10.6	10.9	1.09	0.97
35	Yuma	10.8	11.2	10.1	9.0	11.8	11.1	10.7	0.62	0.89
37	Akron	11.0	12.0	10.4	8.3	12.1	10.6	10.7	0.90	0.95
31	Alliance	11.3	12.3	10.3	7.6	12.1	10.2	10.6	1.11	0.95
18	Kestrel	10.7	11.4	9.8	7.9	12.2	10.7	10.5	0.95	0.94
42	* MT9514	11.3	11.0	10.1	7.0	11.9	10.7	10.3	1.14	0.98
34	Jules	10.2	11.4	9.5	7.2	11.5	11.2	10.2	1.01	0.86
	Average	12.4	12.6	11.4	8.9	13.1	11.7	11.7	1.00	1.00

Table 4. 1997 Intrastate Winter Wheat Test (Exp. 35): 6 Location Heading Date (Julian)

* = new for 1997

Entry	Cultivar/Line	Bozeman LAT	Havre LAT	Williston RCB	Kalispell LAT	Moccasin LAT	Conrad 1 rep	7 Loc. Average	BYX	RSQ
17	Norstar	175.3	163.0	161.0	167.8	177.1	173	169.5	1.25	0.98
23	Bonheville	174.7	162.3	161.0	167.2	177.1	173	169.2	1.28	0.99
9	Blizzard	173.0	161.2	161.0	165.4	177.3	171	168.2	1.26	0.98
11	Winridge	173.4	160.3	160.7	166.8	177.6	170	168.1	1.29	0.96
24	Elkhorn	172.0	160.7	159.3	166.1	175.4	170	167.2	1.20	0.98
42	* MT9514	170.7	161.1	160.3	164.3	174.5	170	166.8	1.09	0.99
46	Morgan	170.0	160.7	159.7	164.9	175.5	170	166.8	1.16	0.98
38	MT91192	169.3	160.8	160.0	164.5	175.5	170	166.7	1.13	0.97
4	Redwin	170.7	161.0	160.0	165.4	173.8	169	166.6	1.04	0.98
1	Neeley	169.7	160.6	161.0	165.1	173.3	169	166.5	0.96	0.99
18	Kestrel	170.2	160.1	159.3	163.9	174.5	171	166.5	1.19	0.99
3	Tiber	170.0	159.8	159.7	165.7	173.4	169	166.2	1.07	0.99
15	Norwin	169.3	160.8	160.0	163.7	174.6	169	166.2	1.07	0.97
14	Agassiz	170.0	159.9	160.3	163.3	172.7	169	165.9	1.03	0.98
27	* ND9257	169.9	160.0	159.3	163.2	172.9	170	165.9	1.10	1.00
41	MTW9441	168.7	160.2	160.3	163.4	172.1	169	165.6	0.95	0.99
13	Rampart	167.0	159.5	160.0	164.7	173.7	168	165.5	0.99	0.94
16	Roughrider	169.4	158.9	159.3	163.8	170.9	170	165.4	1.03	0.98
12	Vanguard	167.5	158.9	158.7	163.4	172.7	168	164.9	1.05	0.98
19	Erhardt	168.1	158.8	160.0	163.2	171.6	168	164.9	0.96	0.98
48	BZ9W92-712-a	168.2	158.6	158.7	163.4	172.7	168	164.9	1.08	0.99
34	Jules	168.3	158.9	158.3	163.7	171.5	168	164.8	1.03	1.00
22	Promontory	167.0	160.2	158.3	161.7	171.3	169	164.6	0.98	0.96
40	MT9432	168.1	158.7	158.3	163.2	170.1	169	164.6	1.00	0.99
43	* MT9524	168.1	158.5	158.7	163.0	170.8	168	164.5	0.99	0.99
8	Bighorn	167.0	158.5	158.7	163.8	170.7	168	164.4	0.96	0.99
20	NuWest	168.4	159.3	160.0	162.6	171.3	165	164.4	0.86	0.91
28	* ND9272	168.7	159.5	159.3	162.3	169.9	167	164.4	0.88	0.98
10	Manning	167.7	157.9	158.7	163.2	171.3	166	164.1	0.99	0.97
5	Judith	167.3	158.2	157.7	162.7	169.0	168	163.8	0.95	0.98
47	* S86-1533	167.1	158.1	158.3	161.4	169.0	168	163.6	0.94	0.98
26	* SD89153 (Crimson)	166.7	158.1	158.0	161.8	169.3	167	163.5	0.93	1.00
2	Rocky	166.5	158.0	158.0	162.4	168.5	167	163.4	0.88	0.99
6	Centurk	166.4	158.1	157.7	162.3	168.9	167	163.4	0.91	1.00
39	MT9222	166.3	157.5	158.0	163.3	168.5	167	163.4	0.89	0.98
7	Quantum 542	167.0	157.1	157.3	161.1	168.2	167	163.0	0.96	0.98
44	QT566	166.4	156.2	155.7	162.4	167.9	167	162.6	1.03	0.97
45	* XNH1824	165.5	157.4	156.0	161.6	168.3	167	162.6	0.97	0.98
37	Akron	165.1	157.0	156.7	162.0	167.4	167	162.5	0.90	0.97
25	* SD89119 (Tandem)	165.3	156.9	156.0	161.6	167.0	167	162.3	0.93	0.97
35	Yuma	164.0	156.0	155.7	159.9	166.4	167	161.5	0.93	0.94
21	McGuire	164.6	155.7	156.0	160.2	165.8	166	161.4	0.90	0.97
32	Niobrara	164.1	155.6	156.3	159.8	165.1	164	160.8	0.79	0.98
30	Vista	163.9	155.4	155.7	159.3	165.4	164	160.6	0.84	0.99
33	Nekota	163.7	156.1	154.7	160.6	164.4	164	160.6	0.79	0.95
31	Alliance	163.3	156.2	155.0	159.9	164.9	164	160.5	0.79	0.97
29	* Pronghorn	162.7	155.8	154.7	159.0	163.4	164	159.9	0.75	0.94
36	Halt	163.7	155.2	154.0	159.0	163.4	164	159.9	0.83	0.93
	Average	168.0	158.7	158.4	163.0	170.8	168	164.5	1.00	1.00
	LSD (0.05)	1.0	1.5	1.0	1.0	1.4				
	CV	0.4	0.6	8.1	0.4	0.5				

Table 5. 1997 Intrastate Winter Wheat Test (Exp. 35): 6 Location Plant Height (in)

* = new for 1997

Entry	Cultivar/Line	Bozeman LAT	Havre LAT	Williston RCB	Kalispell RCB	Moccasin LAT	Conrad 1 rep	6 Loc. Average	BYX	RSQ
17	Norstar	48.5	32.8	25.5	52.3	45.3	42	41.1	1.25	0.99
14	Agassiz	46.7	32.4	23.0	46.7	41.8	40	38.4	1.12	0.96
16	Roughrider	43.4	29.9	23.9	49.2	42.1	41	38.2	1.17	1.00
24	Elkhorn	45.0	26.2	21.4	49.6	41.1	40	37.2	1.36	0.99
23	Bonneville	41.3	29.1	20.9	47.8	39.7	40	36.5	1.20	0.99
3	Tiber	42.5	27.5	22.6	47.4	39.7	39	36.4	1.17	1.00
11	Winridge	41.4	27.6	19.3	48.5	39.5	37	35.5	1.30	1.00
43	* MT9524	40.9	28.6	20.6	45.0	39.0	37	35.2	1.11	0.99
18	Kestrel	40.3	29.6	22.1	45.3	37.6	36	35.1	1.02	1.00
4	Redwin	39.2	28.0	21.3	46.9	38.0	37	35.0	1.11	0.98
9	Blizzard	39.2	26.8	18.9	47.3	38.6	37	34.6	1.25	0.99
40	MT9432	38.0	27.2	22.2	44.1	38.8	37	34.5	1.01	0.99
42	* MT9514	40.5	29.0	20.0	42.1	38.4	35	34.2	1.02	0.97
27	* ND9257	40.0	27.5	21.8	42.6	37.3	35	34.0	0.98	1.00
6	Centurk	39.4	24.4	19.3	44.6	37.2	37	33.7	1.19	0.99
1	Neeley	39.6	26.1	19.7	45.0	37.4	34	33.6	1.15	0.99
12	Vanguard	38.8	26.7	21.0	43.3	37.8	34	33.6	1.03	1.00
7	Quantum 542	37.8	26.3	22.3	43.4	36.2	34	33.4	0.96	0.99
2	Rocky	37.4	23.9	21.0	44.6	37.8	35	33.3	1.11	0.98
20	NuWest	38.0	28.1	19.7	41.7	36.4	36	33.3	0.99	0.99
46	Morgan	37.9	27.2	20.2	42.3	37.1	34	33.1	1.00	1.00
5	Judith	37.3	28.0	19.3	43.3	35.5	34	32.9	1.02	0.98
29	* Pronghorn	36.8	25.0	20.9	42.0	36.1	37	32.9	1.00	0.97
41	MTW9441	38.6	28.0	18.6	41.3	36.7	34	32.9	1.02	0.98
13	Rampart	37.3	25.5	18.2	44.2	36.6	33	32.5	1.14	0.99
44	QT566	38.2	26.1	21.8	39.5	34.6	33	32.2	0.86	0.99
25	* SD89119 (Tandem)	38.1	26.7	19.3	42.2	36.5	30	32.1	1.02	0.95
26	SD89153 (Crimson)	37.2	24.5	19.6	42.8	35.8	33	32.1	1.06	0.99
39	MT9222	37.7	24.4	19.6	39.9	35.9	34	31.9	1.00	0.99
28	* ND9272	36.0	26.5	19.2	40.8	33.1	34	31.6	0.94	0.98
19	Erhardt	37.0	25.4	17.2	41.4	33.9	34	31.5	1.08	0.99
32	Niobrara	36.4	25.1	20.3	40.4	33.8	32	31.3	0.92	1.00
47	* S86-1533	35.6	24.6	20.5	40.2	34.1	32	31.2	0.91	1.00
38	MT91192	33.8	26.5	17.8	42.0	33.7	33	31.1	1.00	0.97
10	Manning	36.0	25.4	21.7	39.5	31.4	32	31.0	0.81	0.97
21	McGuire	35.5	23.1	20.1	39.2	34.9	33	31.0	0.93	0.98
37	Akron	36.0	24.1	18.4	40.2	33.8	32	30.7	1.00	1.00
22	Promontory	33.9	25.1	21.9	37.0	32.8	32	30.4	0.71	1.00
34	Jules	35.5	24.7	17.8	40.7	33.2	30	30.3	1.00	0.98
31	Alliance	34.3	23.6	17.4	39.1	32.4	32	29.8	0.97	0.99
8	Bighorn	33.3	23.1	17.8	37.0	31.5	29	28.6	0.87	0.99
45	* XNH1824	33.4	22.5	19.6	35.3	31.5	29	28.5	0.77	0.99
33	Nekota	31.6	21.2	20.0	37.3	30.2	30	28.4	0.80	0.96
48	BZ9W92-712-a	32.7	24.8	20.2	32.5	28.5	30	28.1	0.58	0.93
35	Yuma	32.1	22.5	18.4	34.5	29.5	30	27.8	0.76	0.99
30	Vista	31.9	21.0	19.0	35.9	29.2	29	27.7	0.80	0.98
36	Halt	30.7	21.4	19.0	35.4	28.3	29	27.3	0.74	0.97
15	Norwin	29.7	24.5	16.8	31.0	26.6	27	25.9	0.59	0.90
	Average	37.6	26.0	20.1	42.0	35.7	34.1	32.6	1.00	1.00
	LSD (0.05)	2.8	2.8	2.8	3.2	2.0				
	CV	4.2	6.3	8.4	4.7	3.2				

Table 6. 1997 Intrastate Winter Wheat Test (Exp. 35): 2 Location Winter

Entry	Cultivar/Line	Williston	Moccasin	Survival %	
				2 Loc. Average	BYX
18	Kestrel	41.9	88.2	65.1	0.76
42	* MT9514	32.7	91.6	62.1	0.97
44	QT566	37.7	84.9	61.3	0.78
43	* MT9524	34.1	88.4	61.2	0.89
46	Morgan	35.8	86.7	61.2	0.84
41	MTW9441	32.7	88.4	60.5	0.92
40	MT9432	27.8	89.9	58.8	1.02
24	Elkhorn	26.9	90.1	58.5	1.04
45	* XNH1824	33.1	83.4	58.3	0.83
29	* Pronghorn	25.9	90.0	58.0	1.06
17	Norstar	25.7	90.1	57.9	1.06
26	* SD89153 (Crimson)	20.2	93.2	56.7	1.20
16	Roughrider	21.3	91.7	56.5	1.16
14	Agassiz	23.6	86.7	55.1	1.04
19	Erhardt	23.5	86.8	55.1	1.04
20	NuWest	23.4	86.7	55.0	1.04
38	MT91192	23.0	86.9	54.9	1.05
31	Alliance	29.0	80.1	54.5	0.84
7	Quantum 542	26.4	81.7	54.0	0.91
47	* S86-1533	23.0	85.0	54.0	1.02
32	Niobrara	26.8	80.0	53.4	0.88
39	MT9222	14.4	89.9	52.2	1.24
3	Tiber	21.9	81.7	51.8	0.98
28	* ND9272	9.6	93.2	51.4	1.38
21	McGuire	22.5	80.1	51.3	0.95
30	Vista	20.7	79.9	50.3	0.98
5	Judith	16.6	83.3	49.9	1.10
37	Akron	17.8	81.7	49.8	1.05
8	Bighorn	19.2	80.0	49.6	1.00
27	* ND9257	15.3	83.2	49.2	1.12
15	Norwin	13.3	84.9	49.1	1.18
1	Neeley	17.4	80.0	48.7	1.03
25	* SD89119 (Tandem)	19.0	78.4	48.7	0.98
4	Redwin	18.4	78.5	48.4	0.99
33	Nekota	13.8	81.9	47.9	1.12
10	Manning	14.5	78.3	46.4	1.05
34	Jules	14.3	78.2	46.2	1.05
23	Bonneville	14.0	76.7	45.4	1.03
11	Winridge	12.2	78.3	45.3	1.09
9	Blizzard	17.3	73.2	45.2	0.92
6	Centurk	14.4	74.9	44.7	1.00
36	Halt	14.4	75.1	44.7	1.00
2	Rocky	12.8	76.4	44.6	1.05
12	Vanguard	16.8	66.5	41.6	0.82
13	Rampart	13.1	68.5	40.8	0.91
22	Promontory	6.5	71.6	39.0	1.07
35	Yuma	8.1	68.5	38.3	0.99
48	BZ9W92-712-a	-0.8	30.0	14.6	0.51
	Average	20.3	81.0	50.7	1.00
	LSD (0.05)	12.6	7.7		
	CV	38.4	5.8		