

TITLE: Spring Wheat

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 Montana Wheat Research & Marketing Comm.

SUMMARY:

Advanced Yield Trial - The varieties MT 8289, Ward and NK 2631 all yielded above 100 bu/a, showed low levels of Septoria infection and were resistant to leaf rust, powdery mildew and lodging.

Western Regional Nursery - Sixteen spring wheat varieties significantly out-yielded Owens, the check variety. Most of those varieties were resistant to both leaf rust and powdery mildew.

INTRODUCTION:

In an effort to continually test new and improved spring wheat varieties in western Montana variety nurseries are evaluated annually at the Northwestern Agricultural Research Center. These nurseries, through accumulated years of testing, are the proving grounds for all Montana recommended spring wheat varieties.

RESULTS:

Advanced Yield Trial - Five varieties yielded significantly greater than Newana, the check variety (77 bu/a), with three of those topping 100 bu/a (MT 8289, Ward and NK 2631). Five varieties also yielded significantly less than Newana, among those being Lew, Fortuna and Thatcher.

Test weights ranged from 46.5 to 57.1 lbs/bu. Fourteen varieties were significantly higher in test weight with Ward being the only variety with a significantly higher yield also. Test weights were slightly below normal due to foliar diseases.

Lodging was moderate to severe in seven varieties. Any variety with lodging percent or severity greater than 19% and 1.56 respectively was significantly different when compared to Newana, which had no lodging. As would be expected more severe lodging was seen in plots with low yields (Lew, Fortuna, Thatcher and MT 8043).

Heading dates varied by variety and since Newana heads a little later than most varieties there were thirty-one entries which were significantly different in heading (earlier).

Leaf rust was light throughout the trial yet five varieties showed moderate to severe susceptibility to that disease. Marberg, Thatcher, MT 8228 and MT 8043 were heavily infested with rust.

Septoria was prevalent in this study and was recorded in every variety. Four varieties showing a significantly less reaction to Septoria, as compared to Newana, were Ward, Crosby, Vic and Butte.

Results (con't)

Powdery mildew was very light this year. Owens showed the highest level of infection (significantly greater in comparison to Newana) of mildew with Waverly and MT 8286 showing moderate reactions.

Western Regional Nursery - Sixteen varieties (ranging from 76.4 bu/a to 92.7 bu/a) yielded significantly higher than the check variety, Owens (57.8 bu/a). Only one variety yielded so low as to be significantly different from the check and that was Federation at 34.3 bu/a.

Test weights were generally low for this nursery with the average being 48.2 lbs/bu. Eight varieties had significantly higher test weights, seven of which also had better yields. Waverly, UT 541815, and Federation had significantly lower test weights.

Approximately half of the entries showed some lodging during the season with five varieties being severely affected.

Leaf rust was not as prevalent in this nursery yet was recorded at high levels in seven varieties, most of which were poor yielding varieties. Septoria was severe in this nursery and recorded in all varieties. The varieties showing the lowest Septoria infection were ID 247 and OR 750573 which had mild reactions. Eighteen varieties showed resistance to Powdery mildew. Of the remaining entries five had high susceptibility to powdery mildew (Table 2).

Table 3. Agronomic data from the Western Regional Spring Wheat Nursery grown on the Northwestern Agricultural Research Center, Kalispell, MT in 1983. Field No. Y-5, randomized block design, four replications. Plot size: 32 sq. ft.

Date seeded: April 18, 1983 Date harvested: September 20, 1983

VARIETY	YIELD BU/A	TEST WT LBS./BU	HEADING DATE	% LODGING	LODGING SEVER.	HEIGHT INCHES		
WA7074	PTM70/WA6021, BRONS/K	2/	92.70a	51.70a	180.67	8.33b	1.67b	38.06
WA6920	POTAM70/WA6021, K7905	2/	91.85a	49.57	181.00	.00b	.00b	38.85
OR791432	HORK/YMH/KA//BB	2/	90.05a	49.47	180.67	.00b	.00b	34.38b
CI 17903	MCKAY	1/	87.57a	51.90a	180.33	.00b	.00b	41.21a
WA6917	POTAM70/WA6021, K7905	2/	86.65a	52.07a	180.67	1.67b	1.33b	40.55
ID247	TZFP/AN3//B61-136AB	1/	85.73a	52.13a	184.00a	.00b	.00b	41.08a
WA6918	POTAM70/WA6021, K7905	2/	83.28a	50.13	180.67	53.33	6.00	37.80
OR66558	STS958/ARANA	1/	82.42a	50.57a	178.67b	.00b	.00b	35.56b
ID236	FBR/5/BBI1/4/7*SF1/3	2/	81.23a	48.03	185.67a	.00b	.00b	44.49a
OR750573	CTK/CND//EMU	1/	81.05a	48.53	181.67a	5.00b	1.00b	41.08a
UT2746	UTAH W498-165/BORAH	1/	80.97a	49.90	180.33	5.00b	.67b	39.11
WA7075	K73579/BORAH	1/	80.40a	50.70a	177.67b	5.00b	2.33b	38.71
WA6919	POTAM70/WA6021, K7905	2/	79.27a	48.73	180.67	.00b	.00b	40.15
OR644421	HORK/YMH/KA//BB	2/	77.98a	47.83	179.33	.00b	.00b	37.66
WA6916	POTAM70/WA6021, K7905	2/	76.93a	51.43a	179.33	6.67b	2.00b	40.68
CI17911	WAVERLY	2/	76.43a	44.13b	182.00a	.00b	.00b	37.80
ID246	BBI1/4/7*SF1/3/AS/FR	2/	74.00	47.00	179.33	.00b	.00b	39.63
ID250	ABERDEEN SELN	2/	73.57	49.23	185.67a	.00b	.00b	40.55
OR66367	CTK/CND//EMU	1/	71.38	47.90	184.33a	.00b	.00b	39.76
WA7076	K74153/WA6096//ATL66	1/	69.15	48.50	179.33	81.67a	5.67	37.66
ID227	ID0067*2/BB*5*RESEL.	2/	68.13	46.57	182.67a	.00b	.00b	39.50
WA7073	PTM70/WA6021, BRONS/K	2/	67.40	49.83	181.00	31.67	4.67	38.98
ID263	ABERDEEN SELN	1/	66.65	54.10a	181.00	.00b	.00b	44.09a
ID258	ABERDEEN SELN	1/	66.33	48.17	180.33	.00b	.00b	38.85
WA6831	POTAM70/WA6021, K7905	2/	65.77	45.47	180.33	21.67	4.00	38.45
ID249	ABERDEEN SELN	2/	64.53	45.40	183.00a	.00b	.00b	41.73a
ID248	ABERDEEN SELN	2/	64.32	45.83	181.67a	.00b	.00b	38.32
UT209	UTAH W498-259/PROSPU	1/	61.08	44.87	181.00	3.33b	1.00b	43.83a
ID174	ABERDEEN SELN	2/	60.50	45.57	180.33	23.33	2.33	41.73a
ID262	ABERDEEN SELN	1/	58.87	47.47	180.00	96.33a	9.00a	36.22
CI17904	OWENS	2/ 3/	57.82	47.40	180.00	45.00	5.67	38.45
UT541774	BANNOCK/738-274-1	1/	56.68	48.83	179.00	13.33b	4.33	41.21a
UT541842	BANNOCK/738-274-1	1/	56.55	47.77	178.00b	94.67a	8.33	41.08a
UT541954	BANNOCK/738-274-1	1/	52.87	44.77	179.33	5.00b	1.67b	40.55
ID238	BORAH/3/MRN//PJ'S//G	1/	52.70	45.83	176.00b	79.67a	5.33	37.01
UT541815	BANNOCK/738-274-1	1/	52.58	44.27b	180.00	.00b	.00b	40.94a
CI4734	FEDERATION	2/	34.25b	43.33b	176.00b	36.67	4.33	48.69a

X	71.07	48.24	180.59	16.68	1.95	39.85
F 4/	4.29**	5.64**	28.77**	11.77**	5.78**	9.40**
S.E.X.	6.41	1.10	.40	8.36	1.08	.67
L.S.D. (.05)	18.08	3.10	1.13	23.56	3.03	2.44
C.V.%	9.02	2.28	.22	50.10	55.03	2.17

- 1/ Hard red spring wheat variety
- 2/ Soft white spring wheat variety
- 3/ Check variety
- 4/ Fvalue for variety comparison

** Indicates statistical significance at the .01 level
 a/ Values significantly greater than the check at the .05 level
 b/ Values significantly less than the check at the .05 level

Table 4. Agronomic data from the Western Regional Spring Wheat Nursery grown on the Northwestern Agricultural Research Center, Kalispell, MT in 1983. Field No. Y-5, randomized block design, four replications. Plot size: 32 sq. ft.

Date seeded: April 18, 1983 Date harvested: September 20, 1983

			*** see footnotes on disease ratings at end of table***							
VARIETY			LF RUST	LF RUST	SEPT	SEPT.	SEPT.	MILDEW	MILDEW	MILDEW
			% PLOT	SEVER.	% PLOT	SEVER.	STAGE	% PLOT	SEVER.	STAGE
WA7074	PTM70/WA6021, BRONS/K	2/	.00	.00	53.33	11.67	6.00	.00b	.00b	.00b
WA6920	POTAM70/WA6021, K7905	2/	.00	.00	89.67a	10.00	7.67	30.00b	3.33b	3.00b
GR791432	HORK/YMH/KA//BB	2/	.00	.00	46.67	11.67	6.33	20.00b	1.67b	2.33b
CI 17903	MCKAY	1/	.00	.00	36.67	10.00	6.67	.00b	.00b	.00b
WA6917	POTAM70/WA6021, K7905	2/	.00	.00	76.67	15.00	6.67	.00b	.00b	.00b
ID247	TZPT/AN3//B61-136AB	1/	.00	.00	21.67	6.67	6.00	84.67	10.00b	8.33
WA6918	POTAM70/WA6021, K7905	2/	.00	.00	66.67	8.33	6.67	20.00b	1.67b	2.00b
ORS6558	ST5958/ARANA	1/	.00	.00	70.00	8.33	7.00	20.00b	1.67b	3.00b
ID236	FBR/5/BBII/4/7*9FL/3	2/	.00	.00	63.33	6.67	7.00	.00b	.00b	.00b
OR750573	CTK/CNO//EMU	1/	.00	.00	28.33	10.00	5.67	.00b	.00b	.00b
UT2746	UTAH W498-165/BORAH	1/	.00	.00	78.33	10.00	7.00	.00b	.00b	.00b
WA7075	K73579/BORAH	1/	.00	.00	88.33a	15.00	7.33	.00b	.00b	.00b
WA6919	POTAM70/WA6021, K7905	2/	.00	.00	73.33	13.33	6.67	30.00b	1.67b	3.00b
ORS44421	HORK/YMH/KA//BB	2/	.00	.00	80.00	8.33	6.33	26.67b	3.33b	6.00
WA6916	POTAM70/WA6021, K7905	2/	.00	.00	63.00	15.00	7.33	.00b	.00b	.00b
CI17911	WAVERLY	2/	.00	.00	68.33	10.00	6.67	88.33	18.33	7.67
ID246	BBII/4/7*9FL/3/AS/FR	2/	26.67	1.67	66.67	11.67	7.33	.00b	.00b	.00b
ID250	ABERDEEN SELN	2/	.00	.00	91.33a	15.00	7.00	.00b	.00b	.00b
ORS6367	CTK/CNO//EMU	1/	.00	.00	86.67a	26.67a	7.67	.00b	.00b	.00b
WA7076	K74153/WA6096//ATL66	1/	.00	.00	65.00	10.00	6.33	53.33	3.33b	5.33
ID227	ID0067*2/BB*5*RESEL.	2/	.00	.00	40.00	8.33	6.67	.00b	.00b	.00b
WA7073	PTM70/WA6021, BRONS/K	2/	.00	.00	66.67	10.00	6.67	40.00	3.33b	6.00
ID263	ABERDEEN SELN	1/	96.00a	13.33a	66.00	18.33	7.67	53.00	10.00b	5.33
ID258	ABERDEEN SELN	1/	63.00a	5.00	97.67a	11.67	8.00a	25.00b	1.67b	3.00b
WA6831	POTAM70/WA6021, K7905	2/	.00	.00	85.00a	11.67	6.00	90.00	10.00b	8.33
ID249	ABERDEEN SELN	2/	66.00a	3.33	96.33a	23.33	7.67	83.00	6.67b	9.00
ID248	ABERDEEN SELN	2/	.00	.00	83.33	11.67	7.33	.00b	.00b	.00b
UT209	UTAH W498-259/PROSPU	1/	96.00a	10.00a	99.00a	48.33a	5.33	33.00b	3.33b	3.00b
ID174	ABERDEEN SELN	2/	.00	.00	96.33a	40.00a	8.00a	30.00b	1.67b	3.00b
ID262	ABERDEEN SELN	1/	60.00a	3.33	97.67a	25.00a	7.33	.00b	.00b	.00b
CI17904	OWENS	2/ 3/	.00	.00	51.67	6.67	6.00	96.00	21.67	9.00
UT541774	BANNOCK/738-274-1	1/	96.00a	18.33a	74.67	26.67a	8.00a	.00b	.00b	.00b
UT541842	BANNOCK/738-274-1	1/	99.00a	21.67a	96.33a	15.00	8.00a	.00b	.00b	.00b
UT541954	BANNOCK/738-274-1	1/	99.00a	50.00a	97.67a	53.33a	8.00a	30.00b	3.33b	5.67
ID238	BORAH/3/MRN//PJ'S/G	1/	.00	.00	97.67a	33.33a	8.00a	10.00b	.00b	.00b
UT541815	BANNOCK/738-274-1	1/	99.00a	46.67a	99.00a	58.33a	8.00a	.00b	.00b	.00b
CI4734	FEDERATION	2/	99.00a	8.33	96.33a	18.33	8.00a	99.00	40.00a	8.00
X			24.32	4.91	74.47	17.66	7.03	26.00	3.96	2.73
F 4/			16.83**	11.05**	3.34**	4.52**	1.55*	4.87**	8.93**	3.56**
S.E.X.			9.75	3.54	11.64	6.20	.61	14.83	2.65	1.71
L.S.D. (.05)			27.49	9.98	32.82	17.48	1.73	41.81	7.46	4.81
C.V.%			40.10	72.12	15.63	35.12	8.71	57.04	66.77	62.48

Table 4 (con't)

- 1/ Hard red spring wheat variety
- 2/ Soft white spring wheat variety
- 3/ Check variety
- 4/ F-value for variety comparison
- * Indicates statistical significance at the .05 level
- ** Indicates statistical significance at the .01 level
- a/ Values significantly greater than the check at the .05 level
- b/ Values significantly less than the check at the .05 level

*** FOOTNOTES FOR DISEASE RATINGS ***

- Leaf rust, % plot = percent plot infected with disease (*Puccinia recondita*)
- Leaf rust, severity = average leaf area (percent) infected by the disease
- Sept. % plot = percent plot infected with disease (*Sectoria spp.*)
- Sept. sever. = average leaf area (percent) infected by the disease
- Sept. stage = stage of development of disease, 1-9 scale, 1 = crown 9 = head of plant
- Mildew % plot = percent plot infected with disease (*Erysiphe graminis*)
- Mildew sever. = average leaf area (percent) infected by the disease
- Mildew stage = stage of development of disease, 1-9 scale, 1 = crown 9 = head

Table 2. Summary of the Western Regional Spring Wheat Nursery yields grown at the Northwestern Agricultural Research Center, Kalispell, MT 1979-1983.

CI or State No.	Variety	1979	1980	1981	1982	1983	- X	Sta. yrs.	% Owens
CI 4734	Federation	78.2	45.2	42.4	59.3	34.3	51.9	5	57
CI 17904	Owens	114.8	93.9	73.5	114.7	57.8	90.9	5	100
CI 17903	McCay		98.1	93.9	112.0	87.6	97.9	4	115
UT 541774	Bannock/738-274-1		92.2	65.1	111.3	56.7	81.3	4	96
WA 6831	Potam 70/WA 6021			95.0	109.1	65.8	90.0	3	110
ID 236	FLR/5/BBII/4/7*SFL/3/AS			74.2	131.3	81.2	95.6	3	116
ID 247	Complex Pedisree				129.8	85.7	107.8	2	125
WA 6919	Potam 70/WA 6021, K790				129.0	79.3	104.2	2	121
WA 6920	Potam 70/WA 6021, K790				127.6	91.9	109.8	2	127
WA 6918	Potam 70/WA 6021, K790				127.0	83.3	105.2	2	122
WA 6917	Potam 70/WA 6021, K790				126.6	86.7	106.7	2	124
WA 6916	Potam 70/WA 6021, K790				126.6	76.9	101.8	2	118
UT 209	Utah WA 498-256/Prosper				116.0	61.1	88.6	2	103
ID 246	Complex Pedisree				112.9	74.0	93.5	2	108
CI 17911	Waverly				106.7	76.4	91.6	2	106
ID 227	Complex Pedisree				99.7	68.1	83.9	2	97
UT 2746	Utah W498-165/Borah				89.5	81.0	85.3	2	99
ID 238	Complex Pedisree				85.3	52.7	69.0	2	80
WA 7074	PTM70/WA 6021.BRUNS/K					90.7	90.7	1	157
OR 791432	HORK/YMH/KA//BB					90.1	90.1	1	156
OR 86558	ST 5958/ARANA					82.4	82.4	1	142
OR 750573	CTK/CNO//EMU					81.1	81.1	1	140
WA 7075	K 73579/BORAH					78.0	78.0	1	139
OR 844421	HORK/YMH/KA//BB					78.0	78.0	1	135
ID 250	ABERDEEN SELN.					73.6	73.6	1	127
OR 86367	CTK/CNO/EMU					71.4	71.4	1	124
WA 7076	K74153/WA6096//ATL66					69.2	69.2	1	119
WA 7073	PTM70/WA 6021.BRUNS/K					67.4	67.4	1	117
ID 263	ABERDEEN SELN.					66.7	66.7	1	115
ID 258	ABERDEEN SELN.					66.3	66.3	1	115
ID 249	ABERDEEN SELN.					64.5	64.5	1	112
ID 248	ABERDEEN SELN.					64.3	64.3	1	112
ID 174	ABERDEEN SELN.					60.5	60.5	1	105
ID 262	ABERDEEN SELN.					58.9	58.9	1	102
UT 541842	BANNOCK/738-274-1					56.6	56.6	1	98
UT 541954	BANNOCK/738-274-1					52.9	52.9	1	98
UT 541815	BANNOCK/738-274-1					52.6	52.6	1	91