

PROJECT TITLE: Spring wheat variety evaluations

YEAR/PROJECT: 1984/756

PROJECT PERSONNEL: Leader, Vern R. Stewart, Northwestern Agricultural Research Center, Kalispell, MT.  
 Research Specialist, Todd K. Keener, NWARC  
 Cooperators, Larry Alexander - USDA ARS, Bozeman  
 Mike Wilson - USDA ARS, Bozeman  
 R.E. Allen - USDA ARS, Pullman  
 Wheat Research Marketing Committee  
 MAES, MSU

#### 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 year's of accumulated testing, are the proving ground for all Montana recommended spring wheat varieties.

Three nurseries were grown this year in Kalispell, two regional nurseries ( Advanced Yield and Western Regional ) and a Museum spring wheat nursery.

#### RESULTS: - Advanced Yield Nursery -

Yields this year were similar to the 1983 season with five varieties yielding above 100 Bu/A. None of these yields were significantly higher than the check variety ( Newana ) which yielded 98.5 Bu/A. Six varieties did yield significantly less than the check, with five of those also having the only significantly less test weights for this nursery. These six varieties, that were lower in yields, are more than likely the least drought tolerant and were effected by the hot, dry summer this season.

Heading dates were one week later than last year which may also be a reflection on the lack of moisture during that time of development. There were no varieties that headed later than Newana ( when analyzed for significance ), which is understood due to the fact that Newana is a late heading variety.

Stripe rust ( *Puccinia striiformis* ) and leaf rust ( *Puccinia recondita* ) were both present in this nursery yet only leaf rust was prevalent. There were 10 entries which had moderate to severe levels of leaf rust and were significantly higher than the infection recorded in Newana. Twelve varieties were observed to be susceptible to stripe rust at the disease level that occurred in this trial. Table 1.

#### - Western Regional Spring Wheat -

Yields were higher in the Western Regional nursery in comparison to the Advanced Yield nursery. Large differences occurring between the same varieties (such as McKay and Owens) in different nurseries can only be attributed to field location. The mean yield for this trial was 108.1 Bu/A with Owens ( the check variety ) yielding 119.9 Bu/A. No varieties were significantly higher in yield than Owens yet ten entries were found to be significantly less in yield.

Test weights were lower than average, yet in the study were slightly higher than in the Advanced Yield Nursery. Nine varieties had significantly higher test weights than Owens whereas eleven showed significantly lower test weights. Five of those eleven varieties with lower test weights also were the lower yielding entries which could have been the demonstrating of low drought stress resistance.

Table 2 . Agronomic data from the Western Regional Spring Wheat Nursery grown on the Northwestern Agricultural Research Center, Kalispell, MT in 1984. Field Y-6.

Date planted: April 16, 1984 Harvested: August 28, 1984

STATE or CI #	Variety	Class 2/	Yield Bu/A	Test Wt Lbs/Bu	Heading Date	Height ( In )
✓C17903	MCKAY	H	129.83	58.50	185.67a	34.51b
ID286	ABERDEEN SELN	S	125.35	59.07	186.33a	39.11
ID232	ABERDEEN SELN	S	120.03	56.47b	185.67a	37.14
✓C17904	OWENS 1/	S	119.88	58.40	183.00	38.32
✓ID249	ABERDEEN SELN	S	116.87	57.47b	185.00a	37.53
✓WA7074	POTAM70/FIELDER	S	115.95	58.73	183.67	33.33b
U25129	UTW498-165/WA61	H	115.77	59.50a	185.67a	38.58
OR8414	PV18A/CIANO	H	114.23	60.57a	183.67	37.14
✓ID248	ABERDEEN SELN	S	114.12	56.80b	186.33a	34.12b
OR8413	HORK/YHM/KA//BB	S	113.97	58.47	183.33	31.89b
✓WA7073	POTAM70/FIELDER	S	113.85	58.17	183.00	32.55b
OR8412	CTK/CNO//EMU,OR	H	113.45	58.70	186.00a	37.66
ID266	ABERDEEN SELN	S	113.10	59.63a	183.67	38.19
OR8411	ST5958/ARANA,OR	H	113.07	57.47b	181.33b	36.22
✓C17911	WAVERLY	S	112.25	57.83	185.00a	35.96
✓WA6920	POTAM70/FIELDER	S	112.13	58.10	184.67a	35.56b
✓WA6919	POTAM70/FIELDER	S	112.00	58.83	183.67	35.56b
WA7183	K78504/K79129-3	S	111.22	58.40a	184.00	32.41b
WA7182	K74153/K74093,K	H	110.87	59.37	181.00b	38.71
✓ID246	BBII/4/7SF1/3/	S	110.27	56.60b	184.67a	34.51b
✓WA7075	K73579/BORAH	H	110.03	58.37	181.33b	33.99b
WA7181	K73772/BORAH,K7	H	109.32	60.07	184.00	38.32
U25130	UT498-165/WA615	H	109.05	59.77a	185.67a	34.25b
ID285	ABERDEEN SELN	S	107.70	60.67a	181.33b	37.66
✓WA6831	POTAM70/FIELDER	S	107.45	56.10b	184.67a	36.75
✓ID238	BOR/3/MRN//PJSI	H	107.18	58.93	181.33b	34.65b
✓WA6916	POTAM70/FIELDER	S	107.03	58.03	183.00	34.78b
ID269	ABERDEEN SELN	H	106.98	59.10	182.00	36.22
✓WA6918	POTAM70/FIELDER	S	103.17b	57.80	183.33	34.91b
OR8415	MINIVET SIB	H	103.13b	61.63a	183.33	32.55b
✓ID263	ABERDEEN SELN	H	101.55b	60.77a	185.00a	42.26a
ID271	ABERDEEN SELN	H	98.37b	59.20	183.67	38.45
✓UT209	UTW498-259/PROS	H	98.13b	56.63b	185.33a	37.80
✓ID227	ID67/2/BB5RESE	S	96.18b	53.30b	187.00a	35.30b
✓UT2746	UTW498-165/BORA	H	95.77b	59.90a	184.33	35.56b
UT1382	PWL/PDA	H	82.82b	48.17b	187.33a	35.96
UT1376	PWL/PDA	H	78.90b	50.77b	186.67a	35.04b
✓C4734	FEDERATION	S	75.17b	54.37b	183.33	45.41a
X			108.06	57.81	184.16	36.29
F 5/			3.88**	64.31**	8.22**	9.76**
S.E.X.			5.72	.33	.59	.86
C.V. %			5.30	.57	.32	2.37
L.S.D.			16.13	.92	1.66	2.42

Table 2 ( Cont'd ) . Western Regional Spring Wheat Nursery

STATE or CI #	Variety	Class 2/	- Lodging - Angle %		Stripe Rust 3/ In Top Sever	Leaf Rust 4/ In Top Sever		
C17903	MCKAY	H	.00	.00	.00	.00	1.50b	20.00
ID286	ABERDEEN SELN	S	.00	.00	.00	.00	7.50	15.00
ID232	ABERDEEN SELN	S	1.00	3.33	.00	.00	.00b	.00b
C17904	DWENS 1/	S	1.33	1.67	.00	.00	8.00	25.00
ID249	ABERDEEN SELN	S	.00	.00	.00	.00	8.00	35.00
WA7074	POTAM70/FIELDER	S	.00	.00	1.00	5.00	2.50b	15.00
U25129	UTW498-165/WA61	H	.00	.00	.00	.00	7.00	7.50
OR8414	PV18A/CIANO	H	.00	.00	1.00	12.50	.00b	.00b
ID248	ABERDEEN SELN	S	.00	.00	.00	.00	8.00	15.00
OR8413	HORK/YHM/KA//BB	S	.00	.00	.00	.00	1.00b	5.00
WA7073	POTAM70/FIELDER	S	.00	.00	1.00	12.50	1.00b	5.00
OR8412	CTK/CNO//EMU,OR	H	5.67a	5.00	.00	.00	9.00	37.50
ID266	ABERDEEN SELN	S	1.67	10.00	.00	.00	8.50	40.00
OR8411	ST5958/ARANA,OR	H	.00	.00	.00	.00	9.00	65.00a
C17911	WAVERLY	S	.00	.00	1.50	12.50	8.00	25.00
WA6920	POTAM70/FIELDER	S	.00	.00	6.50a	10.00	1.50b	15.00
WA6919	POTAM70/FIELDER	S	.00	.00	6.50a	10.00	.00b	.00b
WA7183	K78504/K79129-3	S	.00	.00	3.50	5.00	.00b	.00b
WA7182	K74153/K74093,K	H	1.67	1.67	3.00	2.50	1.50b	5.00
ID246	BBII/4/7SF1/3/	S	.00	.00	.00	.00	7.50	17.50
WA7075	K73579/BORAH	H	.00	.00	1.00	10.00	6.00	15.00
WA7181	K73772/BORAH,K7	H	.00	.00	.00	.00	3.00b	10.00
U25130	UT498-165/WA615	H	.00	.00	1.50	7.50	9.00	10.00
ID285	ABERDEEN SELN	S	.00	.00	.00	.00	9.00	92.50a
WA6831	POTAM70/FIELDER	S	.00	.00	.00	.00	2.50b	5.00
ID238	BDR/3/MRN//PJSI	H	.00	.00	.00	.00	3.50b	2.50
WA6916	POTAM70/FIELDER	S	.00	.00	7.00a	12.50	.00b	.00b
ID269	ABERDEEN SELN	H	.00	.00	.00	.00	8.00	17.50
WA6918	POTAM70/FIELDER	S	.00	.00	3.50	5.00	3.50b	5.00
OR8415	MINIVET SIR	H	.00	.00	.00	.00	2.50b	5.00
ID263	ABERDEEN SELN	H	.00	.00	.00	.00	9.00	50.00a
ID271	ABERDEEN SELN	H	.00	.00	.00	.00	8.00	40.00
UT209	UTW498-259/PROS	H	.00	.00	.00	.00	8.50	45.00
ID227	ID67/2/BB5RESE	S	.00	.00	.00	.00	7.50	7.50
UT2746	UTW498-165/BORA	H	.00	.00	.00	.00	4.00	7.50
UT1382	PWL/PDA	H	.00	.00	4.50a	10.00	9.00	90.00a
UT1376	PWL/PDA	H	.00	.00	.00	.00	9.00	75.00a
C4734	FEDERATION	S	1.67	3.33	.00	.00	8.00	40.00
X			.34	.66	1.09	3.03	5.25	22.76
F 5/			3.40**	1.18	2.46**	1.13	5.89**	8.11**
S.E.X.			.55	1.77	1.29	4.41	1.43	8.69
C.V. %			62.17	286.30	117.83	145.67	27.14	38.19
L.S.D.			1.56	4.97	3.69	12.63	4.08	24.91

- 1/ Check variety
- 2/ Wheat class, H = hard red, S = soft white
- 3/ Stripe rust ( *Puccinia striiformis* ) rated 8-7-84
  - In Typ = infection type
  - 0 = no chlorosis or necrosis
  - 5 = necrotic/chlorotic stripes intermediate sporulation
  - 9 = abundant sporulation; no necrosis
- 4/ Leaf rust ( *Puccinia recondita* )
  - In Typ = infection type
  - 0 = no chlorosis or necrosis
  - 5 = necrotic/chlorotic stripes intermediate sporulation
  - 9 = abundant sporulation; no necrosis
- 5/ F value for variety comparison
  - a/ Values significantly greater than the check at the .05 level
  - b/ Values significantly less than the check at the .05 level
  - \* Indicates statistical significance at the .05 probability level
  - \*\* Indicates statistical significance at the .01 probability level

Table 2a. 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	1984	- X	Sta. yrs.	% Owens
CI 4734	Federation	78.2	45.2	42.4	59.3	34.3	75.2	55.8	6	58
CI 17904	Owens	114.8	93.9	73.5	114.7	57.8	119.8	95.8	6	100
CI 17903	Mckay		98.1	93.9	112.0	87.6	129.8	104.3	5	113
WA 6831	Potam 70/WA 6021			95.0	109.1	65.8	107.5	94.3	4	103
WA 6919	Potam 70/WA 6021, K790				129.0	79.3	112.0	106.0	3	110
WA 6920	Potam 70/WA 6021, K790				127.6	91.9	112.1	110.5	3	113
WA 6918	Potam 70/WA 6021, K790				127.0	83.3	103.2	104.5	3	107
WA 6916	Potam 70/WA 6021, K790				126.6	76.9	107.0	103.5	3	106
UT 209	Utah WA 498-256/Prospur				116.0	61.1	98.1	91.7	3	94
ID 246	Complex Pedisree				112.9	74.0	110.3	99.1	3	102
CI 17911	Waverly				106.7	76.4	112.3	98.5	3	101
ID 227	Complex Pedisree				99.7	68.1	96.2	88.0	3	90
UT 2746	Utah W498-165/Borah				89.5	81.0	95.6	88.8	3	91
ID 238	Complex Pedisree				85.3	52.7	107.2	81.7	3	84
WA 7074	PTM70/WA 6021.BRUNS/K					90.7	116.0	103.3	2	116
WA 7075	K 73579/BORAH					78.0	110.0	94.0	2	106
WA 7073	PTM70/WA 6021.BRUNS/K					67.4	113.9	90.5	2	102
ID 263	ABERDEEN SELN.					66.7	101.6	84.1	2	95
ID 249	ABERDEEN SELN.					64.5	116.9	90.7	2	102
ID 248	ABERDEEN SELN.					64.3	114.1	89.2	2	100
ID 286	ABERDEEN SELN.						125.4	125.4	1	104
ID 232	ABERDEEN SELN.						120.0	120.0	1	100
U 25129	UTW 498-165/WA61						115.8	115.8	1	97
OR 8414	PV18A/CIAND						114.2	114.2	1	95
OR 8413	HORK/YHM/KA//BB						114.0	114.0	1	95
OR 8412	CTK/CNO//EMU,OR						113.5	113.5	1	95
ID 266	ABERDEEN SELN.						113.1	113.1	1	94
OR 8411	ST5958/ARANA,OR						113.1	113.1	1	94
WA 7183	K78501/K79129-3						111.2	111.2	1	93
WA 7182	K74153/K74093,K						110.9	110.9	1	92
WA 7181	K73772/BORAH,K7						109.3	106.3	1	91
U 25130	UT 498-165/WA615						109.1	109.1	1	91
ID 285	ABERDEEB SELN.						107.7	107.7	1	90
ID 269	ABERDEEN SELN.						107.0	107.0	1	89
OR 8415	MINIVET						103.1	103.1	1	89
ID 271	ABERDEEN SELN.						98.4	98.4	1	82
UT 1382	PWL/PDA						82.8	82.8	1	69
UT 1376	PWL/DPA						78.9	78.9	1	66