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TITLE: Spring Wheat

PROJECT: Small Grain Investigation MS 756

YEAR: 1979

PERSONNEL: Leader - Vern R. Stewart  
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 Cooperators - Montana Agricultural Experiment Station, MSU  
 USDA SEA-AR  
 Montana Wheat Research and Marketing Committee

OBJECTIVES:

1. To determine the adaptability of new and introduced spring wheat varieties and selections.
2. To aid in the basic genetic research programs in spring wheat.

1979 Experiments:

1. Private Variety Spring Wheat Nursery
2. Western Regional Spring Wheat Nursery

RESULTS AND DISCUSSIONS:

Private Variety Spring Wheat Nursery - The yields ranged from 77.49 bu/a to 111.52 bu/a with two varieties (TR5 and Thatcher) yielding significantly less than Newana. Test weights were slightly lower than in 1978. Four varieties had test weights significantly less than Newana. Five entries headed significantly earlier than Newana, whereas WS 122 and Fielder headed significantly later. Diseases were not an important factor in the study. However, Thatcher and Prodax showed susceptibility to leaf rust.

Western Regional Spring Wheat Nursery - Yields ranged from 78.18 bu/a to 129.77 bu/a with three varieties yielding significantly more than the check, Borah. Test weights were slightly higher than in previous years. All but four varieties had a significantly later heading date than Borah. Seventy-two percent of the entries were significantly greater in height than Borah. Leaf rust was severe on UT 25943, ID 184, and ID 183, where infection levels exceeded 50%. Moderate levels of infection were observed throughout the nursery (Table 2). Powdery mildew was high throughout the nursery.

## SPRING WHEAT VARIETIES

### SPRING WHEAT VARIETIES RECOMMENDED FOR WESTERN MONTANA

#### Hard Red Varieties

1. Norana - nonirrigated and irrigated
2. Borah - nonirrigated and irrigated
3. Thatcher - dryland and irrigated
4. Fortuna - dryland
5. Newana - dryland and irrigated
6. Pondera - dryland and irrigated
7. Marberg - dryland and irrigated

#### Soft White Varieties

1. Fielder - nonirrigated and irrigated
2. Fieldwin - dryland and irrigated

### CHARACTERISTICS OF RECOMMENDED VARIETIES

#### Hard Red Varieties

1. Norana
  - a. Bearded variety, developed in Montana
  - b. Very high yielding ability
  - c. Semi-dwarf type
  - d. Maturity - mid-season to late
  - e. Good test weight
  - f. Excellent straw strength
  - g. Good shattering resistance
  - h. Resistant to stem rust
  - i. Resistant to loose smut
  - j. Resistant to moderately resistant to stripe rust
  - k. Good milling and baking quality
2. Borah
  - a. Bearded variety
  - b. Very high yielding ability
  - c. Semi-dwarf type
  - d. Medium maturity
  - e. Low to fair test weight
  - f. Resistant to shattering
  - g. Resistant to stripe rust
  - h. Susceptible to leaf rust
  - i. Resistant to stem rust
3. Thatcher
  - a. Beardless variety, developed in U.S.A.
  - b. Fair yielding ability
  - c. Medium height
  - d. Early maturity
  - e. Good test weight
  - f. Fair to good lodging resistance
  - g. Good shattering resistance
  - h. Susceptible to leaf rust
  - i. Resistant to stripe rust
  - j. Good milling and baking quality

Recommended Spring Wheat Varieties (con't)4. Fortuna

- a. Beardless variety, developed in North Dakota
- b. Good yielding ability
- c. Medium to tall height
- d. Medium maturity
- e. High test weight
- f. Poor to fair lodging resistance
- g. Somewhat susceptible to shattering
- h. Resistant to most common races of stem rust
- i. Resistant to most common races of leaf rust
- j. Fair to good milling and baking quality

5. Newana

- a. High yielding ability
- b. Semi-dwarf variety (short straw)
- c. High test weight
- d. High lodging resistance
- e. Good shattering resistance
- f. Resistance to stem rust
- g. Moderately susceptible to leaf rust

6. Pondera

- a. High yielding ability
- b. Semi-dwarf variety
- c. High test weight
- d. Mid-season maturity
- e. Resistant to stem and strip rust
- f. Moderately resistant to leaf rust

7. Marberg

- a. Good yielding ability
- b. Semi-dwarf variety
- c. Good test weight
- d. Mid-season maturity
- e. Resistant to stem rust
- f. Moderately susceptible to leaf rust
- g. Moderately resistant to stripe rust

Soft White Varieties1. Fielder

- a. Bearded variety, developed in Idaho
- b. Very high yielding ability
- c. Semi-dwarf type
- d. Medium to late maturity
- e. Fair test weight
- f. Good straw strength
- g. Good shattering resistance
- h. Moderately resistant to stripe rust
- i. Slight resistance to leaf rust

Recommended Spring Wheat Varieties (con't)2. Fieldwin

- a. High yielding ability
- b. Semi-dwarf variety
- c. Medium to late maturity
- d. Fair test weight
- e. Good straw strength
- f. Good shattering resistance
- g. Moderate resistance to stripe, stem and leaf rust
- h. Moderate resistance to powdery mildew

Table 2. Agronomic data from the Western Regional Spring Wheat Nursery grown at the Northwestern Agricultural Research Center, Kalispell, MT in 1979. Field No. Y-1. Random block design, four replications.

Date seeded: April 30, 1979

Date harvested: September 13, 1979

Size of plot: 32 sq. ft.

C.I. or State No.	Variety	Yield Bu/A	Test Wt. Lbs/Bu.	Heading Date	Height Inches	Leaf Rust		Mildew	
						%	Sev.	%	Sev.
ID 181	A71531S-A-26-2 <sup>3/</sup>	129.77a	61.13	183.75	35.93a	.00	.00	2.50b	.25b
ID 167	MRN/TBR 66/3/TZPP/AN3/B <sup>2/</sup>	123.90a	61.57	186.50a	35.83a	.00	.00	7.50b	1.00
ID 130	AB A71525S-A-38-2 <sup>3/</sup>	123.00a	61.92	188.00a	37.50a	5.00	1.00	45.00	2.25
ID 187	A7243S-A-3-1 <sup>3/</sup>	117.58	60.38	186.25a	36.91a	41.25a	2.25	10.00	1.25
ID 183	ID0053/A6596S <sup>3/</sup> /A-21-1 <sup>3/</sup>	116.63	63.02a	187.00a	36.61a	51.25a	3.75a	57.50a	3.25a
ID 177	A7244S-B-2-1 <sup>3/</sup>	116.26	59.75	188.25a	35.33a	2.50	.75	27.50	2.00
ID 186	A7240S-38-2 <sup>3/</sup>	115.09	61.77	188.00a	36.81a	15.00	.50	35.00	2.00
ID 185	A7250S-A-8-1 <sup>3/</sup>	114.75	61.37	185.75a	34.45	.00	.00	65.00a	3.25a
ID 184	A6543S-14-1-3/A6596S <sup>3/</sup>	114.54	62.52a	187.50a	35.63a	50.00a	2.75a	12.50	1.50
ID 144	A7136S-5-2-3 <sup>3/</sup>	112.60	61.68	186.00a	37.01a	.00	.00	57.50a	3.50a
WA 6613	VH070954/ID 55 <sup>3/</sup>	112.14	57.92b	189.75a	39.67a	30.00	1.75	35.00	2.25
WA 6402	CI 14482/K6202578R21 <sup>3/</sup>	112.07	60.00	187.50a	34.55	.00	.00	62.50a	3.50a
ID 160	Peak 72/A6546S-2 <sup>3/</sup> 2 <sup>2/</sup>	110.11	61.05	187.75a	33.27	.00	.00	17.50	2.00
WA 6619	K 7095153/ID 55 <sup>3/</sup>	110.05	61.00	189.50a	33.86	38.75a	1.25	15.00	.50
UT 261102	RED R68/UT 256-3 <sup>3/</sup> 14-45-1 <sup>2/</sup>	109.42	61.75	186.75a	36.52a	.00	.00	15.00	1.75
WA 6618	K 7105153/ID 55 <sup>3/</sup>	109.29	62.57a	188.75a	35.14a	25.00	1.25	10.00	1.50
ID 153	Borah <sup>3/</sup> 3/II-60-101//TZPP <sup>2/</sup>	108.70	61.13	183.50	34.65	5.00	1.00	40.00	3.50a
CI 17267	Borah <sup>2/</sup>	108.22	60.77	183.75	32.28	2.50	.75	27.50	1.75
WA 6617	K 7105152/ID 56 <sup>3/</sup>	107.56	55.42b	194.50a	34.35	15.00	1.25	42.50	2.75
WA 6307	K6901532/Era <sup>2/</sup>	107.49	62.50a	189.25a	32.28	.00	.00	2.50b	.25b
ID 129	AB A71523S-A-17-2 <sup>3/</sup>	107.46	58.50b	189.00a	40.55a	22.50	.75	15.00	1.75
CI 17425	Fieldwin, ID 87 <sup>3/</sup>	107.17	62.40a	192.00a	39.86a	.00	.00	22.50	2.25
UT 881292	Bannock/Fremont <sup>2/</sup>	105.95	61.47	188.00a	40.75a	.00	.00	20.00	1.25
WA 6510	K 6901495/ID 26268 <sup>2/</sup>	105.40	61.75	188.50a	34.15	.00	.00	2.50b	.25b
UT 25910	Rogue 66/Fremont <sup>2/</sup>	105.30	61.05	187.00a	36.81a	45.00a	2.00	7.50b	1.25
WA 6620	N 7000315/ID65 <sup>3/</sup>	104.63	60.45	186.00a	35.93a	.00	.00	25.00	2.00
UT 881235	Bannock/Fremont <sup>2/</sup>	103.48	62.65a	185.75a	47.64a	.00	.00	35.00	2.50
UT 25850	Rogue 66/Fremont <sup>2/</sup>	103.22	59.95	185.50a	36.32a	22.50	1.25	32.50	2.00
ID 138	Fielder/A6514S-A <sup>2/</sup> 102-1 <sup>3/</sup>	102.66	62.70a	184.25	35.04a	.00	.00	78.75a	4.75a
UT 25943	Rogue 66/Fremont <sup>2/</sup>	101.80	60.47	187.75a	37.30a	68.75a	4.50a	15.00	1.50
UT 881404	Bannock/Fremont <sup>2/</sup>	99.20	60.55	185.25	46.46a	.00	.00	5.00b	.25b
WA 6615	VH070954/Fielder <sup>3/</sup>	99.11	62.27a	190.50a	42.62a	20.00	1.25	52.50a	3.50a
WA 6614	VH070954/ID 46 <sup>3/</sup>	98.72	56.92b	189.00a	32.68	42.50a	2.50	40.00	3.00
UT 25776	Rogue 66/Fremont <sup>2/</sup>	94.97b	60.45	186.75a	36.91a	83.75a	5.25a	17.50	1.75
WA 6616	VH070954/Fielder <sup>3/</sup>	90.42b	63.10a	188.25a	42.62a	22.50	.75	32.50	2.00
CI 4734	Federation <sup>3/</sup>	78.18b	59.42b	188.25a	46.75a	2.50	1.00	90.00a	7.00a

Table 2. (con't)

C.I. or State No.	Variety	Yield	Test Wt.	Heading	Height	Leaf Rust		Mildew	
		Bu/A	Lbs/Bu.	Date	Inches	%	Sev.	%	Sev.
	$\bar{x}_4$	107.96	60.93	187.49	37.25	16.98	1.04	29.97	2.14
	F $\bar{a}$	4.28**	13.20**	14.69**	16.79**	3.14**	3.54**	12.00**	7.89**
	S.E. $\bar{x}$	4.58	.46	.59	.96	12.61	.71	6.43	.48
	L.S.D. (.05)	12.85	1.30	1.65	2.68	35.34	1.98	18.03	1.35
	C.V. %	4.25	.76	.31	2.57	74.26	67.93	21.46	22.53

1/ Check variety

2/ Hard red

3/ Soft white

4/ F - value for variety comparison

 $\bar{a}$ / Values significantly greater than the check at the .05 level $\bar{b}$ / Values significantly less than the check at .05 level

\* Indicates statistical significance at the .05 level

\*\* Indicates statistical significance at the .01 level

Table \_\_\_\_\_. Summary of the western regional spring wheat nursery grown at the Northwestern Agricultural Research Center, Kalispell, MT 1971-79.

C.I. or State No.	Variety	1971	1972	1973	1974	1975	1976	1977	1979	Ave.	Sta. Yrs.	% Borah
CI 4734	Federation	51.3	65.3	69.4	69.4	40.7	38.7	73.0	78.2	60.8	8	67
CI 17267	Borah	89.2	88.3	93.1	89.5	94.4	72.8	89.6	108.2	90.6	8	100
CI 17425	Fieldwin, I87				107.2	78.6	71.9	97.9	107.2	92.5	5	102
UT 25776	Rogue 66/Fremont							92.1	95.0	93.6	2	95
UT 25850	Rogue 66/Fremont							98.6	103.2	100.9	2	102
UT 25943	Rogue 66/Fremont							92.6	101.8	97.2	2	98
ID 0129	Ab A71523S-A-17-2							100.5	107.5	104.0	2	105
ID 0130	Ab A71525S-A-38-2							109.6	123.0	116.3	2	118
ID 181	A71531S-A-26-2								129.8	129.8	1	120
ID 167	MRN/TBR 66/3/TZPP/AN3//B2								123.9	123.9	1	115
ID 187	A 7243S-A-3-1								117.6	117.6	1	109
ID 183	ID 0053/A6596S-A-21-1								116.6	116.6	1	108
ID 188	A 7244S-B-2-1								116.3	116.3	1	107
ID 186	A7240S-38-2								115.1	115.1	1	106
ID 185	A7250S-A-8-1								114.8	114.8	1	106
ID 184	A6543S-14-1-3/A6596S								114.5	114.5	1	106
ID 144	A7136S-5-2-3								112.6	112.6	1	104
WA 6613	VH070954/ID 55								112.1	112.1	1	104
WA 6402	CI 14482/K620257								112.1	112.1	1	104
ID 160	Peak 72/A65465-2-2								110.1	110.1	1	102
WA 6619	K 7105153/ID 55								110.1	110.1	1	102
UT 261102	Red R68/UT 256-3-14-45-1								109.4	109.4	1	101
WA 6618	K 7105153/ID 55								109.3	109.3	1	101
ID 153	Borah/3/II-60-101//TZPP								108.7	108.7	1	100
WA 6617	K 7105152/ID 56								107.6	107.6	1	99
WA 6307	K 6901532/Era								107.5	107.5	1	99
UT 881292	Bannock/Fremont								105.9	105.9	1	98
WA 6510	K 6901495/MN26268								105.4	105.4	1	97
WA 6620	N 7000315/ID 65								104.6	104.6	1	97
UT 881235	Bannock/Fremont								103.5	103.5	1	96
ID 138	Fielder/A65145-S-102-1								102.7	102.7	1	95
UT 881404	Bannock/Fremont								99.2	99.2	1	92
WA 6615	VH 070954/Fielder								99.1	99.1	1	92
WA 6614	VH 070954/ID 46								98.7	98.7	1	91
WA 6616	VH 070954/Fielder								90.4	90.4	1	84