

TITLE: Spring Wheat

PROJECT: Small Grains Investigations MS 756

YEAR: 1981

PERSONNEL: Leader - Vern R. Stewart
 Technician - Todd K. Keener
 Cooperators: Montana Agricultural Experiment Station, MSU
 USDA-SEA-AR
 Montana Wheat Research & Marketing Committee

OBJECTIVES:

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

EXPERIMENTS FOR 1981:

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

RESULTS AND DISCUSSION:

Private Variety Nursery

Yields were noticeably lower this season in comparison to the previous two years. The highest yield of the nursery was 84.4 bu/a from the variety Aim. Aim and the variety NK 55114 were the two varieties which yielded significantly more than the check, Newana. The mean yield this year was 26% less than the yield mean for last year.

The three highest yielding varieties also had the highest test weights (Aim, NK 55114 and Fortuna). Lodging was severe in the varieties Fortuna, Solar and Walera and moderate in Fielder and Fieldwin (Table 1).

Stripe rust (*Puccinia striiformis* West) was detected throughout the nursery in the maturing stage of the grain. Susceptibility ranged from light to severe. Several of the varieties which were highly susceptible to this disease like Fielder and Fieldwin, had very low yields. One variety, Owen, was observed to be resistant to this disease organism.

Western Regional Spring Wheat Nursery

Yields for this nursery were also lower than previous year averages. Leaf rust, stripe rust, and dry weather during grain maturation could all have contributed to depleted yields.

Ten varieties yielded significantly higher than the check. Of those ten varieties several were new Washington entries that were crossed with Potam 70. Eleven varieties yielded significantly less than the check (Table 2).

Spring Wheat (con't)

Test weights were also noticeable lower when comparing previous season means. Several varieties were significantly higher than the check test weight yet just two varieties were above 57 lbs/bu.

Lodging was not a serious problem throughout the nursery although there were four varieties which exhibited severe lodging tendencies.

Stripe rust was not as prevalent in this nursery yet seven varieties were moderately to severely infected. Five entries were resistant to stripe rust. Table 2.

SPRING WHEAT VARIETIES

SPRING WHEAT VARIETIES RECOMMENDED FOR WESTERN MONTANA

Hard Red Varieties

1. Borah - non-irrigated and irrigated
2. Fortuna - dryland
3. Newana - dryland and irrigated
4. Pondera - dryland and irrigated
5. Marberg - dryland and irrigated

Soft White Variety

1. Owens - dryland and irrigated

CHARACTERISTICS OF RECOMMENDED VARIETIES

Hard Red Varieties

1. 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

2. 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

3. 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

Recommended Spring Wheat Varieties (con't)4. 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

5. 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. Owens

- a. Bearded variety from Idaho
- b. High yielding ability
- c. Semi-dwarf type
- d. Medium maturity
- e. Fair test weight
- f. Good straw strength
- g. Good shattering resistance
- h. Resistant to stem and stripe rust

Table 1. Agronomic data from the Private Variety Spring Wheat Nursery grown on the Northwestern Agricultural Research Center in 1981. Field Y-3. Random block design, four replications.

Date Seeded: April 16, 1981 Date Harvested: September 15, 1981 Size of Plot: 32 sq. ft.

C.I. or State No	Variety	Yield Bu/A	Test Wt Lbs/Bu.	Heading Date	Height Inches	Lodging		Strip Rust	
						%	Angle	Sev.	Reaction ^{3/}
WB 1	Aim (WPB)	84.35a	55.53	182.00b	38.50	.00	.00	35.00	I
NK 55114	75S 5511-4	82.75a	57.42a	182.00b	39.75	7.50	1.25	8.00	S
CI 13596	Fortuna	75.61	58.95a	182.75b	46.75a	69.75a	3.00a	5.50	S
WB 2	803 Durum (WPB)	72.24	53.72	181.75b	33.50b	.00	.00	6.00	I
CI 17904	Owens	71.20	52.42b	183.00b	40.25a	15.00	1.25	10.00	R
CI 17430	Newana, MT 7156 ^{1/}	70.87	54.17	184.25	38.00	.00	.00	12.50	S
AG 1	Solar	69.96	55.35	184.75	40.75a	60.00a	6.00a	10.00	S
NK 2631	75S 2631	69.50	54.07	185.50a	41.75a	.00	.00	8.50	S
AG 2634	Walera	62.21b	55.20	184.50	39.75	69.75a	6.00a	17.50	I
WS 122	MP-122	60.13b	53.17	186.25a	40.25a	.00	.00	27.50	I
MT 34	Prodax	57.81b	50.72b	182.00b	38.00	.00	.00	47.50a	I
NA 79304	HS79-304(NAPB)	55.76b	52.63b	185.00	38.25	.00	.00	94.50a	S
CI 17790	Len (ND543)	53.54b	50.97b	182.25b	38.50	.00	.00	27.50	S
NA 18374	NHS 183-74	51.00b	50.85b	180.50b	36.25	.00	.00	82.00a	S
CI 10003	Thatcher	46.94b	53.57	182.00b	48.25a	.00	.00	8.00	S
CI 17268	Fielder	22.08b	43.65b	185.25a	39.75	43.75a	4.50a	95.00a	S
CI 17425	Fieldwin, ID 87	14.80b	44.60b	184.75	37.75	41.25a	3.75a	94.50a	S
		\bar{x}	60.04	52.77	183.44	39.76	18.06	1.51	34.68
		F _{2/}	44.24**	62.68**	40.57**	21.46**	6.09**	5.00**	11.28**
		S.E. \bar{x}	2.85	.50	.26	.75	10.95	1.00	10.29
		L.S.D. (.05)	8.10	1.41	.75	2.13	31.14	2.83	30.84
		C.V.%	4.74	.94	.14	1.89	60.65	65.80	29.66

1/ Check variety

2/ F-value for variety comparison

3/ Stripe Rust Reaction = R = resistant, I = intermediate, S = susceptible

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 .01 level.