TITLE: Spring Wheat

PROJECT: Small Grains Investigation MS 756

YEAR: 1976

PERSONNEL: Leader - Vern R. Stewart
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Cooperating Agencies - Montana Agricultural Experiment Station
Field Crops Branch, ARS, USDA
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OBJECTIVES:
1. To determine the adaptability of new introduced spring wheat varieties and selections by comparisons with recommended varieties.
2. Study the semi-dwarf strains of spring wheat for use under irrigated conditions.
3. To aid in basic genetic research in spring wheat and the overall breeding program.

1976 EXPERIMENTS:
1. Advanced Yield Nursery (dryland)
2. Western Regional Spring Wheat Nursery (dryland)
3. Private Variety Nursery (dryland)

1976 RESULTS BY NURSERY:

Advanced Yield Nursery - The mean yield is down this year, 65.21 bu/a as compared to last year's 78.45 bu/a. It was discovered that this field was quite low in N, therefore the usual level of N added to this nursery was inadequate for optimum yield growth. No entries had yields significantly higher than the check Norana, but eight yielded significantly lower. Many entries had heading dates significantly earlier than Norana; Lew and Wared were significantly later. As last year rainy weather conditions hindered harvest and contributed to the low test weights. Lodging severity wasn't quite as severe this year with a mean of 5.31 compared to last years 6.02. Many entries had a lodging severity significantly greater than Norana, no entries were significantly less. MT737, Rolette, and Tioga had stripe rust severity readings significantly greater than Norana, nine were significantly less. Table 1.

In the ten year summary all varieties yielded higher than Thatcher. Table 2.

Western Regional Spring Wheat Nursery - Yields were low this year due to a low N fertility. WA6105 had a yield significantly greater than the check, Fielder; thirteen had yields significantly less. There were 15 hard red varieties and 12 soft white varieties. In comparing the red and white varieties, it was found that the "reds" mean yield was higher than the white; 65.35 bu/a and 53.22 bu/a respectively. Test weights were low due to the rainy harvest season. Table 3.

In a summary of yields over several years Fielder was used as a check. Three varieties, ID112, UT670, and UT497 with one station year of data had yields higher than Fielder. Table 4.

Private Variety Nursery - This nursery contains lines and varieties developed by commercial companies which were compared to several established varieties used as checks. Two entries, NA13374 and Profit 75, yielded significantly higher than the check, Newana; Thatcher and WS701 yielded significantly lower. Test weights were low with NK5511 having the highest at 58.60 lbs/bu. Table 5.

Table 1. Agronomic data from the Advanced Yield Spring Wheat Nursery grown on the Northwestern Agricultural Research Center, Kalispell, MT in 1976. Field No. Y-6 (dryland) Random block design, four replications.

Date seeded: April 28, 1976 Date harvested: September 13, 1976 Size of plot: 16 sq. ft.

C.I. or State No.	Variety	Yield Bu/A	Test Wt Lbs/Bu	Heading Date	Plant Height	Lodging %	Lodging Sev.	Stripe Rust Prev.%	Stripe Rust Sev.
CI 17267	Borah	76.45	56.50	183.75b	28.25	75.00a	6.25a	7.50	2.00
ND 522	ND491/Fletcher	75.25	55.40	187.25b	33.00	62.50a	6.50a	2.50	1.00b
MT 7437	Redr68-Crim/3/N/B//4*Cnt	74.42	59.20	183.75b	30.75a	40.00	3.75	.00b	.00b
MT 746	Redr68-SI/3/N10/B14//5*C	73.27	58.50	185.75b	30.75a	82.50a	6.25a	6.25a	2.75
MT 749	Redr68-SI/3/N10/B14//5*C	72.57	59.50	185.25b	31.25a	62.50a	5.50a	3.75	2.25
CI 17282	Crosby	70.67	58.80	186.25b	39.00a	65.00a	5.25a	7.50	3.25
CI 15927	Norana (MT 7042) 1/	69.85	57.20	188.50	27.75	32.50	3.75	7.50	3.25
MT 7421	Redr68/3/N10/B14//6*Cnt	69.82	58.40	186.75b	32.00a	49.75	3.25	2.50	1.50b
CI 15892	Ward (Durum)	69.10	58.80	186.00b	37.25a	57.50	5.75a	6.25	3.75
CI 17430	Newana, MT 7156	68.32	57.10	188.50	29.00	26.25	4.00	6.25	3.25
MT 737	MRN10/BVR14//6*CNT/3/SI	68.05	58.50	187.50b	31.75a	57.25a	3.00	13.75	5.00a
MT 747	Redr68-SI/3/N10/B14//5*C	67.95	56.70	182.75b	27.25	82.50a	5.50a	16.25a	3.25
MT 7031	JT/3/MRN10/BVR14//4*CNT	67.55	56.40	186.00b	30.50	55.00	5.50a	.00b	.00b
MT 7537	SI/3/N10-B//4*CNT/4/Polk	67.40	57.40	188.75	31.25a	41.00	3.25	1.25	.50b
CI 15930	Olaf	67.22	57.70	186.00b	29.50	47.50	5.00	1.25	.50b
MT 7422	Redr68/3/N10/B14//6*CNT	66.32	54.70	187.50b	31.25a	40.00	4.75	5.00	2.50
CI 15926	Wared	65.30	57.50	189.50a	31.25a	50.00	5.25a	5.00	2.75
MT 7416	Redr68/3/N10/B14//6*CNT	65.15	58.10	183.50b	29.50	60.00a	5.25a	6.25	3.75
MN 6427	II-55-14/II-60-105	63.57	56.80	187.00b	30.25	67.50a	6.75a	5.00	2.50
CI 13775	Manitou, R.L. 4159	63.17	58.10	186.75b	37.00a	72.50a	5.00	.00b	.00b
MT 7448	PK 176/Sheridan	61.90	57.80	183.75b	29.00	65.00a	5.25a	15.00	4.00
ND 519	ND480//Polk/Wisc 261	61.40	59.10	184.50b	30.50	50.00	5.50a	8.75	2.75
CI 15326	Rolette (Durum)	59.94b	58.80	184.50b	37.75a	45.00	5.00	20.00a	5.25a
MT 7449	PK 176/Sheridan	59.47b	56.30	185.50b	27.25	56.25	5.75a	.00b	.00b
CI 13596	Fortuna	58.82b	57.30	187.75	37.25a	90.00a	6.50a	6.25	2.75
CI 17429	Lew, MT 711	58.17b	58.30	190.00a	36.50a	85.00a	6.50a	8.75	3.25
CI 13333	Wells	57.34b	56.90	188.75	42.25a	62.50a	6.00a	11.25	4.25
CI 17297	Kitt, MN 6433	54.12b	53.80	188.75	28.25	82.50a	7.00a	12.50	3.75
CI 10003	Thatcher	52.27b	56.70	186.50	36.25a	82.50a	6.25a	.00b	.00b
CI 17286	Tioga	51.52b	57.40	189.00	37.75a	87.50a	6.00a	43.75a	7.00a
	$\bar{x}$	65.21	57.46	186.53	32.28	61.10	5.31	7.67	2.56
	F 2/	4.09**	.00	46.75**	16.94**	3.18**	4.44**	7.66**	16.04**
	S.E.$\bar{x}$	3.29	.00	.29	.98	9.64	.52	3.10	.44
	L.S.D.(.05)	9.24	.00	.81	2.75	27.07	1.45	8.70	1.23
	C.V.%	5.04	.00	.15	3.02	15.77	9.73	40.42	17.18

Tabel 1 (con't)

1/ Check variety
2/ Value for variety comparison
* Indicates statistical significance at the .05 level
** Indicates statistical significance at the .01 level
a/ Value significantly greater than the check .05
b/ Value significantly less than the check .05

Table 2. Summary of dryland hard red spring wheat yields for the Advanced Yield Nursery Grown at the Northwestern Agricultural Research Center, Kalispell, MT. 1967-76.

C.I. or State No.	Variety	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	Ave.	Sta. Yrs.	% Thatcher
CI 10003	Thatcher	60.6	63.4	69.5	55.5	72.5	64.7	55.0	71.9	65.9	52.3	63.1	10	100
CI 13333	Wells	62.8	63.1	64.8	53.7	66.8	54.1	49.9	83.8	78.8	57.3	63.5	10	101
CI 13775	Manitou	57.5	57.6	70.7	66.9	67.1	61.5	53.8	77.5	69.3	63.2	64.5	10	102
CI 13596	Fortuna	56.4	74.7	88.9	41.9	76.8	56.2	60.5	81.9	68.9	58.8	66.5	10	105
CI 15927	Norana					90.8	87.6	69.7	98.4	72.7	69.8	81.5	6	128
CI 17430	Newana (MT 7156)						83.9	72.7	99.1	85.2	68.3	81.8	5	132
CI 17429	Lew (MT 711)						71.9	67.3	88.6	65.3	58.2	70.3	5	113
CI 17286	Tioga						62.7	58.6	80.9	63.3	51.5	63.4	5	102
CI 17297	Kitt (MN 6433)							61.5	88.7	81.9	54.1	71.5	4	117
CI 17267	Borah							69.5	102.9	95.0	76.5	86.0	4	140
CI 15930	Olaf							58.0	84.8	82.6	67.2	73.2	4	119
CI 15926	Wared								98.0	74.1	65.3	79.1	3	125
CI 15892	Ward (Durum)								93.4	77.8	69.1	80.1	3	126
MT 737	NRN10/BVR14//6*CNT/3/SI								90.3	83.3	68.1	80.6	3	127
MT 749	Redr 68-SI/3/N10/B14//5*CNT									96.7	72.6	84.6	2	143
MT 7416	Redr 68/3/N10/B14//6* CNT									90.0	65.2	77.6	2	131
MT 7421	Redr 68/3/N10/B14//6*CNT									80.9	69.8	75.3	2	127
MT 747	Redr 68-SI/3/N10/B14//5*CNT									80.5	68.0	74.2	2	126
CI 17282	Crosby									79.6	70.7	75.1	2	127
MT 746	Redr 68-SI/3/N10/B14//5*CNT									72.2	73.3	72.7	2	123
ND 522	ND491/Fletcher										75.3	75.3	1	144
MT 7437	Redr 68-Crim/3/N/B//4*CNT										74.4	74.4	1	142
MT 7031	JT/3/NRN10/BVR14//4*CNT										67.6	67.6	1	129
MT 7537	SI/3/N10-B//4*CNT/4/Polk										67.4	67.4	1	129
MT 7422	Redr 68/3/N10/B14//6*CNT										66.3	66.3	1	127
MN 6427	II-55-14/II-60-105										63.6	63.6	1	122
MT 7448	PK 176/Sheridan										61.9	61.9	1	118
ND 519	ND 480//Polk/Wisc. 261										61.4	61.4	1	117
CI 15326	Rolette (Durum)										59.9	59.9	1	114
MT 7449	PK 176/Sheridan										59.5	59.5	1	114