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
Montana Wheat Research & Marketing Committee

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 5. Agronomic data from the Private Variety Nursery grown on the Northwestern Agricultural Research Center, Kalispell, MT in 1976. 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.
NA 18374	NHS 183-74	76.25a	55.90	186.50b	30.25	35.00	5.00b	5.00	2.00
MT 45	Profit 75(W.S.)	73.65a	56.10	187.00	29.75	62.50	5.75	2.50	1.50
CI 13596	Fortuna	69.77	57.00	188.00	35.25a	82.50a	6.25	5.00	2.00
NK 5511	75 V 5511	67.50	58.60	188.00	30.00	47.50	5.25	5.00	2.50
NA 712	6WA-712 Early	67.05	54.50	188.25	26.25	70.00a	6.75	2.50	1.25
CE 1024	Cebeco 1024	65.87	55.80	187.50	30.25	57.50	6.00	5.00	1.25
CI 13986	ERA	65.47	55.30	190.25a	30.00	57.50	7.25	8.75	3.25
NK 5508	75V 5508	61.82	52.60	190.00	29.00	55.00	6.25	5.00	3.25
CI 17430	Newana, MT 7156[1/]	61.07	55.50	188.50	28.50	45.00	6.25	3.75	2.50
MT 44	Bounty 309(Cargill)	58.82	54.50	186.50b	29.00	52.50	5.00b	1.25	.50b
WS 25	World Seeds 25	58.64	54.00	186.50b	30.50	65.00	6.75	.00	.00b
MT 34	Prodax	55.69	54.00	187.00	29.00	65.00	6.25	5.00	2.25
NK 5507	75 V 5507	54.67	54.60	187.25	28.50	62.50	6.75	3.75	2.00
CI 10003	Thatcher	51.27b	54.10	187.50	38.25a	75.00a	6.25	2.50	.75
WS 701	World Seeds 701	50.62b	54.40	189.50	32.75a	65.00	7.00	.00	.00b
	$\bar{x}$	62.54	55.13	187.88	30.48	59.83	6.18	3.67	1.67
	F[2/]	4.98**	.00	4.56**	12.79**	2.33*	2.57**	1.53NS	2.47**
	S.E.$\bar{x}$	3.47	.00	.58	.82	7.87	.43	1.85	.66
	L.S.D.(.05)	9.91	.00	1.65	2.36	22.49	1.23	5.28	1.90
	C.V. %	5.54	.00	.31	2.70	13.15	6.98	50.38	39.81

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
b/ Value significantly less than the check