TITLE: Spring Wheat

PROJECT: Small Grains Investigations 756

YEAR: 1973

PERSONNEL: Vern R. Stewart
Cooperators - F. H. McNeal and M. A. Berg

COOPERATING AGENCIES:

Montana Agricultural Experiment Station
Field Crops Branch, ARS, USDA
Montana Wheat Research and 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.

1973 EXPERIMENTS:

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

SUMMARY OF 1973 RESULTS:

Spring Wheat (1) The hard red semi-dwarf out yielded the taller standard wheats. Norana, a semi-dwarf type, is a new release for western Montana. Era is the highest yielding semi-dwarf type over a five year period in western Montana, but is somewhat weak in baking quality. ID 43 needs further evaluation, because of its high yield and earliness. (2) The soft white wheats were 2 to 3 bushels higher in yield on the average than the hard red types. ID 46 was the highest yielding variety in 1973, but not significantly higher than Twin, a recommended variety for western Montana. ID 46 is 4 days earlier in heading which could be a valuable asset in western Montana. (3) There were no real significant differences found between commercial varieties tested and Norana (HR) which was used as the check variety. Twin (SW) was superior in yield to all private lines tested.

1973 RESULTS BY NURSERY:

Advance Yield Nursery - The mean for this nursery was 62.0 bu/a down 12.8 bu/a from the 1972 nursery. This is due to lower rain fall during the 1973 crop year. Norana, a new release, is used as the check variety. Era is equal to Norana, MT 738 is the highest yielding entry, however no entry was significantly higher in yield than the check.

The semi-dwarf lines out yielded and are superior agronomically to the tall standard varieties.

ID 43 is the earliest heading entry in the nursery, 4 days ahead of Norana. Its earliness could be a real asset for spring wheat production in western Montana. Table 1

Table 2 gives a summary of yield data of spring wheat varieties grown from 1964-1973. Thatcher is used as a base of 100%. Era and Norana out yield Thatcher by 36% and 26% respectively. There are other entries that exceed these percentages but are for a very short term. Comparing the yield of Norana and Era 1971-73, they yield 82.7 bu/a and 85.2 bu/a respectively. Era, a semi-dwarf, continues to out preform all other semi-dwarf types agronomically.

Results (con't)

Western Regional Spring Wheat - Thirty-two entries are included in the nursery. There are 17 soft whites, 2 hard whites and 13 reds. Twin, a soft white variety, which is currently recommended for western Montana averaged 95.5 bu/a and no other entry was found to be significantly higher in yield. Anza, a hard red entry was the highest yielding entry at 98.7 bu/a.

The hard red varieties yielded 81.3 bu/a and the soft white varieties 83.6 bu/a.

Lodging data was obtained, but is not made a part of this record because the differences were not found to be statistically significant. Table 3.

Private Variety Nursery - This nursery contains lines and varieties developed by commercial companies and public varieties for comparison. Twin is the highest yielding entry at 94.41 bu/a followed by Era at 90.68 bu/a. Norana is used as a check for comparison. Twin was found to be significantly higher in yield statistically than Norana. None of the commercial lines were significantly lower in yield than Norana. Triticales varieties in this test were quite low in yield and very late in maturity.

Table 4. Agronomic data from private variety spring wheat nursery grown at the Northwestern Agricultural Research Center, Kalispell in 1973. Field No. Y-2

Planting date: April 24, 1973 Harvest date: August 30, 1973
Size of Plot: 16 sq. ft.

C.I. or State No.	Variety	Yield Bu/A	Test Wt. Lbs/Bu.	Heading Date	Plant Height	Sheaf Wt. Grams
CI 14588	Twin - ID 0015	94.41a	57.60	181.50	35.50	1928.00
CI 13986	Era	90.68	59.50	180.75	35.25	1793.25
MT 25	Promora	85.00	58.50	175.75b	33.50	1750.50
CI 15927	Norana (MT 7042)1/	79.90	58.50	181.00	37.50	1722.50
MT 31	1809	78.25	58.90	176.00b	30.75b	1601.75
MT 33	Bounty 208	75.42	57.10	175.50b	30.50b	1687.00
MT 24	Protor	75.17	58.50	176.25b	31.25	1615.75
MT 29	MP-6B	72.22	52.80	177.50b	30.75b	1623.25
MT 28	Sicco	71.82	58.20	186.25a	37.25	1828.75
MT 30	Lark	70.00	54.10	177.00b	30.50b	1566.50
CI 13596	Fortuna	68.62	61.20	177.50b	38.75	1637.25
MT 23	Trailblazer (Triticales)2/	63.62b	49.00	182.50a	46.25a	1807.50
MT 32	Armadillo-105,Triticale2/	61.10b	49.40	175.00b	40.50	1729.50
CI 10003	Thatcher	61.00b	59.00	178.25b	39.50	1559.50
MT 27	A004, 1996	53.22b	61.30	177.25b	27.00b	1134.00
	$\bar{x}$	73.4	56.9	178.5	35.0	1665.7
	F3/	6.02**	.00	115.17**	4.92**	5.67**
	S.E.$\bar{x}$	4.61	.00	.30	2.28	76.11
	L.S.D. .05	13.19	.00	.85	6.53	217.52
	C.V. %	6.29	.00	.17	6.53	4.57

1/ Check variety
2/ Late in maturity, this harvested several days later.
3/ Value used for variety comparison.
* Indicates statistical significance .05 level.
** Indicates statistical significance .01 level.
a Values significantly greater than the check .05.
b Values significantly less than the check .05.