

TITLE: Spring Wheat

PROJECT: Small Grains Investigation MS 756

YEAR: 1977

PERSONNEL: Leader - Vern R. Stewart
 Research Technician - Nancy Campbell
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 Cooperating Agencies - Montana Agricultural Experiment Station
 Field Crops Branch ARS USDA
 Montana Research and Marketing Committee

OBJECTIVES:

1. To determine the adaptability of new and introduced spring wheat varieties and selections.
2. To study the semi-dwarf strains of spring wheat for use under irrigated conditions.
3. To aid in the basic genetic research program in spring wheat.

DURATION: Indefinite

1977 EXPERIMENTS:

1. Advanced Yield Nursery, dryland
2. Western Regional Spring Wheat Nursery, dryland
3. Private Varieties Nursery, dryland

1977 RESULTS BY NURSERY:

Advanced Yield Nursery

In spite of the lower than normal rainfall during the crop year 1976-77 spring wheat yields were near average. The highest yielding entry in the nursery was MT 7646 at 90.75 bu/a. The durum variety Rolette was the lowest yielding variety. Newana was used as the check variety. There were no varieties that exceeded it in yield, but several were significantly less. Test weights were considerably below normal. This could be due in part to rainfall during the harvest period. Heading dates are crucial as regards spring wheat in western Montana. Even with an early seeding date we did not get this material harvested at an early date. Borah is one of the earlier maturing varieties, whereas Newana is one of the later maturing varieties in this test. Lodging was not a significant factor in this nursery. CV's are low in this test. The nursery was harvested with the Hegi combine. Lodging CV's were about what we would anticipate. Table 1.

Table 2, is a ten year summary of varieties grown in the Advanced Yield Nursery grown at the Northwestern Agricultural Research Center. Thatcher is the check variety. We find most of the varieties currently grown do exceed Thatcher in yield. Percentages up to 40% superior in yield are shown, however some are for only one year. Newana is 33% greater in yield than Thatcher and Borah is 39%.

Western Regional White Wheat Nursery

The mean yield for this nursery was 89.7 bu/a. Borah which was used as the check variety was 89.58 bu/a which is less than the average. ID 130 was the only variety that was significantly higher in yield than Borah. Test weights were fair to poor throughout the test. One line ID 132, a soft white variety, had a test weight of 60 lbs/bu, which was the highest in the test. Heading dates are late in the soft white wheats. ID 130 has a relatively early heading date, but six days later than Borah which is the earliest in the study. Lodging was not a major factor in this nursery. Table 3.

Spring Wheat (con't)

Table 4 gives a summary of the Regional Spring Wheat Nursery yields with Borah as the check. Those that have been under test three or more years only Fieldwin exceeds the check.

Private Variety Nursery

The mean for this nursery was 84.53 bu/a. The highest yielding entry Newana, 97.71 bu/a, is also the check variety. There were five varieties that were significantly lower in yield than Newana. Prodam was relatively close in yield to Newana. Test weights were below standard. This is probably due to rain. Heading dates are 174 to 179 days following January 1, which are somewhat late. Lodging was not a significant factor. Table 5.

All of the above nurseries were free of leaf diseases in 1977.

Table 1. Agronomic data from the Advanced Yield Nursery grown at the Northwestern Agricultural Research Center, Kalispell, MT in 1977. Field No. Y-7 Random block design, four replications. Size of plot: 16 sq. ft.

Seeding Date: April 14, 1977 Harvest Date: September 13, 1977

C.I. or State No.	Variety	Yield bu/a	Test Wt. lbs/bu	Heading Date	Lodging	
					%	Sev.
MT 7646	ND476/4/SI/3/N-B//4*CNT	90.75	56.30	174.75b	22.50b	3.50
MT 749	REDR68-SI/3/N10/B14//5*C	90.08	58.70	173.00	59.50	2.75
CI 17430	Newana, MT 7156 ^{1/}	89.50	58.70	177.25	76.75	1.25
MT 7648	ND476/4/SI/3/N-B//4*CNT	89.40	57.40	174.25b	32.50b	3.00
CI 17681	Butte	86.55	58.50	172.50b	47.25b	3.50
CI 15927	Norana (MT 7042)	86.50	55.20	177.00	54.50	1.75
CI 17267	Borah	85.23	54.70	172.25b	86.75	2.00
MT 7416	REDR68/3/N10/B14//6*CNT	83.98	57.30	172.00b	57.00	2.00
CI 15930	Olaf	83.15	53.30	173.50b	99.00	1.00
MT 7421	REDR68/3/N10/B14//6*CNT	82.65	53.10	175.50b	99.00	1.00
MT 7031	JT/3/NRN10/BVR14//4*CNT	82.40	56.00	174.50b	57.00	2.25
MN 6427	II-55-14/II-60-105	80.93	58.30	175.00b	59.50	2.50
MT 7639	POLK/4/SI/3/N-B/5*CNT	79.38	55.70	175.00b	27.50b	3.25
CI 17429	LEW, MT 711	78.78	58.60	177.50	77.50	5.75
CI 13596	Fortuna	75.30b	58.30	175.75b	77.50	5.50
MT 7525	RR68/4/SI/3/N10/B//5*CNT	75.05b	55.30	175.50b	76.75	1.50
MT 7635	MT 647/MT 6868	74.85b	53.90	172.75b	32.50b	3.75
MT 7620	B52-91//KF/CNT/3/FTA	74.30b	57.00	178.25	45.00b	4.25
MT 7616	B52-91//KF/CNT/3/FTA	72.02b	55.30	177.00	52.50	5.00
CI 15892	Ward (Durum)	70.87b	58.40	174.00b	32.25b	2.50
CI 13333	Wells	70.85b	58.90	176.00	42.50b	5.00
MT 7437	REDR68-CRIM/3/N/B//4*CNT	70.45b	57.90	171.75b	37.25b	2.75
ND 538	ND496//ND487/Fletcher	69.27b	53.80	176.00	22.50b	3.75
CI 17286	Tioga	68.50b	58.40	177.00	65.00	5.25
CI 13775	Manitou, R.L. 4159	68.15b	56.00	175.25b	35.00b	5.25
MT 757	91-KF-CNT-SI-N10-B-5*CNT	66.60b	57.40	172.75b	35.00b	4.50
CI 17282	Crosby	64.75b	57.50	174.75b	39.75b	3.25
CI 10003	Thatcher	64.70b	55.60	174.75b	35.00b	4.00
MT 7626	MT647/3/B52-91//KF/CNT	64.62b	57.20	173.50b	52.50	5.25
CI 15326	Rolette (Durum)	62.95b	57.70	172.00b	54.50	1.75
	\bar{x}	76.75	56.68	174.70	53.06	3.29
	F ^{2/}	5.07**	-	26.02**	1.72*	1.14
	S.E. \bar{x}	3.89	-	.36	16.34	.57
	L.S.D. (.05)	10.92	-	1.01	45.89	N.S.
	C.V. %	5.06	-	.21	30.80	17.26

^{1/} Check variety

^{2/} Value for variety comparison

* Indicates statistical significance at the .05 level

** Indicates statistical significance at the .01 level

a/ Values significantly greater than the check .05

b/ Values 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. 1968-77.

C.I. or State No.	Variety	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	Ave.	Sta. Yrs.	% Thatcher
CI 10003	Thatcher	67.4	69.5	55.5	72.5	64.7	55.0	71.9	65.9	52.3	64.7	63.5	10	100
CI 13333	Wells	63.1	64.8	53.7	66.8	54.1	49.9	83.8	78.8	57.3	70.9	64.3	10	101
CI 13775	Manitou	57.6	70.7	66.9	67.1	61.5	53.8	77.5	69.3	63.2	68.2	65.6	10	103
CI 13596	Fortuna	74.7	88.9	41.9	76.8	56.2	60.5	81.9	68.9	58.8	75.3	68.4	10	108
CI 15927	Norana				90.8	87.6	69.7	98.4	72.7	69.8	86.5	82.2	7	129
CI 17430	Newana (MT 7156)					83.9	72.7	99.1	85.2	68.3	89.5	83.1	6	133
CI 17429	Lew (MT 711)					71.9	67.3	88.6	65.3	58.2	78.8	71.7	6	115
CI 17286	Tioga					62.7	58.6	80.9	63.3	51.5	68.5	64.3	6	103
CI 17267	Borah						69.5	102.9	95.0	76.5	85.2	85.8	5	139
CI 15930	Olaf						58.0	84.8	82.6	67.2	83.2	75.2	5	121
CI 15892	Ward (durum)							93.4	77.8	69.1	70.9	77.8	4	122
MT 749	RR68-Si/3/N-B//5*Cnt								96.7	72.6	90.1	86.5	3	142
MT 7416	RR68/3/N-B//6*Cnt								90.0	65.2	84.0	79.7	3	131
MT 7421	RR68/3/NB//6*Cnt								80.9	69.8	82.7	77.8	3	128
CI 17282	Crosby								79.6	70.7	64.8	71.7	3	118
MT 7437	RR68-Crim/3/N/B//4*Cnt									74.4	70.5	72.5	2	124
MT 7031	Jt/3/N-B//4*Cnt									67.6	82.4	75.0	2	128
MN 6427	II-55-14/II-60-105									63.6	80.9	72.3	2	124
CI 17681	Butte (ND 519)									61.4	86.6	74.0	2	126
CI 15326	Rolette (durum)									59.9	63.0	61.5	2	105
ND 538	ND496//ND487/Fletcher										69.3	69.3	1	107
MT 7616	B52-91//KF/Cnt/3/Fta										72.0	72.0	1	111
MT 7620	B52-91//KF/Cnt/3/Fta										74.3	74.3	1	115
MT 7525	RR68/4/Si/3/N10/B//5*Cnt										75.1	75.1	1	116
MT 757	91-KF-Cnt-Si-N10-B-5*Cnt										66.6	66.6	1	103
MT 7646	ND476/4/Si/3/N-B//4*Cnt										90.8	90.8	1	140
MT 7648	ND476/4/Si/3/N-B//4*Cnt										89.4	89.4	1	138
MT 7626	MT647/3/B52-91//KF/Cnt										64.6	64.6	1	100
MT 7635	MT647/MT 6868										74.9	74.9	1	116
MT 7639	Polk /4/Si/3/N-B/5*Cnt										79.4	79.4	1	123