

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 3. Agronomic data from the Western Regional White Spring Wheat Nursery grown at the Northwestern Agricultural Research Center, Kalispell, MT in 1977. Field No. Y-7. Random block design, four replications.

Seeding Date: April 14, 1977 Harvest Date: September 13, 1977
Size of Plot: 16 sq. ft.

C.I. or State No.	Variety	Yield bu/a	Test Wt lbs/bu	Heading Date	Lodging	
					%	Sev.
ID 130	AB A71525S-A-38-2 ^{3/}	109.59a	57.80	176.00	59.50	2.00
WA 6276	Spring Luke ^{3/}	103.18	59.20	181.75	54.50	1.75
WA 6389	K 69001496/ERA S.14 ^{2/}	101.31	58.40	178.00	99.00	1.00
ID 129	AB A71523S-A-17-2 ^{3/}	100.53	57.20	176.75	37.50	4.00
UT 25850	Rogue 66/Fremont ^{2/}	98.56	56.60	173.50	64.50	2.00
✓ CI 17425	Fieldwin, ID 87 ^{3/}	97.88	58.00	178.00	30.00	4.00
WA 6277	Spring Luke ^{3/}	96.00	58.70	181.50	76.75	1.50
UT 25943	Rogue 66/Fremont ^{2/}	92.61	57.40	175.50	54.50	2.00
UT 25776	Rogue 66/Fremont ^{2/}	92.11	57.30	175.00	76.75	2.00
WA 6371	K 6900975/N 6800168 S.42 ^{3/}	91.86	57.70	179.00	57.00	2.00
ID 128	AB A71454S-4-3 ^{3/}	91.78	53.80	174.75	55.00	5.75a
WA 6305	K 6901031/Era ^{2/}	91.28	59.00	178.50	25.00	4.00
WA 6109	WA5243/3/C3845/H7-536 ^{2/}	90.68	56.20	179.00	54.50	1.75
✓ ID 106	Twin/Triple Dirk ^{3/}	89.78	52.90	177.00	22.50	3.50
WA 6105	HRY/KRN//AO/HRPC/3/13730 ^{2/}	89.63	56.50	176.50	22.50	3.75
CI 17267	Borah ^{1/2/}	89.58	58.30	172.50	59.50	2.50
ID 133	ID0042//SN64/II-60-155 ^{2/}	88.55	58.70	174.75	59.50	2.25
ID 135	AB A71415S-16-3 ^{2/}	88.38	56.10	176.00	67.00	2.75
ID 134	BOR/3/II-60-101//TSPP-SN ^{2/}	87.85	58.10	173.75	64.50	2.50
UT 611	UT S15 & UT S16 ^{2/}	83.95	55.30	178.00	37.50	4.25
ID 131	AB A71464S-98-2 ^{3/}	83.90	56.40	174.00	32.25	2.00
CA 70293	Inia 66/ANZA ^{2/}	82.78	57.30	171.00	37.25	3.50
WA 6298	K 6900975/N 6800168 S.35 ^{3/}	82.23	58.20	178.75	32.25	2.25
WA 6325	VH 68262/N 6800346 S.09 ^{3/}	80.73	55.00	179.25	32.25	2.25
ID 132	Burt/Marquis//861-131 ^{2/}	79.15	60.40	177.75	10.00	2.75
ID 725078	Idaed 59/4*Lemhi 62 ^{3/}	78.45	57.20	178.75	50.00	5.75a
UT 517	UT S15 and UT S16 ^{2/}	78.23	56.20	178.25	52.25	3.50
CI 4734	Federation ^{3/}	72.97	56.70	177.00	25.00	3.50
	\bar{x}	89.77	57.16	176.80	48.17	2.88
	$F_{5/}$	2.23**	-	.99	1.17	3.05*
	S.E. \bar{x}	7.22	-	8.43	18.69	.68
	L.S.D. (.05)	20.03	-	N.S.	N.S.	1.92
	C.V. %	7.95	-	4.81	38.80	23.73

1/ Check variety

2/ Hard red

3/ Soft white

4/ Hard white

5/ 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 4. Summary of the Western Regional Spring Wheat nursery grown at the Northwestern Agricultural Research Center, Kalispell, MT 1971-77.

C.I. or State No.	Variety	1971	1972	1973	1974	1975	1976	1977	Ave.	Sta. Yrs.	% Borah
CI 4734	Federation	51.3	65.3	69.4	69.4	40.7	38.7	73.0	58.3	7	66
CI 17267	Borah	89.2	88.3	93.1	89.5	94.4	72.8	89.6	88.1	7	100
ID 725078	Idaed 59/4* Lemhi 62			80.9	76.4	76.8	46.3	78.5	71.8	5	82
CI 17425	Fieldwin, ID 87				107.2	78.6	71.9	97.9	88.9	4	103
WA 6105	HRY/KRN//AO/HRPC/3/13730					83.6	77.6	89.6	83.6	3	98
ID 0106	Twin/Triple Dirk					81.2	67.0	89.8	79.3	3	93
CA 70293	INIA 66/ANZA (Shasta)						68.2	82.8	75.5	2	93
WA 6109	WA 5243/3/C3845/H7-536						62.4	90.7	76.6	2	94
WA 6277	Spring Luke						59.2	96.0	77.6	2	96
WA 6276	Spring Luke						51.7	103.2	77.5	2	95
UT 517	UT S15 and UT S16						51.3	78.2	64.8	2	80
ID 0132	Burt/Marquis//B61-136							79.2	79.2	1	88
ID 0133	ID 0042//Sn64/II-60-155							88.6	88.6	1	99
ID 0134	Bor/3/II-60-101//TZPP/Sn							87.9	87.9	1	98
ID 0135	AbA71415S-16-3							88.4	88.4	1	99
WA 6305	K6901031/Era							91.3	91.3	1	102
WA 6389	K69001496/Era S. 14							101.3	101.3	1	113
UT 611	UT S15 & UT S16							84.0	84.0	1	94
UT 25776	Rogue 66/Fremont							92.1	92.1	1	103
UT 25850	Rogue 66/Fremont							98.6	98.6	1	110
UT 25943	Rogue 66/Fremont							92.6	92.6	1	103
ID 0128	Ab A71454S-4-3							91.8	91.8	1	102
ID 0129	Ab A71523S-A-17-2							100.5	100.5	1	112
ID 0130	Ab A71525S-A-38-2							109.6	109.6	1	122
ID 0131	Ab A71464S-98-2							83.9	83.9	1	94
WA 6298	K 6900975/N6800168 S.35							82.2	82.2	1	92
WA 6325	VH68262/N6800346 S.09							80.7	80.7	1	90
WA 6371	K 6900975/N6800168 S. 42							91.9	91.9	1	103