

TITLE: Small Grains Investigations

PROJECT: Spring Wheat ✓ MS 756

YEAR: 1968

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

LOCATION: Northwestern Montana Branch Station, Field No. Y-7

DURATION: Indefinite

OBJECTIVES:

1. To determine the adaptability of new introduced spring wheat varieties and selections by comparisons of recommended variety.
2. Study the semi-dwarf strains of spring wheat for use under irrigated conditions.
3. To determine the yield depression in inbreeding of certain lines of spring wheat.

SIGNIFICANT FINDINGS:

Fortuna has promise as a potential variety for Western Montana. The white wheats were not outstanding in performance in 1968.

FUTURE PLANS:

To continue to evaluate spring wheat varieties. To aid in the total breeding program in Montana. To study semi-dwarf strains of spring wheat for irrigated conditions.

MATERIALS AND METHODS:

Standard nursery procedures were used in a variety testing program. Nurseries were grown in four row plots, four replications. A randomized block design was used for all nurseries. All the nurseries this season were located in Field Y-7 at the Northwestern Montana Branch Station. The nurseries grown were: Advance Yield Nursery, containing 30 entries; the Western Regional White Spring Wheat Nursery, containing 24 entries; the Semi-dwarf Dryland Yield Nursery, containing 30 entries and the Inbreeding Nursery consisting of 20 entries. The nurseries were sprayed with bromoxynil at the rate of 3/8 of a pound per acre for weed control. To control wire worm, 100 pounds of 10% DDT was applied October 5, 1967. One hundred pounds of 27-14-0 was also applied in October.

All studies were harvested with a power harvester. Complete agronomic data was obtained for each study.

RESULTS AND DISCUSSIONS:

Precipitation during the months of May, June, July and August was considerably above normal. Continued rain into September made harvest difficult. This accounts in part, for the light test weights and lodging in all nurseries.

RESULTS AND DISCUSSION (con't):

Advanced Yield Nursery: The highest yielding entry in the nursery was Montana 6722, a semi-dwarf. The test weight was 58 pounds, heading date is satisfactory for this area and lodging resistance was excellent. Sixteen entries were found to be significantly higher in yield than the variety Sheridan which is used as a check in the study. Fortuna and Red River 68 were in this group. All the durum entries included in the study in 1968 were in the lower yielding group. Complete tabulation of this nursery is found in Table 1.

Comparing Sheridan and Fortuna over a five year period we find that Fortuna is 119% of Sheridan. The semi-dwarfs are found to be from 115% up to 145% of Sheridan. These entries are also found to be somewhat superior to the variety Centana. Red River 68, a much publicized variety is 150% of Sheridan in 1968. (Table 2)

Western Regional White Spring Wheat Nursery: Aberdeen Sel. #0015 is the highest yielding entry, with a yield of 71.92 bu/a, which is 11.1 bu/a above the mean of 60.8 bu/a. These yields are somewhat lower than average for this area. Aberdeen Sel. #0015 has a good lodging resistance, but test weight is very light, which was probably influenced by the rainfall. It is interesting to note that the variety Lemhi is higher in yield than the check Idaed 59. This no doubt is due to the absence of stripe rust. CI 13981, CI 13736 and Aberdeen Sel. #006 show promise for use in western Montana, using yield and maturity date as measures. Lodging resistance is quite high in most of the entries at the higher yield levels. (Table 3)

In Table 4, is a summary of white spring wheat yields grown at the Northwestern Montana Branch Station 1958 thru 1968. Over the 10 year period there does not seem to be anything significant as related to the variety Idaed 59. CI 13981 over a three year period is 123% of Idaed 59, however in 1968 this entry was not significantly better in yield than Idaed 59. A summary of these data do not indicate any real potential varieties from this testing program to date.

Semi-dwarf Nursery: The mean yield was about 2 bu/a below the Advanced Yield Nursery grown in adjacent plots. Two entries were found to be significantly higher in yield than Sheridan. The semi-dwarf lines have from fair to excellent lodging resistance under severe conditions. Montana 6830 has an early maturing date some three days earlier than the variety Sheridan, which would be an asset to Western Montana wheat growing. (Table 5)

The data in Table 6 is made a part of this report for a permanent record. These data are part of an over all program conducted by F. H. McNeal and will be summarized from several locations. Most of these entries were quite late in maturity and have a low yield index. Lodging resistance was poor in this material.

Table 3. Agronomic data from the western regional spring wheat nursery, Northwestern Montana Branch Station, 1968, Field No. Y-7. Experimental design-random block, 4 replications.
Seeding Date: April 29, 1968
Harvest Date: September 10, 1968
Size of Plot: 16 sq. ft.

Variety	Number	Yield bu/a	Heading date	Plant Height	Test Wt lbs/bu	Lodging	
						%	Severity
Aberdeen selection	0015	71.92*	7/ 9	32.25	53.1	6.25	1.00
Lemhi 62 x CI 13636	13981	71.07*	7/ 6	42.00	57.8	43.75	2.75
Burt x KF, 58-2025	13736	70.15*	7/10	37.00	55.5	11.25	1.25
Nainari 60 x 2Lemhi 53	0016	70.05*	7/ 6	43.25	57.7	51.25	5.25
Lemhi	11415	69.67	7/ 6	43.75	59.4	55.00	4.25
SV x Lee 2x N10-B 3x UT	256001	66.40*	7/ 9	35.75	58.4	25.00	2.75
Aberdeen selection	0006	66.27*	7/ 8	34.25	55.1	10.00	1.50
Premier x2 Fr 2x5 Idaed	13984	63.70	7/ 2	41.75	58.3	67.50	6.50
Eureka-Lemhi x3 Idaed	13980	62.47	7/ 5	45.75	57.8	61.25	5.25
Ramona 50	5009	61.62	7/ 4	45.75	59.0	15.00	1.75
SV x Lee 2x N10-B 3x UT	256002	61.60	7/12	31.25	52.4	13.75	1.50
Idaed x Burt, 42-5	13722	60.95	7/ 6	46.25	55.7	75.00	6.00
Lemhi 62 x2 Idaed	13982	60.75	7/ 3	42.25	57.1	62.50	6.50
Lee x No 58-TC A6119S-46	13979	59.12	7/ 4	40.25	55.1	72.50	7.75
Moran	13743	57.49	7/ 8	45.50	54.0	77.50	5.25
1750 x TST 2x AIV, 14	5387	56.97	7/ 9	47.75	59.5	77.50	5.50
Lemhi 66	13969	56.29	7/ 9	43.75	58.3	38.75	4.50
Federation 67	13732	55.19	7/ 7	43.75	58.3	65.00	4.00
Idaed 59 ^{1/}	13631	54.79	7/ 2	39.50	56.6	91.25	7.00
Thatcher	10003	54.69	7/ 6	44.75	55.6	76.25	5.00
Federation	4734	54.07	7/10	41.00	56.6	30.00	3.00
Marfed	11919	52.97	7/ 8	43.75	57.9	63.75	7.00
Beart	1697	52.47	7/ 6	48.25	58.1	91.25	8.50
Premier x2FR 2x5 Idaed	13983	48.32	7/ 2	43.50	56.6	81.25	6.50

^{1/} Idaed 59 check variety

* Varieties yielding significantly more than the check (.05)

\bar{x}	60.8
S.E. \bar{x}	3.4
L.S.D.(.05)..	9.65
C.V.%.....	5.65

Analysis of Variance

Source	D.F.	M.S.	F.
Replications	3	149.5	3.17*
Varieties	23	181.1	3.84*
Error	69	47.2	
Total	95		

Table 4. Summary of dryland white spring wheat yields grown at the Northwestern Montana Branch Station, Route 4, Kalispell, Montana from 1958 - 1968.

Variety	Number	1958	1959	1960	1961	1962	1963	1964	1966	1967	1968	Sta. Yrs.	% Lemhi	% Idaed	59
Baart	1697	48.1	41.8	29.1	25.5	41.8	21.8	35.0	32.4	60.9	52.5	10	120	78 ^{1/2}	
Federation	4734	40.5	43.2	30.6	24.9	44.1	21.2	29.5	36.6	43.7	54.1	10	113	81 ^{1/2}	
Thatcher	10003	37.0	45.2	25.5	30.0	50.3	35.2	50.1	72.6	57.4	54.7	10	141	99 ^{1/2}	
Lemhi	11415	54.6	38.7	17.8	18.3	52.4	6.2	14.7	15.7	37.2	69.7	10	100	61 ^{1/2}	
Idaed 59	13631			31.8		52.1	29.1	55.7	66.7	59.6	54.8	7	164	100	
Federation 67	13732						32.3	42.7	60.4	54.2	55.2	5	171	92	
Moran	13743							58.6	67.1	65.4	57.5	4	181	105	
LeexNo 58-TCA61195-46	13979								83.4	67.4	59.1	3	171	116	
Lemhi 62xC.I.13636	13981								80.0	71.5	71.1	3	182	123	
Eureka-Lemhix 3Idaed	13980								78.9	56.6	62.5	3	162	109	
Lemhi 66	13969								74.0	57.2	56.3	3	153	104	
Premier x 2Fr2x5Idaed	13984								73.4	64.3	63.7	3	164	111	
Lemhi62 x 2Idaed	13982								58.5	66.4	60.8	3	152	103	
Premier x 2Fr x 5 Idaed	13983								57.1	61.0	48.3	3	136	92	
Aberdeen Sel.	0006									77.7	66.3	2	135	126	
SvxLee2 x N10-B3xUT	256002									63.3	61.6	2	117	109	
Ramona 50	5009									60.3	61.6	2	114	107	
SvxLee2 x N10-B3xUT	256001									59.9	66.4	2	118	110	
Aberdeen Sel.	0015										71.9	1	103	131	
BurtxKF 58-2025	13736										70.2	1	101	128	
Nainari 60 x 2Lemhi53	0016										70.1	1	101	128	
Idaed x Burt 42-5	13722										61.0	1	88	111	
1750xTST 2 x AIV,14	5387										57.0	1	82	104	
Marfed	11919										53.0	1	76	97	

^{1/2} seven years