

TITLE: Small Grains Investigation (Spring Wheat) 756

LOCATION: Northwestern Montana Branch Station and three Off Station Locations

PERSONNEL: Leader - Vern R. Stewart  
Cooperator - F. H. McNeal

DURATION: Indefinite

OBJECTIVES: To determine the adaptation of new and introduced spring wheat varieties and selection by comparison with recommended varieties.

EXPERIMENTAL DESIGN AND PROCEDURES:

Standard nursery procedures were used in the variety testing program. The station nurseries were grown in four row plots, replicated four times. A randomized block design was used in all nurseries. The off station nurseries were four row plots, two replications in the three locations. The advanced yield hard red spring nursery contained twenty-eight entries. The western regional soft white nursery, twenty-three entries. The off station nurseries consisted of ten entries in this years studies. Yields of the hard red spring wheat nursery were about average for the past season. Not quite measuring up to the yields of 1965 when the average for the nursery was 63.4 compared to 58.1 in 1966. Percipitation was excellant during the growing season, 6.7 inches of moisture falling in June.

RESULTS AND DISCUSSION:

Attached

FUTURE PLANS:

Continue in a limited way spring wheat varietal studies.

SUMMARY:

1. The variety Sheridan did not perform as well in 1966 as in past seasons, but equal to Centana. Over a six year period it is 104 percent of Centana.
2. The variety C.I. 13979 shows considerable promise in the white wheats. Fairly early and fair stripe rust resistance.

Small Grains - Spring Wheat - Results & Discussion

The variety released in 1966 for production, Sheridan, did not perform as well in this years nursery as it has in past years. Being about equal to yield to Centana. Lakota a durm, was the highest yielding variety with 75.3 bushels per acre. Fortuna released for Eastern Montana did well in this years nursery with a yield of 66.2 bushels per acre.

Stripe rust was very prevalent in this nursery in 1966. Sheridan had a severity of 30 percent, a type of five in the 1966 nursery. Montana #6661, which is B 62-91 x B 60-40, was the high yielding entry, (71.5 bushels per acre) and a very low stripe rust severity of .5 and a type of two. This variety indicates some promise.

The Western Regional White Wheat nursery yields were above average with a mean of 59.9 bushels per acre. Stripe rust was severe and took a severe toll in yield of the susceptible varieties. Lemhi a high yielding variety in the absence of stripe rust yielded 15.7 bushels per acre, a severity of 99 and a type of nine. C.I. 13979 fairly early in heading, approximately three days later than Idaed 59, had a yield of 83.4 bushels per acre, stripe rust severity of 11.2 percent and type one. There were very few entries in this nursery that had any degree of resistance to stripe rust, approximately three which would be acceptable. Data for this nursery can be found in Table 2.

Off Station Nurseries:

Missoula County - The Missoula County spring wheat nursery was grown on the A. D. Neilson farm near Frenchtown, Montana. The nursery as previously mentioned was grown in four row plots, two replications. This nursery was grown under ideal growing conditions. The land had previously been in sugar beets. Fertility was excellent, weeds were of no particular problem. Lemhi 66 is the highest yielding entry in the nursery with 61.3 bushels per acre. Test weights were somewhat low and this was due in part to an immature harvest. Using Centana as a check in this nursery, Lemhi 66, North Dakota 60-54 and Sheridan were found to be significantly better in yield than Centana. There was no stripe rust in this area and thus was no factor on yields. Table 3 shows the complete data for this nursery.

Ravalli County - Table 4, shows the data for the nursery grown on the Western Montana Branch Station in Ravalli County. Centana is the highest yielding variety with 37.1 bushels per acre, the mean of 31.7. The statistical analysis indicates that there was no significant difference between varieties in this particular study. There was considerable bird damage in the nursery at harvest time. A note is made on each of these varieties in the data.

Lake County - The study located in Lake County on the James Fleming farm was an ideal location. Growing conditions were excellent. This was grown on land which had previously been in potatoes. These data were not too significant because harvest was premature. Bushel weights are down. There are yield differences, but the analysis indicates that these differences are not significant. Lemhi 66 was the highest yielding entry in the nursery with Idaed 66 in third place.

Table 5 is a ten year summary of spring wheat data from the Advanced Yield nurseries grown at the Northwestern Montana Branch Station, 1957-1966.

Table 6 is a ten year summary of white spring wheat varieties grown at the Northwestern Montana Branch Station, 1956-1966.

Table 1. (con't)

Source	Analysis of Variance			$\bar{x}$ .....	58.1
	D.F.	Mean Square	F.		
Replications	3	28.5	.30	S.E. $\bar{x}$ .....	4.8
Varieties	27	403.2	4.29	L.S.D.(.05)..	13.6
Error	81	93.7		C.V.%.....	8.33
Total	111				

Table 2. Agronomic data from the western regional white wheat nursery grown at the Northwestern Montana Branch Station in 1966. Experimental design - RB, four replications.

Date Seeded: April 29, 1966      Harvest Date: September 7, 1966      Size of Plot: 16 sq. ft.

Variety	C. I. Number	Yield Bu./A.	Weight Lbs./Bu.	Ht. In.	Heading Date	Stripe Rust		Lodging		
						Sever.	Type	Type	Prev.	Sever.
Burt x KF, 58-2025	13736	84.0*	52.7	42	7/18/66	29.0	2	8	72	8
Lee x NO 58-TC A6119S-46	13979	83.4*	57.5	44	7/ 6/66	11.2	1	7	74	5
Lemhi 62 x CI 13636	13981	80.0	57.0	44	7/ 9/66	48.7	4	7	74	5
Eureka-Lemhi x 3 Idaed	13980	78.9	58.3	46	7/ 5/66	11.2	2	8	69	6
Idaed x Burt, Pend 111-1	MT 6	76.9	55.5	41	7/ 9/66	10.0	2	7	15	5
Idaho A613A-3-15	13969	74.0	51.6	46	7/12/66	37.5	4	6	95	6
Premier x 2 FR 2x5 Idaed	13984	73.4	58.5	43	7/ 5/66	18.7	3	6	97	5
Thatcher	10003	72.6	58.7	47	7/ 8/66	32.5	3	6	90	5
Idaed x Burt, 30-2	13742	71.8	57.6	39	7/ 7/66	80.0	4	4	6	2
NO58-TC x TC-KF	13743	67.1	56.8	48	7/13/66	18.7	3	7	98	4
Idaed 59	13631	66.7	57.7	41	7/ 3/66	27.5	3	6	92	5
Premier x 5FR, 62M9-204	13732	60.4	56.6	45	7/10/66	83.5	8	8	95	6
Lemhi 62 x 2 Idaed	13982	58.5	57.2	44	7/ 7/66	30.0	5	7	92	3
Marfed Mutant, 5899	WA4793	58.1	55.4	38	7/15/66	28.7	6	7	89	7
Premier x 2 FR 2x5 Idaed	13983	57.1	56.5	43	7/ 4/66	4.0	1	4	74	3
Burt x Onas 52, Lind 168	WA4737	50.4	51.3	44	7/17/66	45.0	5	9	78	7

Table 2. (con't)

Variety	C.I. Number	Yield Bu/A.	Weight Lbs./Bu.	Ht. In.	Heading Date	Stripe Rust		Lodging		
						Sever.	Type	Type	Prev.	Sever.
NO58-TC x TC-KF	13744	48.1	56.1	39	7/ 3/66	87.5	7	6	93	4
Burt x Onas 52, Lind 466	WA4468	45.2	52.6	41	7/15/66	64.7	6	4	5	3
N10-B 2x2 12228 3x L53	13978	44.9	51.1	34	7/ 8/66	99.0	9	8	34	8
N10-B 2x2 12228 3x L53	13977	41.4	49.8	34	7/14/66	73.2	6	6	11	5
Federation	4734	36.6	52.7	44	7/16/66	74.2	7	8	51	6
Baart	1697	32.4	53.6	45	7/ 9/66	99.0	9	7	83	6
Lemhi	11415	15.7	0.0	42	7/12/66	99.0	9	9	48	8

NOTE: Idaed 59 is used as a check in this nursery.

$\bar{x}$ .....	59.9
S.E. $\bar{x}$ .....	5.7
L.S.D.(.05)..	16.2
C.V.%.....	9.61

Analysis of Variance			
Source	D.F.	Mean Square	F.
Replications	3	167.0	1.25
Varieties	22	1317.6	9.91*
Error	66	132.8	
Total	91		