

## SPRING GRAIN IMPROVEMENT

### Spring wheat (Irrigated)

A total of seven irrigated spring wheat nurseries were seeded in the spring of 1953. Two of which were located on the station. The off-station nurseries were located in Lake County (Polson and Charlo), Sanders (Hot Springs), Lincoln County (Eureka), Missoula County (Potomac). The nursery at Polson in Lake County was not harvested due to bird damage and the nursery at Hot Springs was not harvested because of improper care.

The advanced yield and western regional nurseries were grown on the station. The mean yield for the advance yield was 59.23 bushels per acre. Lee contained loose smut in all plots. Table XXIV. The mean yield for the western regional was 51.31 bushels per acre using Onas as a check, White Federation 38 and Marfed x Merit 10 were significantly greater in yield than the check. Many of the varieties had 100% leaf rust infection and some up to 78% stem rust. Percent of lodging was also very high in this nursery. High infection of mildew was noted during the growing season, but no notes were made at the time. Table XXV.

The off-station nurseries contained eleven varieties. Three white wheats and nine hard red spring varieties. The nursery at Charlo in Lake County was very good, and a good test of the varieties. Rescue and Chinook were significantly lower in yield than Pilot which was used as the check. Table XXVI.

No significant difference was found in the nursery at the Horticultural Branch station at Corvallis. Table XXVII. Due to uneven soil conditions only two replication of the nursery at Eureka in Lincoln County were harvested. Table XXVIII.

Lemhi (white wheat) was significantly better than the check (Pilot) in the nursery at Potomac in Missoula County. Table XXIX.

Table XXX gives the average of the eleven varieties under irrigation for the past season. The rank of the first three varieties are Lemhi (white), Pilot and Ceres.

Data for the period 1949-1952 of work done on hard red spring wheats at Creston, Montana and in Northwestern Montana are shown in tables XXXI and XXXII respectively. Data on white wheats for the same period and area are shown in tables XXXIII and XXXIV. For 20 trials Pilot is the highest yielding hard red spring and Lemhi the highest white wheat with 36.2 and 37.7 respectively.

Table XLIV. Agronomic data from irrigated advance yield wheat Nursery, Creston, Montana, 1953. Three row plots, five replications.

Date Planted May 4, 1953

Size of Plot 16 feet.

Variety or Cross	C. I. or N No.	Head- ing Date	Plot Yield in Bushels per Acre					Total Bushels	Average Bushels Per Acre	Bushel Weight Pounds
			I	II	III	IV	V			
Rescue x Thatcher	B50-18	7-13	68.04	53.87	69.46	68.75	57.41	317.52	63.50	60
Pilot	11945	7-12	71.58	60.24	46.78	69.46	65.21	301.93	60.38	60
1750 x Rescue	B50-120	7-12	53.16	52.45	58.12	58.12	75.13	296.97	59.39	58
1520 x 1752 (N2389)	13041	7-13	72.29	75.84	53.16	77.25	54.57	333.11	66.62	61
Thatcher	10003	7-12	51.74	63.79	57.41	46.07	57.41	276.41	55.28	59
Pilot <sup>2</sup> x Thatcher (N2170)	12974	7-15	63.79	57.41	45.36	68.04	59.54	294.13	58.82	59
1764 x Rescue	B49-90	7-16	61.66	43.94	51.74	53.87	51.74	262.95	52.59	60
Rescue	12435	7-14	42.53	59.54	44.65	41.82	64.50	253.02	50.61*	59
McM-Exch x Redman <sup>3</sup> (C. I. 186)	15100	7-15	70.88	57.41	58.12	55.28	46.07	287.75	57.55	59
1764 x Henry	12733	7-9	58.12	58.83	48.90	59.54	53.87	279.25	55.85	60
Chinook	H-4258	7-15	51.74	52.45	47.49	48.90	53.16	253.73	50.75*	60
1750 x Rescue	B49-102	7-14	79.38	68.04	60.24	46.07	53.87	307.60	61.52	59
Ceres	6900	7-13	75.83	87.89	42.53	57.41	57.40	321.77	64.21	60
Lee <sup>1</sup>	12488	7-9	55.28	68.04	65.20	68.04	59.54	316.10	63.22	58
Pilot <sup>2</sup> x Regent (N2183)	13042	7-11	63.79	69.46	64.50	68.75	69.46	335.95	67.19	60
Mida	12008	7-11	58.83	67.33	72.29	82.21	73.00	353.66	70.73	61
Rushmore	12273	7-11	56.70	47.49	51.03	54.57	56.70	266.49	53.30	59
Supreme	2026	7-12	56.70	65.20	36.15	53.16	61.66	272.87	54.57	57

Note: Average of Pilot and Ceres used as a check in this Nursery.

\*Varieties yielding significantly less than the checks.

<sup>1</sup>Smoot in all plots of this variety.

Mean Yield.....59.23  
 S. E.  $\bar{x}$  ..... 3.90  
 L.S.D. (5%).....11.00  
 L.S.D. (1%).....14.66  
 C. V. .... 6.59%

SPRING GRAIN IMPROVEMENT

Wheat (Dryland)

Six dryland nurseries were seeded during May 1953 in four Northwestern Counties. Two nurseries were on the station at Creston, with each nursery having 18 varieties. The remaining four were in Flathead (Stillwater), Lincoln (Eureka), Mineral (Superior), and Sanders (Trout Creek) counties. Eleven entries were included in each nursery.

The advance yield hard red spring wheat nursery on the station had a mean yield of 39.48 bushels per acre. There was no significant difference when analysed statistically. Lee, was heavily infected with loose smut. Supreme, had 75% lodging, breaking over about two inches above the soil surface. A number of "white heads" were noted, the greatest number being in Pilot. Table LIV.

The western regional white wheat nursery had a mean yield of 69.46 bushels per acre. Rates of infection of both stem and leaf rust were very high in this nursery. Leaf rust was present on all varieties. Stem rust was recorded on all but three varieties. These varieties are: Marfed x Merit-10, C. I. 13056; Idaed x Merit-5, C. I. 13055; and Idaed x Merit-5, C. I. 13054. Some lodging of all varieties was noted except white Federation 38, C. I. 11906 and Idaed x Merit-5, C. I. 13055. Yields were not significantly different.

No significant differences were found in the nursery at Trout Creek, which had a mean yield of 9.48 bushels per acre. The high C. V. is due in part to unevenness of stand because of new forest soil on which the nursery was grown. Table LVI.

Very dry conditions prevailed in the nursery at Superior. Yields were very low because of these conditions. The mean yield was 14.63 bushels per acre. Table LVII.

Drouth conditions in the Eureka nursery account for the low mean yield of 5.65 bushels per acre in this nursery. Table LVIII.

Significant results were obtained in the nursery at Stillwater in Flathead county. Two white wheats Lemhi and Onas were significantly higher in yield, when compared to Pilot which was used as a check in this nursery. Table LIX.

Table IX shows the results of the seasons work on eleven varieties and includes all locations in which they were grown. For the white wheats Lemhi is first, also first of all varieties and chinook is high for the hard red wheats.

Table LXI and LXIII give the five year yields for Creston and all work done in the Northwest 1949-1953 respectively for hard red spring wheats. In years on the station Pilot leads with 45.7 bushels per acre, for twenty trials in the Northwest Pilot leads with 16.9 bushels per acre.

White wheat averages are found in Tables LXIII and LXIV for Creston and Northwestern Montana respectively. In four years grown Lemhi leads on the station with 60.3 bushels per acre. On the basis of 19 trials Lemhi also leads with 20.7 bushels per acre.

Six varieties were grown in 1/80 acre plots to obtain samples for milling and baking test. These plots were harvested with a 6 foot combine. Yield data is shown in Table LXV.

Table LIV. Agronomic data from dryland advance yield nursery, Creston, Montana in 1953. Three row plots, three replications.

Date Planted, May 4, 1953

Size of Plot, 16 feet.

Variety or Cross	C. I. or H No.	Head- ing Date	Height in Inches	Lodg- ing %	Har- vest Date	Plot Yield in			Total Ounces	Average Bushels Per Acre	Bushel Weight
						Bushels I	per II	Acres III			
Rescue x Thatcher Pilot	B50-18 11945	7-11 7-11	45 43	- -	8-22 8-22	38.27 38.27	39.69 38.98	53.16 41.11	131.12 118.36	43.71 39.45	61 56
1750 x Rescue	B50-120	7-11	46	-	8-19	38.27	41.82	40.40	120.49	40.16	None
1520 x 1752 (N2389)	13041	7-12	41	-	8-22	38.98	42.53	32.60	114.11	38.04	60
Thatcher Pilot <sup>2</sup> x Thatcher (N2170)	10003 12974	7-10 7-12	41 42	- -	8-19 8-22	36.15 36.15	37.56 43.23	35.44 45.36	109.15 124.74	36.38 41.58	57 58
1764 x Rescue	B49-90	7-14	44	-	8-22	36.15	34.02	43.23	113.40	37.80	59
Rescue	12435	7-12	42	-	8-22	37.56	32.60	46.78	116.94	38.98	58
McM-Exch x Redman <sup>3</sup> (C.I.186)	13100	7-11	42	-	8-19	34.02	36.15	46.78	116.90	38.98	56
1764 x Henry	12733	7-7	42	-	8-19	38.98	43.23	32.60	114.82	38.27	57
Chinook	H-4258	7-10	45	-	8-19	37.56	13.56	49.61	124.74	41.58	60
1750 x Rescue	B49-102	7-12	46	-	8-22	35.44	35.44	38.98	109.86	36.62	None
Ceres	6900	7-11	47	-	8-22	38.27	38.27	31.89	108.44	36.15	60
Lee <sup>1</sup> Pilot <sup>2</sup> x Regent (N2183)	12488 13042	7-7 7-8	45 42	- -	8-19 8-22	36.86 39.69	42.53 41.11	36.86 45.36	116.24 126.16	38.75 42.05	57 58
Mida	12008	7-9	44	-	8-22	42.53	43.23	43.94	129.70	43.23	60
Rushmore	12273	7-10	42	-	8-22	38.27	40.40	46.78	125.45	41.82	59
Supreme	8026	7-10	43	75	8-22	42.53	36.86	31.89	111.27	37.09	57

Note: Average of Pilot and Ceres used as check in this Nursery.

<sup>1</sup>Twenty-four smut heads per 16 feet of row average of three plots (Loose smut)

Mean Yield.....39.48  
 S. E.  $\bar{x}$ .....2.65  
 L.S.D. (5%).....Not Signif.  
 L.S.D. (1%)....." "  
 C. V. ....6.70%

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