SPRING GRAIN IMPROVEMENT

Spring wheat (Irrigated)

A total of five irrigated spring wheat nurseries were seeded in the spring of 1954. One nursery was located on the station and the remaining four were located as follows: Lake County (Ronan), Sanders County (Plains), Lincoln County (Eureka), and Ravalli County (Corvallis). The nursery at Corvallis was not harvested due to hail damage.

The advance yield nursery was grown on the station in four row plots ten feet long and five replications. Due to the wet season, particularly at harvest time there was considerable lodging in many of the varieties. The mean yield of this nursery was 72.7 bushels per acre. Only one variety was significantly better in yield than the check (Thatcher), namely 1502 x 1752 C. I. 13041. Table XXIII.

The off-station nurseries contained eleven varieties, three of which were white wheats and eight hard red varieties. The nursery in Lake County near Ronan contained a large number of wild oats. The mean yield was 22.9 bushels per acre. Table XXIV.

Using Pilot as check Thatcher and Lee were found to be significantly lower in yield in the nursery at Plains. Inproper irrigation is due in part to the low yields in this nursery. Table XXV.

Table XXVI gives the results of the nursery at Eureka in Lincoln County. Thatcher and Lee were significantly lower in yield than Pilot. The mean yield of this nursery was 33.9 bushels per acre.

Table XXVII shows the rank of the varieties grown in Northwestern Montana in 1954. Pilot ranks number one of the varieties this year.

Data, for the period 1949-1954, of work done on hard red spring wheats at Creston and in Northwestern Montana are shown in tables XXVIII and XXIX.

Table XXX thru XXXIV are summaries of the work done in individual counties throughout Northwestern Montana.

Table XXIII. Agronomic data from irrigated Advanced yield spring wheat nursery, Creston, Montana 1954. Four row plots, five replications.

Date Planted. May 13, 1954 Irrigated July 7, 1954 Harvested Sept. 22, 1954 Size of Plot 16 feet.

Variety or Cross	C. I. or N No.	Heading Date	Heading Height in Ins.	Lodging %	Plot Yield in Bushels Per Acre I	II	III	IV	V	Total Bushel	Average Bushel Per Acre	Bushel Wt. in Pounds
Pilot^2 x Thatcher (N2170)	12974	7-14	47	10	80.9	73.1	78.1	80.9	66.0	379.0	75.8	60
Rescue	12435	7-15	49	80	59.6	51.1	61.8	44.0	58.9	275.4	55.1	57
Lee	12488	7-10	46	14	80.9	77.4	87.3	73.1	83.1	401.8	80.4	58
Marquis	3641	7-15	48	28	68.2	74.6	74.6	61.8	68.9	348.1	69.6	59
1764 x Rescue	B49-78	7-14	46	67	74.6	50.4	56.8	41.9	70.3	294.0	58.8	57
Rescue x Regent	4337-35	7-15	47	48	76.7	54.7	71.0	49.7	80.9	333.0	66.6	59
Supreme	8026	7-12	48	61	68.2	83.1	74.6	78.1	90.9	394.9	79.0	59
Chinook	H-4258	7-14	49	41	64.6	70.3	71.0	61.8	70.3	338.0	67.6	59
1520 x 1752 (N2389)	13041	7-14	48	8	88.0	89.5	100.8	92.3	85.9	456.5	91.3**	60
Pilot x Merit	N2164	7-13	46	25	88.8	75.3	80.2	74.6	66.0	384.9	77.0	59
Mida	12008	7-12	52	12	82.4	80.2	83.1	78.8	76.0	400.5	80.1	59
Ceres	6900	7-14	49	43	79.5	71.7	67.5	58.9	72.4	350.0	70.0	58
Rescue x Thatcher	B50-18	7-16	49	43	104.4	68.9	78.1	87.3	80.9	419.6	83.9	59
Willet	13099	7-16	48	31	90.9	67.5	68.2	75.3	73.8	375.7	75.5	57
Selkirk (C. I. 186)	13100	7-13	45	1	82.4	75.3	84.5	61.8	78.1	382.1	76.4	57
Marquis	Lohr	7-15	49	31	81.7	80.2	90.2	70.3	73.8	396.2	79.2	60
Rescue x 1831	B51-9	7-17	50	85	42.6	63.9	72.4	50.4	79.5	308.8	61.8	58
Rescue x Th-s615	B51-43	7-13	48	69	76.0	61.8	66.0	68.2	62.5	334.5	66.9	59
Thatcher	10003	7-12	45	11	83.1	78.8	73.8	71.0	66.7	373.4	74.7	58
Pilot	11945	7-13	47	12	83.1	78.8	74.6	76.0	73.8	386.3	77.3	59
Pilot^2 x Regent (N2183)	13042	7-12	46	15	71.0	71.7	83.1	68.9	63.2	357.9	71.6	58
Rescue x Th-s615	B51-27	7-15	48	44	83.8	73.8	69.6	67.5	68.2	362.9	72.6	59
Rescue x Th-s615	B51-16	7-14	48	58	76.0	57.5	58.2	56.8	49.0	297.5	59.5	57
1750 x 1753 (N2256)	12975	7-14	44	2	83.1	83.1	87.3	78.1	74.6	406.2	81.2	59
Rushmore	12273	7-12	45	8	57.5	63.9	72.4	59.6	62.5	315.9	63.2	58

Note: Thatcher is the check in this nursery.

*Varieties yielding significantly more than the check (5%).

**Varieties yielding significantly more than the check (1%).

Mean Yield.....72.7
S. E. $\bar{x}$..... 3.438
L.S.D. (5%)..... 9.6
L.S.D. (1%).....12.8
C. V. 4.73%

SPRING GRAIN IMPROVEMENT

Wheat (Dryland)

Seven dryland nurseries were seeded in May 1953 on and off-station. Four were located on the station and three off-station. The off-station nurseries containing eleven varieties were located in Mineral County (Superior), Missoula County (Frenchtown), and Flathead County (Stillwater).

The advance yield hard red spring nursery was grown on the station with 25 entries, four row plots and three replications. The mean yield of this nursery was 52.8 bushels per acre. Lee had a light infection of loose smut and Chinook a trace. There was some lodging of all varieties except C. I. 13041. Using Thatcher as a check C. I. 13041, Ceres, C. I. B51-9 and B51-43 were significantly higher in yield. See table XLI for complete agronomic data.

Heavy infestation of leaf rust and powdery mildew were noted on the varieties in the Western Regional white wheat nursery. C. I. 13054 showed the most resistance to leaf rust with only seven per cent and no mildew infection. It was also significantly higher in yield than Onas which is used as a check. Table LXII shows complete agronomic data.

A test was conducted to determine the effect of awns in the yield of Onas and Awned Onas white wheats. Also kernel weights were made on each of the white wheats. Thatcher was included for a check. Plots were single row plots, ten replications. Awned Onas was significantly higher in yield than Onas, also the weight per one thousand kernels was higher. Table LXIII.

The milling and baking plots were planted in 1/80 acre plots and harvested with the combine after trimming the plots. The mean yield of these plots were 34.4 with Marquis being high with 41.0 bushels per acre. Table LXIV.

The nursery in Mineral County was grown on a dry sandy soil. The mean yield of this nursery was 12.06 bushels per acre. Using Pilot as a check, Lemhi was significantly higher in yield. Table LXV.

The nursery at Frenchtown was very badly infested with wild oats, thus giving only a mean yield of 12.0 bushels per acre. This can not be considered a reliable test because of the wild oats. Table LXVI.

Table LXVII shows the yield data of the nursery grown in Flathead County in the Stillwater area. The mean yield was 20.2 bushels per acre.

Table LXVIII gives a summary of work on spring wheat off-station in 1954. Lemhi ranks first for white wheats, also first of all varieties. Mida ranked fifth of all varieties, and first of the hard red spring varieties.

The annual and six year summary of yield data at Creston is shown in Table LXIX. A six year summary of data of work in Northwestern Montana is shown in table LXX.

Table LXXI and LXXII are summaries of work done with white wheats at Creston and in Northwestern Montana 1949-1954, respectively.

Summary of yield data for individual counties is given in table LXXIII thru LXXVI.

Table LXI. Agronomic data from Advance Yield spring wheat nursery, dryland, Creston, Montana 1954. Four row plots, three replications.

Date Planted. May 11, 1954 Size of Plot. 16 feet.

Variety or Cross	C. I. or N No.	Heading Date	Harvest Date	Heading Height in ins.	Lodging %	Loose Smut %	Plot Yield in Bushels Per Acre I	II	III	Total Bushels	Average Bushels Per Acre	Bushel Wt. in Pounds
Pilot^2 x Thatcher (N2170)	12974	7-14	9-4	49	13	-	46.2	54.7	49.7	150.6	50.2	58
Rescue	12435	7-13	9-9	46	36	-	41.9	56.8	51.8	150.5	50.2	56
Lee	12488	7-7	9-4	46	10	5	42.6	50.4	54.0	147.0	49.0	58
Marquis	3641	7-14	9-4	47	15	-	41.2	44.7	42.6	128.5	42.8	59
1764 x Rescue	B49-78	7-13	9-7	46	30	-	51.8	51.8	54.7	158.3	52.8	58
Rescue x Regent	4337-35	7-13	9-7	46	22	-	49.7	52.5	47.6	149.8	49.9	57
Supreme	8026	7-9	9-4	50	30	-	55.4	53.3	42.6	151.3	50.4	58
Chinook	H-4258	7-13	9-4	49	37	T	49.7	35.5	54.0	139.2	46.4	59
1520 x 1752 (N2389)	13041	7-12	9-7	44	-	-	55.4	67.5	58.2	181.1	60.4*	60
Pilot^2 x Merit	N2164	7-13	9-4	48	10	-	53.3	49.7	54.7	157.7	52.6	58
Mida	12008	7-12	9-4	50	39	-	56.1	52.5	53.3	161.9	54.0	59
Ceres	6900	7-13	9-9	48	15	-	66.7	75.3	59.6	201.6	67.2**	59
Rescue x Thatcher	B50-18	7-15	9-9	50	27	-	59.6	52.5	61.8	173.9	58.0	60
Willet	13099	7-14	9-4	49	39	-	56.8	47.6	46.2	150.6	50.2	-
Selkirk (C.I.186)	13100	7-11	9-4	45	2	-	51.8	46.2	49.7	147.7	49.2	57
Marquis	Lohr	7-14	9-6	30	30	-	46.2	36.2	58.2	140.6	46.9	59
Rescue x 1831	B51-9	7-16	9-9	50	57	-	61.2	59.6	68.9	189.7	63.2**	59
Rescue x Th s615	B51-43	7-11	9-9	46	40	-	56.1	66.7	66.7	189.5	63.2**	59
Thatcher	10003	7-10	9-4	43	3	-	50.4	47.6	46.2	144.2	48.1	58
Pilot	11945	7-13	9-7	47	38	-	53.3	47.6	59.6	160.5	53.5	57
Pilot^2 x Regent (N2183)	13042	7-9	9-7	45	10	-	43.3	47.6	54.0	144.9	48.3	58
Rescue x Th-s615	B51-27	7-13	9-9	47	18	-	54.0	55.4	48.3	157.7	52.6	59
Rescue x Th-s615	B51-16	7-14	9-9	46	40	-	54.0	62.5	47.6	164.1	54.7	59
1750 x 1753 (N2256)	12975	7-13	9-9	45	7	-	58.9	56.8	56.8	172.5	57.5	59
Rushmore	12273	7-10	9-9	44	39	-	56.8	50.4	40.5	147.7	49.2	58

Note: Thatcher used as a check in this nursery.

*Varieties yielding significantly more than the check (5%).

**Varieties yielding significantly more than the check (1%).

Mean Yield.....52.8
S. E. $\bar{x}$..... 3.3934
L.S.D. (5%)..... 9.7
L.S.D. (1%).....12.9
C. V. 6.42%