

## WINTER WHEAT

INTRODUCTION:

Winter wheat work was conducted in Western Montana with a primary purpose of introducing varieties that are adapted to the area. Standard nursery techniques are used in the testing program. Varieties that are found to be of high potential for yield and other agronomic and milling and baking characteristics are used in off station testing. In addition to these lines, varieties from neighboring states are included in off station testing if they show promise in the western region.

RESULTS AND DISCUSSION:

Intra-state Hard Red - There were eighteen entries in the intra-state hard red winter wheat nursery. This nursery consisted of thirteen commercial lines that are being grown throughout the pacific northwest and in Montana. The other entries in the nursery consisted of a Burt x P.I. 178383 cross and five lines of Westmont<sup>2</sup> x P.I. 178383.

Delmar was the variety used as a check on yield in the nursery and only one variety, Gaines, was superior. Crest, a new line released by Montana Agricultural Experiment Station, was not significantly less in yield than Delmar, but some two bushels less in yield. Four of the entries in the nursery were free of Dwarf Smut and these were; MT 6646, MT 6642, MT 6634 and the variety Crest. All other entries had some dwarf smut ranging from a mean of 33% found in McCall to 0% in the varieties already mentioned.

One of the high yielding entries MT 6646 has a late heading date, June 17. Crest is one of the earliest heading, it and Westmont heading the 7th day of June. Test weights were good on all of the entries. Only MT 6643 was found completely free of stripe rust. Westmont had the highest infestation of all the entries. Table 1.

Western Regional Hard Red - The western regional hard red winter wheat nursery grown on the L. B. Claridge farm, contained 29 varieties. Dwarf smut and stripe rust were found to be prevalent in this nursery as was snow mold. Only two entries were found to be entirely free of dwarf smut and these were MT 6634 and MT 6619 or Crest. Columbia, one of the most susceptible entries in the nursery had 63% dwarf smut. Stand loss in the nursery was contributed mainly to the snow mold, in that, a perfect stand was obtained in the fall of 1966. The entries showing the most resistance were those crosses of Westmont 2 x P.I. 178383. Two entries ID 0001 and ID 5001 also having a common parent of Turkey, were quite resistant to snow mold. The entries showing the most stripe rust resistance were again the crosses of Westmont 2 x P.I. 178383. The mean yield for the nursery was 43.9 bushels per acre. The test weights were good for all entries. No lodging was noted in this nursery. See Table 2 for complete details.

## Winter Wheat (con't)

SUMMARY AND CONCLUSION:

1. Intrastate nursery - Delmar exceeded in yield only by Gaines. Crest with-  
in two bushels of Delmar, not significantly less.
2. Western regional hard red - Snow mold was a factor in stands and yields.  
MT 6634 and Crest were found to be entirely free of dwarf smut.
3. Western regional white - Moro and Gaines about equal in yield. Moro was  
resistant to stripe rust and dwarf smut.
4. Elite stripe rust nursery - Twenty-three entries of P.I. 178383 x West-  
mont<sup>2</sup> and five check varieties were included in this nursery. Delmar, a check, was  
highest yielding entry in the nursery.
5. Off-station nurseries - Crest is the highest yielding entry grown (see  
summary). Protein levels vary greatly at each location.
6. Breeding nurseries - One hundred and thirty-four lines tested, forty were  
harvested for yield. All were evaluated for snow mold and dwarf smut.

Table 2. Agronomic data from western regional hard red winter wheat nursery grown on the Lance B. Claridge farm in 1967. Random block design, four replications.

Date Seeded: September 21, 1966 Date Harvested: August 10, 1967 Size of Plot: 16 sq. ft.

Variety	C.I. Number	Yield Bu/A.	Test Wt. Lbs/Bu.	Heading Date	Plant Height	Stripe Rust		% Dwarf Smut	% Stand	Snow <sup>1</sup> Mold
						Sever	Type			
Wmt-2 x 83 7-14-4	6634	62.57*	60.2	6/25	30	.3	.3	0.0	91.0	1.3
Wmt x 83 1-1-6	6643	60.12*	61.7	6/25	40	7.5	1.8	7.5	76.3	2.0
Wmt x 83 1-1-3	6642	57.67	61.8	6/24	39	0.0	0.0	6.8	77.5	2.0
Wmt-2 x 83 7-14-5	6635	56.95	59.0	6/24	42	0.0	0.0	13.8	92.3	1.3
Clm x Utah 175A-53	275002	49.97	58.9	6/26	42	29.5	3.3	28.8	72.5	2.0
Crest	6619	49.12	59.6	6/23	38	0.0	0.0	0.0	61.3	2.5
Colorow	12865	48.00	59.9	6/25	44	1.8	1.8	32.5	65.0	1.8
A1150(R10-Rex/2Cnn2/4Tk)	0001	47.22	60.7	6/26	38	30.0	4.0	37.5	75.0	2.0
A 5598-36-3	13870	46.05	60.8	6/25	42	6.3	2.3	40.0	63.8	2.3
Wanser	13844	46.00	59.3	6/26	40	12.5	4.5	25.0	43.8	2.8
Wmt-2 x 83 12-1-1	6631	45.90	60.4	6/23	38	12.5	1.0	27.5	58.8	2.0
Delmar	13442	45.27	59.6	6/28	41	2.0	2.0	31.3	62.5	2.3
Bezosztaja 2/Sel B	4836	45.00	60.1	6/24	34	3.0	2.3	17.5	65.0	1.8
Columbia	12928	44.92	60.3	6/23	40	90.0	7.8	63.8	81.0	1.8
Clm x Utah 175A-53	275001	44.82	60.9	6/26	44	16.3	3.3	47.5	65.0	1.5
Cheyenne	8885	43.37	61.1	6/27	42	10.0	6.5	31.3	57.5	2.0
(Rex-Rio/6Cnn)/A.F. Tk	5001	43.05	60.5	6/26	43	3.0	2.0	51.3	72.5	2.3
Kharkof	1442	41.92	60.9	6/26	42	33.8	4.5	27.5	57.5	1.8
CI 12932 x Burt 2 Sel 1	4756	40.45	60.8	6/27	35	23.8	5.8	32.5	46.3	3.0
Tendoy	13426	39.92	60.9	6/26	43	16.3	6.3	37.5	61.3	2.0
CI 12932 x Burt 2 Sel 17	4878	39.50	60.0	6/27	37	16.3	4.3	35.0	48.8	2.8
Rio	10061	38.45	60.2	6/27	41	21.3	4.8	43.8	47.5	2.5
Orfed/Wsc2/Burt	0002	38.22	60.1	6/27	40	47.5	5.8	16.3	51.3	2.8
(Rex-RioxCnn2)xCnn3	13867	37.82	59.9	6/23	41	10.0	4.8	38.8	43.8	2.5
McCall	13842	36.70	61.7	6/27	37	26.3	3.5	42.5	56.3	2.3
Itana 65	13846	35.12	60.6	6/28	38	18.8	4.8	35.0	33.8	3.0
Itana	12933	31.40	61.0	6/27	41	90.0	7.8	41.3	46.3	2.8
Wmt-2 x 83 16-1-8	6641	29.20	60.1	6/28	40	0.0	0.0	16.3	27.5	2.8
Orfed/Wsc2/Burt	0003	28.35	61.0	6/26	40	45.0	5.8	17.5	36.3	3.0

NOTE: Delmar used as a check

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

1/ 1 = Good tolerance; 2 = Fair; 3 = Poor

Table 2. (con't) Statistical Analysis

Source	Analysis of Variance			$\bar{x}$ .....	43.9
	D.F.	Mean Square	F.		
Replications	3	970.6	9.04*	S.E. $\bar{x}$ .....	5.1
Varieties	28	282.2	2.63*	L.S.D.....	14.56
Error	84	107.2		C.V.%.....	11.79
Total	115				

Table 3. Agronomic data from the western regional uniform white winter wheat nursery. Field E-2 at the Northwestern Montana Branch Station. Random block design, four replications.

Date Seeded: September 21, 1966      Date Harvested: August 10, 1967      Size of Plot: 16 sq. ft.

Variety	C.I. Number	Yield Bu/A.	Test Wt. Lbs/Bu.	Heading Date	Plant Height	Lodging		Stripe Rust		% Smut
						Prev	Sever	Sever	Type	
(14-53 x Odin) x 13431	4765	66.55	60.2	6/15	29	0.0	0.0	0.0	0.0	10.0
Suwon 92 x Omar, BC-3	4762	61.40	61.4	6/ 8	28	0.0	0.0	0.0	0.0	8.8
Gaines	13448	60.25	62.5	6/12	27	0.0	0.0	11.3	2.8	7.5
PI 178383/4 Omar	88	60.07	60.9	6/12	40	.8	3.8	0.0	0.0	0.0
Brevor	12385	59.97	60.7	6/13	37	0.0	0.0	86.2	6.0	4.0
Suwon 92/Omar, BC4	4962	58.80	61.6	6/12	32	0.0	0.0	0.0	0.0	1.5
Nugaines	13968	58.65	63.6	6/12	28	23.8	.8	1.0	1.5	10.0
HH/2 Elgin 2/2 Omar	5002	57.50	60.8	6/13	37	0.0	0.0	98.0	9.0	.5
Moro	13740	57.20	60.4	6/12	36	4.5	3.8	0.0	0.0	.3
Omar	13072	51.40	60.6	6/14	36	0.0	0.0	98.0	7.8	3.0
Elgin	11755	49.55*	60.4	6/14	38	0.0	0.0	98.0	7.8	7.5
Triplet	5408	47.37*	62.1	6/ 9	44	11.3	3.0	93.5	8.5	12.5
Kharkof	1442	47.35*	61.9	6/11	45	71.3	2.5	61.3	5.3	21.3
Golden	10063	46.30*	60.2	6/13	40	1.3	.3	98.0	7.8	10.0
Burt	12696	46.00*	61.6	6/ 9	34	0.0	0.0	58.8	5.5	8.8

NOTE: Gaines is used as the check  
 \* Varieties yielding significantly less than the check (.05)

Source	Analysis of Variance			$\bar{x}$ .....	55.2
	D.F.	Mean Square	F.		
Replications	3	169.4	3.26*	S.E. $\bar{x}$ .....	3.6
Varieties	14	173.2	3.33*	L.S.D.....	10.29
Error	42	51.8		C.V.%.....	6.52
Total	59				