

YEAR: 1964

TITLE: Small Grain Investigations (Winter Wheat) 5023

LOCATION: Northwestern Montana Branch Station, Field No. E-2
and several off-station locations.

DURATION: Indefinite

OBJECTIVES:

1. To obtain the information necessary for making varietal recommendation and for evaluating new varieties and selections.

2. To conduct a breeding program in Northwestern Montana designed to produce high yielding varieties with particular emphasis on acceptable quality and resistance to dwarf bunt and stripe rust. Other agronomic characteristics such as straw strength, winter hardiness, etc, will be evaluated in this program.

3. To determine the effect of seeding date, seeding depth and variety on the incidence of dwarf smut.

EXPERIMENTAL DESIGN AND PROCEDURE:

Standard nursery procedures were used in the variety testing program. In general station studies were four row plots, replicated four times. The design - complete randomized block. Description of a particular study and the procedures of each will be included in the results and discussion section.

RESULTS AND DISCUSSION:

Each nursery will be discussed separately in this report.

Intrastate Hard Red

Several commercial varieties and five Bunt x P.I. 178383 selections were included in this nursery. All the entries were superior to Westmont in yield. The Burt x P.I.178383 selections were quite late in maturity. The entire nursery with the exception of Gaines was lodged severely.

Stripe rust infections were quite sever in the susceptible varieties. Dwarf smut readings were not made but was evident in all entries except, C62-4 and C62-44. See Table 1, for complete results of this study.

Western Regional Hard Red

The hard red regional nursery was grown in two locations in 1963-1964. One in the dwarf bunt area Northwest of Kalispell on the Claridge farm and the other on the station. These nurseries contained thirty entries.

In the nursery on the Claridge farm, dwarf bunt was very sever with many of the susceptible varieties being over 50% smutted. Four of the five Burt x P.I.178383 selections were apparently immuned to dwarf bunt. These were also the highest yielding lines in the nursery. See Table 2 for complete data on this study.

Winter Wheat (con't)

The station nursery was grown in single row plts. It appeared from this nursery that Gaines could not stand the competition from the closely growing hard red entries. In the area of higher yield levels the Burt x P.I. 178383 selections did not preform as well. Delmar is second in yield in this study which is used as a check. Sever lodging was present throughout the nursery. No attempt was made to record plant diseases. See Table 3 for agronomic data.

Western Regional White

Gaines was the out-standing variety in the western regional white wheat nursery. Lodging was quite sever in the nursery except the Semi dwarf selections. Stripe rust, dwarf bunt and mildew were all abundant in this study. There was very little real resistant material to stripe rust in this nursery. However, Gaines does show moderate resistance as a mature plant. See Table 4 for complete results.

Off-Station

Growing conditions, results and other information about each nursery will be discussed under the individual county heading. A total of six nurseries were seeded in the fall of 1963. Each nursery contained fourteen entries.

Missoula County - Excellent growing conditions existed for this study. Stripe rust was heavy, but it did not reduce yields because of the stage of growth when infection took place, namely after the wheat had headed. Thus Westmont is the highest yielding variety in the nursery, and being significantly higher than 12 other entries. Yields were above average for this area in 1964. See Table 5 for complete data.

Ravalli County - Growing conditions in this area were excellent and a fairly high yield level was obtained. Triplet and Westmont are top yielders. When analyzed statistically these data were found to be non-significant. Table 6.

Sanders County - Emergence was poor in this nursery. This was due to poor moisture conditions at seeding time. Thus only two replications were harvested. Data from this study are found in Table 7.

Mineral County - This nursery was "stubble in". Emergence was fair in the fall. Stands at harvest time were above 60 percent in all varieties. Considerable dwarf smut was found in Warrior and Winalta. Omar and Gaines are the highest yield, a trend never before noted in this area in the soft white wheats. See Table 8 for complete data.

Lake County - Emergence was good, however, heavy snow cover resulted in snow mold. This caused poor stands and the study was abandoned.

Protein determinations were made of all entries of the off-station nurseries. These data are made a part of this report. Table 9.

The summary of off-station work including Creston is found in Table 10. Cheyenne is the highest yielding hard red entry and 14 x 53 Sel. 101, is the highest yielding soft wheat entry. Table 10.

Summary of selected varieties grown in Northwestern Montana is found in

Table 4. Agronomic data from dryland western regional white wheat nursery grown at Creston, Montana, 1963-1964
Four row plots, four replications. Field No. E-2

Date Seeded: Sept. 17, 1963

Date Harvested: Aug. 18, 1964

Size of Plot: 16 square feet

Variety or Cross	C.I.No.	Head- ing Date	Ht. in In.	Grams per Plot				Total Grams	Bushel			Lodging			Stripe Rust		Mildew	
				I	II	III	IV		Per Acre	Bu. Wt.	type	Sev.	Prev.	i-4 %	Smut %	0-9 %		
Gaines	13448	6-18	34	780	900	745	694	3119	78.0	61.5	1	2	23	3	5	3	8	6
Sel. 101 (27-15xRio-Rex, 53) x Elgin II	13438	6-17	36	766	695	801	720	2982	74.6	60.5	0	0	0	i-2	T	T	40	7
Brevor (27-15xRio-Rex, 53) x Elgin 4	13725	6-18	44	650	729	814	666	2859	71.5	59.5	2	1	71	2	8	T	50	8
Omar Mutant Alba Sel. (Roedel Sel.)	12385	6-19	45	625	603	580	901	2709	67.7	59.5	8	9	96	i-3	T	T	85	9
Elgin (Elgin 19 x Elmar) - III	13726	6-18	44	676	646	659	559	2540	63.5**58.1		9	5	93	3	5	3	70	8
x 1813, Sel. 4	13727	6-20	47	565	515	510	799	2389	59.7**58.5		14	4	47	4	80	T	5	6
White Coin (Elg. 19 x Elmar) - III	13737	6-26	47	535	570	565	630	2300	57.5**56.5		6	8	99	i-3	T	T	T	6
x 1813, Sel. 6	11755	6-20	47	545	535	580	630	2290	57.3**59.5		4	6	96	4	72	5	15	5
Burt Burt Mutant	13645	6-19	43	550	503	605	606	2264	56.6**55.0		3	9	99	3	5	3	90	9
Burt x Kenya Farmer 57-70136	13729	6-19	48	545	532	560	600	2237	55.9**58.5		1	9	99	i	0	T	7	2
Itana Sel. W-1	13738	6-18	41	460	465	605	680	2210	55.3**54.5		1	9	76	3	T	T	93	9
Omar	12696	6-17	44	645	484	545	510	2184	54.6**60.5		3	6	67	3	13	T	85	8
Tripplet	13728	6-18	38	505	507	570	579	2161	54.0**60.2		0	0	0	3	5	1	43	7
P.I. 178383 x Omar ² Sel. 172	13641	6-14	47	649	535	515	355	2054	51.4**60.3		6	4	73	3	15	T	T	3
Kharkof (Fr. 41 M x Gln ⁴) x (Rio x Gln ⁴) Sel. B-59	13846	6-19	48	516	490	531	515	2052	51.3**60.9		14	8	90	i	0	5	8	4
P.I. 178383 x Omar ² Sel. 197	13072	6-20	47	479	575	474	520	2048	51.2**58.0		3	9	96	4	75	T	28	8
Golden	5408	6-18	48	570	450	449	575	2044	51.1**61.5		8	7	91	4	5	4	30	7
	13740	6-19	48	514	505	435	550	2004	50.1**55.0		1	9	99	i-1	T	0	20	6
	1442	6-18	53	535	514	435	485	1969	49.2**61.3		12	9	98	2	5	T	2	4
	13648	6-19	45	495	480	425	484	1884	47.1**58.1		6	9	96	3	10	T	3	5
	13741	6-20	43	371	480	482	495	1828	45.7**57.5		1	9	99	1	T	0	5	6
	10063	6-20	47	439	425	472	355	1691	42.3**58.4		3	9	99	4	30	3	3	4

NOTE: Gaines was used as a check in this nursery

** Varieties yielding significantly less than the check (.01)

Source	Analysis of Variance			F.	
	D.F.	Mean Square			
Replications	3	4801.54			\bar{x} 56.6 bu/a
Varieties	21	34697.28095	6.45		S.E. \bar{x} 3.664528
Error	63	5371.79968			L.S.D.(.05)..... 10.3 bu/a
Total	87				L.S.D.(.01)..... 13.7 bu/a
					C.V.%..... 6.47