PROJECT TITLE: Winter Wheat Variety Evaluations

YEAR/PROJECT: 1988/756 Small Grain Production

PERSONNEL: Leader - Vern R. Stewart, Todd K. Keener - Research Specialist
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OBJECTIVES:

To determine the adaptability of new and introduced winter wheat varieties for western Montana.

SUMMARY:

The Western Regional Winter Wheat nurseries are grown at the Kalispell and Stillwater locations. The outstanding varieties from these nurseries are tested in western Montana in off-station nursery evaluations. These data are used in making recommendations to the Montana producer.

Continuous snow cover began on December 15, 1987 and continued until February 13, 1988 (60 days) which was 34 days less than last year and 45 days shorter than the 1985/86 season. Dwarf smut infection levels were low at the Stillwater and Kalispell locations sites this year. Although disease occurance was light in most experiments there was a severe incidence of stripe rust in susceptible varieties in the Intrastate winter wheat nursery. Although fall, winter and early spring precipitation amounts were 60-70% of normal the rainfall recieved in April and May greatly aided the sustaining of winter wheat through to harvest. Yields were very good considering the lack of moisture experienced Statewide.

RESULTS:

Western Regional Hard Red Winter Wheat - Kalispell

The Kalispell site had a mean yield of 81.57 bu/A. The highest yielding entry was UT 157140 at 97.75 bu/A. UT 156751, UT 156516, ID 326, and ORCR 8608 all had yields greater than 90 bu/A. No variety had a test weight of 60 lbs/bu and only five entries had test weights of 59.0 lbs/bu. Winter survival of all varieties were good, averaging 95.82%. TCK smut was generally light with seven lines being smut free. Table 1.

Western Regional Hard Red Winter Wheat - Stillwater

The Stillwater trial had a mean yield of 85.97 bu/A. Nine lines had yields in excess of 90/bu/A. All lines but two had test weights above the 60 lb/bu. Winter survival for all entries averaged 97%. TCK smut levels were very low in the test. Table 2.

Western Regional Soft White Winter Wheat - Kalispell

The Kalispell nursery had a mean yield of 94.74 bu/A. OR 855 was the highest yielding entry at 112.93 bu/A. Test weights were low and averaging 55.56 lbs/bu. TCK smut levels were low, with only WA 7621 and WA 7527 smut free. Table 3.

Western Regional Soft White Winter Wheat - Stillwater

The mean yield for the Stillwater site was 86.51 bu/A. ORF 75336 had the high yield (103.94 bu/A). No other varieties had yields above 100 bu/A but eight entries had yields of 90 bu/A or greater. Yield data was found nonsignificant when analyzed statistically. Test weights were average (59.44 lbs/bu). TCK smut was light with fourteen entries having a range of .5 to 8 percent. Table 4.

Intrastate Winter Wheat - Kalispell

The Kalispell location had a mean yield of 91.51 bu/A. The high yielding entry was Winridge at 121.57 bu/A. Ten lines were equal to Winridge, and above 100 bushel per acre. Test weights were good with an average of 61.38 lbs/bu. Fourteen entries had test weights above 62 lbs/bu. TCK smut was light yet was observed in all but eight entries. Stripe rust was prevalent throughout the trial and severe in twelve varieties. MT 86009 and MT 86029 were the only two varieties showing good resistance to strip rust. Table 5.

Offstation Winter Wheat Trials

The offstation winter wheat trials were grown in Ravalli County (McIntyre farm, Stevensville, MT), Lake County (Haake farm, Polson, MT.) and in Flathead County (Stillwater location, Oscar Buller farm Kalispell, MT.). The mean yields were 35.94 bu/A for Ravalli Co., 28.65 bu/A for Lake Co., and 79.86 bu/A for Flathead Co. Heights, test weights, % TCK smut and % survival observations are given in tables 7-9.

Table 1. Agronomic data from the Western Regional Hard Red Winter Wheat Nursery grown on the Northwestern Agricultural Research Center, Kalispell, MT.

Date planted: Sept. 18, 1987 Harvested: July 28, 1988 Field E-1

VARIETY	YIELD BU/A	TEST WT LB/BU	HEADING DATE	HEIGHT INCHES	%WINTER SURVIV	% TCK SMUT	-- LODGING -- SEVER	ANGLE
UT157140	97.75	58.73	157.75	48.23	97.50	.12	.0	.0
UT156751	97.35	58.98	155.25	39.86	97.75	.00	.0	.0
UT156516	97.04	55.05	152.50	36.91	96.00	.12	.0	.0
ID 326	93.49	55.48	153.25	39.47	83.75	.25	.0	.0
ORCR8608	93.44	58.18	155.25	37.11	97.00	.12	.0	.0
ORCR8602	89.70	54.53	153.50	31.59	97.00	1.12	.0	.0
ORCR8601	88.01	57.68	153.50	41.14	97.25	1.37	.0	.0
MT 8039	87.79	56.27	154.75	44.78	96.75	.88	.0	.0
ORCR8603	87.62	54.93	153.50	36.12	95.00	1.25	.0	.0
UT156775	87.34	58.30	154.75	38.19	97.75	.00	.0	.0
ID 356	86.49	56.90	155.50	39.76	93.75	.25	.0	.0
OR 8522	86.40	54.23	156.75	35.14	96.50	3.25	.0	.0
MT 79125	85.83	55.70	155.75	41.04	94.25	.12	6.3	1.3
ORCR8313	85.70	56.33	151.75	37.30	96.00	2.37	.0	.0
OR830282	84.60	55.90	154.25	40.16	95.75	.25	.0	.0
ID 381	84.09	58.15	157.00	46.26	96.75	.12	65.0	4.3
WA 7522	83.60	58.85	157.00	47.74	94.25	2.25	33.8	1.3
OR832306	81.92	52.43	153.25	33.76	98.50	7.00	.0	.0
ID 360	81.49	56.92	157.25	37.20	97.75	.63	.0	.0
ID 354	81.35	57.90	156.75	45.18	94.75	2.50	.0	.0
WA 7626	80.93	59.25	156.50	48.43	97.50	1.62	.0	.0
ID 364	80.14	55.50	155.75	39.47	97.25	.12	.0	.0
ID 380	79.14	59.15	157.00	47.93	93.75	2.13	35.0	1.5
ORCR8414	78.60	56.35	153.25	39.76	95.75	.75	.0	.0
ID 323	78.20	55.95	157.25	37.40	86.75	.00	.0	.0
WA 7523	76.85	56.43	159.25	45.57	91.25	1.25	47.9	4.0
ID 353	76.46	56.10	155.75	39.86	96.00	.63	.0	.0
ID 351	75.25	57.85	157.25	47.93	97.50	.25	5.0	.8
WA 7620	75.15	58.73	158.75	46.06	98.00	7.00	12.5	1.3
CI 13844	74.61	59.57	156.75	52.85	96.50	2.62	35.0	1.0
ID 0333	74.61	58.55	156.50	50.00	95.25	.00	25.0	2.0
ID 0335	72.78	59.85	158.50	50.89	96.75	.00	78.8	4.5
ID 0331	72.33	58.68	155.25	49.02	97.75	.00	43.8	7.0
ID 352	71.81	59.15	157.50	44.78	96.00	.12	17.5	1.8
ID 0336	71.26	58.70	157.50	50.49	97.50	.00	30.0	2.0
WA 7619	69.83	58.22	160.25	49.11	97.50	5.50	45.0	2.8
CI 1442	65.90	59.00	156.75	53.44	100.00	1.62	86.3	4.0
ID 0332	64.86	57.85	157.25	49.80	96.25	.00	92.5	7.0
MEANS	81.57	57.27	155.95	43.15	95.82	1.25	33.0	.82
F TEST 2/	5.32**	6.39**	14.54**	21.36**	6.10**	5.48**		
C.V. 2:	4.48	1.21	.33	2.92	1.27	61.79		
LSD (0.05)	10.25	1.95	1.44	3.53	3.41	2.17		

** Indicates statistical significance at the .01 level

2/ F value for variety comparison

Table 2. Agronomic data from the Western Regional Hard Red Winter Wheat nursery grown on the Oscar Buller farm, Kalispell, MT in 1988.

Date planted: Sept. 22, 1987 Date harvested: August 3, 1988

VARIETY	YIELD BU/A	TEST WT LB/BU	HEIGHT INCHES	% WINTER 1/ SURVIVAL	% TCK 2/ SMUT
UT156775	97.21	63.52	35.14	88	0
ORCR8608	96.24	62.10	31.89	100	0
UT156751	95.61	63.48	33.96	100	0
ORCR8313	94.71	63.23	35.14	95	0
ID 353	93.81	62.25	33.76	100	0
WA 7620	93.59	62.60	37.11	95	0
ID 360	91.88	61.88	28.64	98	0
OR830282	91.39	61.88	31.99	100	1
ID 356	91.09	61.63	30.51	97	0
WA 7522	89.82	62.03	39.07	100	.5
ID 0331	89.80	62.80	32.87	93	.5
ID 326	89.39	61.20	31.30	95	0
ID 323	88.60	61.83	28.94	98	0
WA 7619	88.18	63.38	38.58	95	0
MT 79125	88.10	61.18	34.74	95	0
ID 0336	88.10	62.50	39.27	100	0
WA 7626	86.80	62.82	37.30	98	0
ORCR8414	86.79	61.60	34.55	100	0
UT157140	86.61	61.80	39.96	98	0
CI 13844	85.01	62.80	42.32	96	0
ID 381	84.94	62.30	39.47	100	.5
ORCR8602	84.83	60.65	26.87	90	0
ID 351	84.54	62.87	38.48	95	0
UT156516	83.95	61.38	32.48	95	0
ID 364	83.80	61.95	33.27	98	0
MT 8039	83.79	60.87	36.42	98	0
ORCR8601	83.43	62.33	35.63	95	1
ID 380	83.35	63.55	36.52	90	0
ID 354	82.35	62.43	39.96	95	0
ID 352	81.25	63.15	37.70	98	0
ID 0333	80.54	62.25	42.81	100	0
CI 1442	79.84	61.90	42.42	95	2
WA 7523	79.65	61.50	36.22	98	0
ID 0335	79.30	62.48	41.63	100	0
OR832306	79.27	59.00	29.92	92	2
ID 0332	75.04	61.70	38.09	98	0
OR 8522	74.59	60.13	29.82	100	0
ORCR8603	69.73	59.30	29.53	88	0
EXPERIMENTAL MEANS	85.97	62.01	35.38	97	.2
F TEST 3/	1.67**	7.04**	5.51**		
CV2	5.64	.64	5.10		
LSD (0.05)	13.58	1.11	5.06		

1/ % Winter survival = % of plot survival through winter, 1 rep data only
2/ % TCK Smut by ocular observation, 1 rep data only
3/ F value for variety comparison