PROJECT TITLE: Winter Wheat Variety Evaluations

YEAR/PROJECT 1986/756 Small Grains Production

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SUMMARY:

To determined the adaptability of new and introduced winter wheat varieties to Montana the Western Regional Winter Wheat nurseries are grown at the Kalispell and Stillwater locations. The outstanding varieties from these trials are tested under varying growing conditions of western Montana through off station nursery evaluations. These data are used in making recommendations to the Montana producer.

Continuous snow this year in the Kalispell area was from Nov. 16 to March 3 (105 days). Although conditions appeared favorable for snow mold there was very little incidence of that disease in the winter wheat nurseries. Yields and test weights were good this year in all the nursery locations.

Western Regional Hard Red Wheat Nursery - Kalispell

Yields were equal to last year with the average for the nursery (73.81 bu/A) being just slightly higher than the previous year. Eighteen varieties had yields significantly less than the check variety ,Winridge (83.09 bu/A). No varieties yielded significantly higher than Winridge.

High test weights were recorded this year with 14 varieties having test weights significantly greater than Winridge (61.17 lbs/Bu).

Winter kill, although not severe, was as high as 30% in the varities Winridge, ID 0337, OR 8315, and ID 0338. These % winter kill ratings were taken early in the spring and do not accurately reflect percent stand loss from which to calculate yield loss. The lodging index figure is calculated by multiplying lodging severity (based on a 1-9 scale of degree of lodging) times prevalence (% of plot effected), divided by nine. There was minimal lodging in this nursery. Very little TCK smut was recorded in this nursery. Table 1.

Western Regional Hard Red Wheat - Stillwater

Yields from the Stillwater location were the highest in four years which was a reflection of the good fall and spring moisture with a favorable 1986 growing season. Winter kill averaged 38% for the nursery and a high of 59% was noted for OR 8315. Test weights for ID 298 and WA 7269 exceeded 63 lbs/Bu. Table 2.

Western Regional Soft White Wheat - Kalispell

Yields ranged between 26.8 and 97.9 bu/A with the check variety (Stephens) yielding 79 bu/A. Eight varieties yielded significantly higher than Stephens while six varieties yielded significantly less. Test weights

for the nursery averaged 57.8 lb/bu with Stephens having a test weight of 56.7 lbs/bu. Winter kill was not severe but did occur throughout the nursery at an average of 5.2 % . WA 7163, WA 7126, and WA 7432 had no occurrance of winter kill. Smut was prevalent and was detected in all but four varieties (WA 7431, WA 7432, WA 7434, and WA 7217). OI 754989 had the highest level of smut with 43.8% of the heads showing some infection. Table 3.

Western Regional Soft White Wheat - Stillwater

WA 7431 was the highest yielding entry in the test at 102 bu/A and was the only variety yielding significantly higher than Stephens, the check variety. OI 754022 and OI 754989 were both significantly less in yield than Stephens. Test weights averaged 59.24 lbs/bu with only six varieties varying significantly from Stephens (59.38 lbs/bu). Winter kill was severe in this nursery with percentages as high as 67. 5% in Kharkof. The average for the nursery was 32.6%. This reading was taken in early spring and may not have a relationship to yields obtained. Table 4.

Intrastate Winter Wheat - Kalispell

Yields were excellent for this nursery ranging from 79.5 to 137.7 bu/A. Winridge was used as a check variety and yielded 118.2 bu/A. Two varieties (Neely and MT 84165) yielded significantly higher than Winridge. The test weights for this nursery averaged 61.37 lbs/bu. Several varieties had test weights significantly higher than Winridge. Although winter kill was not severe there was some loss in each variety tested. Lodging was moderate, being observed in 23 of 40 varieties. Leaf rust was detected in all varieties tested and exceeded 50 % severity in eight varieties. Table 5

Off Station Winter Wheat Nurseries

The 1986 off station winter wheat nurseries were grown on the Ross McIntyre farm (Ravalli Co.), the Dean Stipe farm (Lake Co.), and at the Stillwater location near Kalispell. Neely, Lewjain, and MT 79125 were the top three yielding varieties when averaged across the three locations. Neely and Lewjain yielded in the top four entries of each location. Yields were good at each location and representative of the weather conditions for each area. Neely also had the second highest test weight compared across the three locations for the season. Weston had the highest test weight at each location. Percent stands were good at Lake and Ravalli Co. locations but were poor at the Stillwater location. Table 6.

Table 1. Agronomic data from the western regional hard red winter wheat nursery grown on Northwestern Agricultural Research Center in Kalispell, MT in 1986. Seeded September 20, 1986 Harvested August 7, 1986

CI OR STATE	VARIETY	YIELD BU/A	TEST WT LB/BU	HT (")	% WNTR KILL	HEADING DATE	LODGING INDEX 1/	% TCK SMUT 2/
OI 730875	7C/KAVKA2//NORD	88.93	61.08	32.78b	14.75b	158.0b	.0000	.2500
WA 7270	REA SEL 62/ID92	83.48	62.55a	37.20	6.500b	160.5	10.55a	.0000
WINRIDGE 1/CI 17902		83.09	61.17	38.48	32.50	161.8	.0000	.0000
ID 301	HGL/ID5006/4/II	82.57	61.40	29.13b	16.00b	159.0b	.0000	.2500
ID 300	ARBON/3/DM/CLM	81.15	61.28	35.43	5.500b	155.8b	.0000	.0000
WA 7429	ID92/N7403301	80.45	63.05a	40.55	10.50b	161.3	.0000	.0000
ID 297	A68203W-W-1-3-3	80.38	62.50a	38.48	13.25b	160.5	.0000	.1250
OI 602137	OR-DO SEL F 602	79.65	60.05b	24.90b	6.250b	157.5b	.0000	.2500
WA 7430	ID 144/WA7001 N	79.61	62.95a	39.17	14.75b	160.8	.0000	.2500
ID 302	ARBON/3/DM/CLM/	79.30	60.15b	31.99b	5.000b	156.0b	.0000	.0000
MT 79125	UT755079/CST56	79.27	60.78	28.25b	33.25	157.8b	.0000	.1250
WA 7269	WA5514/ITANA//C	78.55	63.45a	37.60	4.250b	159.8	.8250	.0000
BATUM	WA 6816	78.38	58.85b	28.64b	6.750b	161.3	.0000	.0000
ID 0331	RGR/3/II-60-157	76.33	62.40a	38.98	9.500b	156.3b	.0000	.0000
WANSER	CI13844	75.66	62.38a	35.63	8.250b	159.3b	.0000	.1250
WA 6820	GWB 127/GWB236-7	74.95	58.38b	27.76b	5.000b	154.8b	.0000	.0000
ORCR 8313	PROBSTORFER -EXT	74.73	60.48	28.15b	17.25	155.5b	.0000	.0000
UT 152419	MARTONVASARI 3/	74.31	61.72	37.30	8.250b	158.3b	.0000	.0000
ID 0337	A781011W-WA725	73.79b	62.45a	31.59b	30.00	159.0b	.0000	.1250
ID 0335	TK/BURT/4/SM6/	73.26b	62.35a	39.27	14.25b	159.5b	.0000	.0000
ID 0336	ATL 50/4/R/R/2	72.44b	61.50	37.50	18.75	160.0	.0000	.0000
UT 154580	HANSEL//FLEX/UT	71.64b	60.70	32.78b	8.250b	158.5b	.0000	.1250
ID 298	2IT65 OR 2CNN 0	71.10b	63.80a	38.09	10.50b	160.0	31.53a	.0000
ID 0281	HNL///CI14106/6	70.09b	61.42	40.45	8.750b	158.8b	44.58a	.0000
ORCR 8414	PMF//CNO E/GLL	69.46b	61.33	29.04b	8.750b	155.3b	.0000	.5000
UT 146118	HANSEL/ARBON	68.95b	61.17	32.38	21.50	156.5b	.0000	.0000
OR 8315	F60213-76,MEX	68.61b	59.17b	26.57b	33.75	157.0b	.0000	.0000
ID 0333	A75211W-81-1-3T	68.28b	62.07a	38.29	13.75b	157.0b	.0000	.0000
ID 284	2IT65 OR 2CNW 0	68.19b	62.83a	29.63b	5.250b	159.0b	.0000	.0000
ID 299	SNOWMOLD TOLERAN	66.56b	63.13a	38.78	11.75b	158.3b	2.075	.0000
MT 79121	UT 755079/OST56	66.24b	59.65b	28.15b	10.50b	152.3b	.0000	.0000
ID 0332	II-60-156/CI 141	65.95b	61.95a	31.69b	17.25	158.8b	2.200	.0000
ID 0338	SN64/II-60-155/	64.90b	61.85	32.97b	38.00	159.0b	.0000	.0000
MT 79123	UT755079/CST56	64.45b	60.25b	25.10b	22.50	151.0b	.0000	.0000
ORCR 8320	MARNE DESPREZ/C	61.41b	60.12b	25.79b	7.750b	155.3b	.0000	.2500
KHARKOF	CI 1442	60.95b	60.98	43.70a	13.00b	162.8	52.48a	.1250
SUM STATS:								
OVERALL MEAN		73.81	61.43	33.67	14.22	158.1	4.006	.0694
F-RATIO 4/		4.516**	23.25**	19.67**	2.580**	12.67**	15.90**	1.511
CV (SE/MEAN)		4.347	.4413	3.483	40.15	.4540	76.87	137.6
LSD (0.05)		8.996	.7601	3.288	16.01	2.013	8.636	.2679

1/ Lodging scale = lodging severity X prevalence / 9
2/ Ocular rating on TCK smut
3/ Check variety
4/ F value for variety comparison
** Indicates satistical significance at the .01 probability level

a/ Values significantly greater than the check at the .01 level
b/ Values significantly less than the check at the .01 probability level

Table 2. Agronomic data from the western regional hard red winter wheat nursery grown on the Oscar Buller farm in Kalispell, MT in 1986.
Seeded September 25, 1985 Harvested August 18, 1986

CI or State #	VARIETY	YIELD BU/A	TEST WT LB/BU	HT (")	% WNTR KILL
BATUM	WA 6816	89.88	60.45b	28.74b	18.75
WA 7430	ID 144/WA7001 N	85.51	61.93	37.50	32.50
ID 300	ARBON/3/DM/CLM	81.32	62.00	34.45	20.00
WINRIDGE	CI 17902	80.49	62.20	34.06	48.75
ID 0336	ATL 50/4/R/R/2	79.99	61.40b	36.61	36.25
WA 6820	GWB 127/GWB236-7	79.76	60.75b	26.28b	18.75
ID 297	7C/KAVKA2//NORD	79.71	62.30	34.06	37.50
ORCR 8313	A68203W-W-1-3-3	79.15	62.38	29.53b	27.50
ID 298	PROBSTORFER -EXT	77.51	63.60a	35.53	31.25
ID 302	2IT65 OR 2CNN 0	76.57	61.05b	32.19	43.75
UT 154580	ARBON/3/DM/CLM/	76.20	61.85	32.09	48.75
WA 7429	HANSEL//FLEX/UT	75.74	62.40	36.22	27.50
MT 79121	ID92/N7403301	74.94	61.02b	25.69b	37.50
UT 146118	UT755079/CST56	74.36	61.28b	32.48	32.50
ID 301	HANSEL/ARBON	73.90	61.35b	26.87b	40.00
ID 0281	HGL/ID5006/4/II	73.89	62.03	42.62a	22.50
WA 7270	HNL///CI14106/6	73.09	62.38	31.59	31.25
OI 602137	REA SEL 62/ID92	72.99	59.92b	24.41b	53.75
UT 152419	OR-DO SEL F 602	71.64	61.65	34.65	42.50
ID 0337	MARTONVASARI 3/	71.47	62.50	27.07b	57.50
OI 730875	A781011W-WA725	71.25	60.88b	32.38	21.25
ID 0333	A75211W-81-1-3T	70.86	62.02	37.30	42.50
ID 299	SNOWMOLD TOLERAN	70.58	62.70	38.48a	30.00
WANSER	CI13844	70.14	61.95	35.43	43.75
ID 0332	II-60-156/CI 141	68.97	62.18	33.17	53.75
MT 79123	UT755079/CST56	68.78	60.92b	26.77b	38.75
ID 0335	TK/BURT/4/SM6/	68.24	61.58	38.48a	41.25
MT 79125	UT 755079/OST56	67.82	61.08b	25.98b	56.25
ID 0338	SN64/II-60-155/	66.01b	61.40b	31.79	50.00
ID 0331	RGR/3/II-60-157	65.89b	62.13	35.63	32.50
WA 7269	WA5514/ITANA//C	64.95b	63.37a	32.58	32.50
KHARKOF	CI 1442	63.20b	60.20b	40.26a	40.00
ID 284	2IT65 OR 2CNW 0	57.59b	61.73	25.89b	28.75
ORCR 8320	MARNE DESPREZ/C	53.36b	60.98b	25.10b	37.00
ORCR 8414	PMF//CNO E/GLL	48.01b	60.72b	26.18b	37.50
OR 8315	F60213-76,MEX	35.50b	57.05b	23.03b	58.75
SUM STATS:					
OVERALL MEAN		71.09	61.54	31.97	37.59
F-RATIO TRTS 2/		3.970**	23.78**	16.23**	1.468
CV (SE/MEAN)		7.253	.3735	3.902	24.36
LSD (0.05)		14.46	.6444	3.499	25.68