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PROJECT TITLE: Small Grains Production

PERSONNEL: Leader - Vern R. Stewart, Technician - Todd K. Keener  
Cooperators - Oscar Buller, Stillwater location  
Gayle Scypheris, Lake County  
Norm Neiman, Sanders County  
Ross McIntrye, Ravalli County

SUMMARY: To determine 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 cultivars from these trials are then tested under the varying growing conditions of western Montana through Off-station Nursery evaluations. These data are used in making recommendations to the Montana producer.

The extreme climatic and environmental conditions that existed in western Montana this summer did not have as much effect on the winter wheat crop as was seen in the spring grain. Yields were lower in comparison to the excellent yields from the previous year. The incidence of smut was not as high as other years yet the level was enough to evaluate most of the cultivars for TCK smut resistance. Lodging was only a problem in the Hard Red Winter Wheat Nursery at Kalispell, and this was in response to an early summer rain storm.

RESULTS: Western Regional Hard Red Winter Wheat - Kalispell

Yields were equal to the previous season which may be a reflection of the open winter weather conditions. The highest yields were from five entries which resisted lodging ( OI 730875, OI 602137, WA 7172, ORCR 8313, and MT 7877 ). These five varieties were also significantly higher in yield than the check variety, Wanser.

The average height for the nursery was greater than previous years. The heading dates were about twelve days later than last year. Both of these agronomic factors were influenced by the wet cool spring and the dry hot summer. Test weights were also affected by the climatic conditions. ORCR 8313 had the high test weight of 60.3 lbs./bu.

Stripe rust ( *Puccinia striiformis* ) was detected in the nursery and occurred on all varieties except OI 730875 and WA 6815. MT 8003, ID 0280, and Kharkof were very susceptible to stripe rust.

ORCR 8313, besides having the highest test weight also showed fair resistance to stripe rust, and had excellent straw strength. See Table 1.

- Western Regional Hard Red Winter Wheat - Stillwater

The yields from the Stillwater location were lower than those of Kalispell and also noticeable lower than yields from the same location last year.

Test weights were much lower than previous seasons and varied from 47.5 to 57.2 lbs/bu.

TCK smut was not prevalent in high percentages yet was detected in all but ID 0282, ID 0283, UT 125327, Cree, ID 0281, and ID 0280. The two highest yielding varieties were also found to be smut-free. See table 2.

- Western Regional White Winter Wheat - Kalispell

Yields were slightly lower and test weight averages slightly higher than in 1983. One variety ( WA 7164 ) had a significantly higher yield than LewJain, was smut resistant, and showed excellent lodging resistance.

Stripe rust was prevalent throughout the nursery, although not at a high level. It was detected in all varieties except OR 7996 and OI 754989. Stripe rust was especially heavy in the varieties Elsin and Kharkof which had 85 and 45 % severity respectively.

TCK smut was light yet was detected in all but seven varieties.

Lodging was significantly less in the white wheat in comparison to the red varieties. As expected, the three low yields were recorded in those entries that were most susceptible to lodging.

WA 7164 had a significantly higher yield than the check variety ( LewJain ), was smut resistant, and showed excellent lodging resistance. See table 3.

- Soft White Winter Wheat - Stillwater

Yields from the White Wheat nursery at Stillwater ranged from 40.2 to 71.8 bu/A and were much lower than last year. WA 7166 and OI 754989 had significantly higher yields than LewJain.

There were twelve varieties that had test weights which were significantly less than LewJain. The test weights in general were less than previous season due to the dry hot summer.

The lack of snow cover for most of the winter resulted in a low incidence of TCK smut. Although there was not a high level of the disease WA 6819, LewJain, and WA 7168 were found to be smut free. See table 4.

- Offstation Winter Wheat Nurseries

In 1984 the offstation winter wheat nurseries were grown in Lake, Sanders, and Ravalli Counties. On a state-wide basis the top yielding varieties were OR 792, LewJain, and Hill 81. The yields varied from 26 to 66 bu/A partly due to location with most locations showing an effect of the drought-like season experienced by most of the state this summer.

Those varieties that had the top three test weights state wide were Weston, OR 792, and Hawk. The test weights from Sanders County really reflected the dry conditions and ranged from 43 to 50 lbs/A.

Height varied according to variety. Table 5 contains a three location summary as well as the state-wide means.



Table 1 Agronomic data from the Western Regional Hard Red Winter Wheat Nursery sown on the Northwestern Agricultural Research Center at Kalispell, MT in 1984. Random block design, four replications. Field No. E-4.

Date planted: September 19, 1983      Date Harvested August 15, 1983

State or CI #	VARIETY	YIELD BU/A	TEST WT LBS/BU	HEIGHT INCHES	HEADING DATE	2/		2/		
						STRIPE INF TYP	STRIPE SEVER.	LODGING ANGLE	LODGING SEVER.	
01730875	7C/KARKAZ//NORD	109.65a	58.45	45.08	168.7	.00b	.00b	.00b	.00b	
WA 7172	CI13438/BURT//SM7437/3/CER	107.90a	58.92	40.65b	169.7	1.00b	11.25	1.50b	27.50b	
01602137	OR-IDSEL.F60213-76	99.84a	57.08	35.73b	172.0	2.25	6.25	.00b	.00b	
ORCR8313	PROBSTORFER-EXTREM/TOB66	96.91a	60.30a	41.14b	166.7	1.00b	6.25	.00b	.00b	
MT 7877	NORWIN	93.28a	59.25	35.24b	169.5	2.75	30.00	.00b	.00b	
WA 7171	CI13438/BURT//SM7437/3/CE	87.51	57.82	44.19	170.2	1.75	9.50	5.00	56.00b	
WA 6820	GWB127/GWB236-7/STURDY	84.46	56.78	38.98b	166.7	4.75	15.00	4.25b	33.75b	
ORCR8107	ALBA/GNS//FN/SONORA64	81.75	57.13	51.77b	169.2	2.00	20.00	7.75	94.75	
ID 0261	BURT/CI12929//DLM/4/MBR/3	80.56	57.40	38.98b	173.5a	1.50	31.25	4.00b	35.00b	
ID 0282	HGL/ID5006/3/CI14106/CLM/	79.69	56.92	43.80	170.2	4.50	50.00	8.50	96.00	
WA 6816	ID5012/WA5866	77.91	54.53b	44.19	174.2a	.00b	.00b	3.00b	25.00b	
ID 0281	HNL/3/CI14106/CLM//HC	74.77	56.90	47.64	170.5	3.25	18.75	7.75	98.00	
ID 0259	JEFF/3/II-60155/CI14106//	73.91	58.30	48.62	169.2	2.00	7.50	7.75	99.00	
UT125327	DLM/PI173438//CLM/3/DLM/4	73.18	55.88	43.01b	169.5	4.00	12.50	6.75	87.25	
WA 7173	CO696317/CERCO(N8101901	68.77	58.85	50.00	170.8	3.50	49.75	7.25	84.75	
UT132569	WRR/CI13837//PI173438/3/H	68.36	56.43	45.96	173.3a	2.00	3.25	6.75	93.50	
ID 0283	ATL50/4/R/R//2*CNN/3/4TK/	68.19	56.60	47.54	170.0	.50b	10.00	7.75	93.25	
CI 13844	WANSER 1/	66.59	57.32	47.44	169.2	4.25	29.75	7.25	94.50	
MT 77063	CREE	64.53	57.48	47.54	171.0	3.00	53.75	7.75	92.25	
ID 0242	SM4/TD//3*IT/178383	63.35	57.50	47.15	171.0	6.75	46.25	7.50	96.00	
ID 3518	WA4765/3/BZ//BURT/178383	63.17	48.63b	36.52b	176.0a	.75b	1.25	4.00b	44.75b	
MT 8003	REDWIN SEL.	60.34	55.60	48.43	169.7	7.00	94.25a	7.75	90.00	
UT132534	WRR/CI13837//PI1783438/HN	54.48	55.32	47.24	173.5a	1.50	12.50	8.00	97.00	
ID 0280	II-60-155/2*CI14107//RGR	48.38	55.23b	43.90	169.7	7.50a	66.25a	8.00	98.00	
CI 1442	KHARKOF	45.43	55.78	52.17a	173.0	5.75	66.00a	7.50	96.75	
		X	75.72	56.83	44.52	170.7	2.93	26.05	5.43	65.32
		F 3/	4.68	9.51	11.78	23.20	4.24	6.17	12.16	15.04
		S.E.X	7.82	.71	1.39	.46	1.05	10.13	.87	9.87
		C.V.Z	10.33	1.25	3.12	.27	35.94	38.88	15.94	15.11
		L.S.D.	22.04	2.00	3.91	1.68	2.97	28.55	2.44	27.83

1/ Check variety

2/ Stripe = Stripe rust ratings. INF TYPE, 1-9 ratings where 0 = no chlorosis or sporulation  
SEVER. = severity, % leaf area infected      5 = necrotic and chlorotic stripes

3/ F value for variety comparison

intermediate sporulation  
9 = no chlorosis or necrosis

Table 2 Agronomic data from the Western Regional Hard Red Winter Wheat Nursery grown on the Oscar Buller farm at Kalispell, MT in 1984. Random block design, four replications.

Dated planted: Sept. 28, 1983 Harvested: August 20, 1984

State or CI #	VARIETY	YIELD BU/A	TEST WT LBS/BU	SMUT % PLOT	HEIGHT INCHES
ID 0282	HGL/ID5006/3/CI14106/CLM/	61.61	55.78	.00b	37.70b
ID 0283	ATL50/4/R/R//2*CNN/3/4TK/	60.20	54.40	.00b	44.00
ORCR8313	PROBSTORFER-EXTREM/T0B66	59.91	55.15	1.50	35.43b
DI730875	7C/KARKAZ//NORD	57.65	53.93	1.50	39.37b
UT125327	DLM/PI173438//CLM/3/DLM/4	56.86	54.22	.00b	37.89b
CI 13844	WANSER 1/	54.43	54.88	3.00	44.09
WA 6820	GWB127/GWB236-7/STURDY	54.35	51.93b	.50b	34.06b
MT 7877	NORWIN	54.25	55.07	.25b	27.56b
WA 7172	CI13438/BURT/SM7437/3/CER	53.84	52.25	1.00	36.81b
ID 0259	JEFF/3/II-60155/CI14106//	53.05	55.92	.25b	44.09
UT132534	WRR/CI13837//PI1783438/HN	52.83	50.72b	.25b	44.59
UT132569	WRR/CI13837//PI173438/3/H	52.54	51.28b	.25b	43.60
WA 7173	CO696317/CERCO(N8101901	52.37	57.15	1.25	42.91
ORCR8107	ALBA/GNS//FN/SONORA64	52.37	53.95	4.50	45.47
ID 0242	SM4/TD//3*IT/178383	51.75	56.33	.50b	44.98
WA 7171	CI13438/BURT//SM7437/3/CE	51.54	54.25	.75b	37.11b
WA 6816	ID5012/WA5866	51.50	48.65b	2.00	33.66b
DI602137	OR-IDSEL.F60213-76	50.10	53.00	1.50	30.02b
MT 8003	REDWIN SEL.	50.04	54.60	8.50a	41.93
ID 0261	BURT/CI12929//DLM/4/NBR/3	46.80	53.18	2.50	30.81b
MT 77063	CREE	46.66	53.80	.00b	43.70
ID 0281	HNL/3/CI14106/CLM//MC	43.10b	50.95b	.00b	46.56a
ID 0280	II-60-155/2*CI14107//RGR	42.20b	52.58	.00b	40.65
CI 1442	KHARKOF	41.13b	53.62	1.00	47.44a
ID 3518	WA4765/3/BZ//BURT/178383	39.11b	47.45b	.50b	31.89b
	X	51.61	53.40	1.26	39.45
	F 3/	4.41**	6.07**	6.16**	42.94**
	S.E.X.	2.78	.94	.75	.87
	C.V.	5.39	1.75	59.78	2.21
	L.S.D	7.84	2.64	2.20	2.46

1/ Check variety

2/ Smut % plot = percent plot by ocular ratings

3/ F value for variety comparison