

PROJECT TITLE: Western Regional Hard Red Winter Wheat Evaluations

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OBJECTIVE: To evaluate hard red winter wheat varieties for adaptability, yield quality and disease resistance.

RESULTS: Winter kill was less severe in the hard red winter wheats compared to the soft whites. Yields were reduced from the long term averages due to environmental conditions and foliar diseases. The average yield was 65 bu/A with the low yield being 37 bu/A (UT 303) and the highest being 118 bu/A (OR 870834). Test weights also suffered from the poor growing environment during the 1993 season. The mean test weight was 51.1 lb/bu and the high was 56.2 lb/bu (OR850153). Lodging was moderate to heavy and contributed to poor yields and test weights. Four varieties had no lodging (OR870834, OR850153, OR860247 and MT8713). TCK smut (dwarf bunt) was observed in the nursery at low to moderate levels and only five varieties were free of disease infection. Twenty-three entries had TCK infection at, or greater than 1%. Leaf rust and powdery mildew were also prevalent in the nursery.

SUMMARY: Winter wheats were more winter hardy than the soft white but more susceptible to the foliar diseases in the spring. Yields for the hard reds were below normal, and less than the soft white wheats.

FUTURE PLANS: There are plans for continued evaluation of new and introduced lines of winter wheat in Montana by growing the Western Regional Winter Wheat Nursery.

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Table 1. Agronomic data from the Western Regional Hard Red Winter Wheat Nursery grown on the Northwestern Agricultural Research Center, Kalispell, MT.
 Planted: September 21, 1992 Harvested: August 27, 1993

CI Number	VARIETY	YIELD BU/A	TEST WT LB/BU	HT (IN)	HEADING DATE	WINTER KILL %	LODGING INDEX 2/
OR870834	VS74-709/NAC	118.57	53.05	35.93	160.75	14.00	.00
OR861555	VS 74-709/BCU	102.80	51.53	40.35	162.00	10.00	.83
OR 2619	NZT/BEZ1//ALD,F1/4/F	100.89	53.35	34.94	158.75	14.00	.10
OR850513	RBS/ANZA/3/KVZ/HYS//	98.09	56.15	31.99	156.50	5.00	.00
OR860247	GNS/LP/3/5*ATR/AGA//	90.41	53.38	33.96	155.50	18.75	.00
WA 7758	CI9432/4/908/FN*W//4	33.56	53.90	46.26	162.00	4.00	51.13
OR851911	BNS/LP/3/5*ATR/AGA//	81.39	50.65	30.02	154.25	14.25	.55
WA 7759	PI173467/CI13438//MG	76.74	51.37	41.34	160.25	5.25	8.75
WA 7760	KVZ/3/BEZ//MNT/BURT/	76.28	52.30	45.28	162.25	6.25	76.60
WA 7757	PI173467/GNS//WSR/3/	73.48	51.63	47.24	160.25	4.50	74.13
UT 150	ID51022/MANNING	72.80	49.98	42.81	159.50	2.75	.27
UT 190	AG POD/WHEAT	68.91	52.23	43.31	159.00	8.75	2.50
CI 13844	WANSER	68.91	51.60	47.24	158.75	9.00	66.38
ID 447	RGR/3/II-60-156/CI14	68.05	50.02	34.94	161.50	2.75	2.50
INH 1401	HYBRITECH	67.75	53.42	47.24	157.50	3.50	82.47
WA 7679	N823105/N8106201	67.69	53.97	47.74	160.25	3.50	55.68
IDHW0355	2*MC/NP824/3/LMH66/5	67.11	52.48	48.23	160.25	4.25	79.73
MT 8713	RRI/MT 6928	63.81	51.37	37.40	157.75	2.75	.00
UT182016	CI12385/UK//CLM/3/CI	63.01	47.95	44.29	159.00	2.75	15.28
ID 433	II-60-156/CI 14106//	62.58	50.92	46.75	159.50	5.00	96.25
ID 426	ID 77281 Hard Red	60.45	48.78	36.42	158.75	4.50	.05
ID 445	ID 77294 Hard White	60.20	52.05	51.18	159.75	2.75	77.23
OR387020	NA160/SDY//BJY.S (38	59.11	51.28	32.48	159.00	28.00	.27
INH 1486	HYBRITECH	58.53	49.63	41.34	156.25	9.00	37.13
DS 00001	BLIZZARD sib (Sunder	56.81	49.85	46.26	160.25	3.50	96.03
WA 7761	WTH/HTN//WTH, N84091	56.46	52.28	48.23	159.75	6.00	76.68
WA 7762	WA7270/HYAK HWW, D86	53.14	51.95	49.21	163.00	4.00	70.75
WA 7678	CI 14484//BNK/GNS/3/	51.41	51.90	47.74	160.00	1.75	79.80
MT 8719	RRI/MT 6928	49.89	49.70	43.80	158.75	4.25	82.00
ID 444	ID 77190 Hard Red	49.59	49.38	47.74	167.00	2.50	95.28
SDM206W	SUNDERMAN BLIZZARD R	49.19	53.13	48.72	160.75	1.75	79.15
ID 453	BEZ-1//CI13438/BURT/	48.54	50.63	48.72	158.75	7.25	92.80
UT187416	FENG KNG15/MANNING	47.80	47.48	40.35	157.50	3.25	68.35
ID 454	A742332-9-4/A75284W	45.80	50.52	49.21	158.50	7.75	84.58
CI 1442	KHARKOP	42.00	50.25	46.75	159.00	4.25	88.00
ID 423	ID0076/3 11-60-157/W	41.24	46.73	36.42	159.25	5.25	1.93
ID 443	ID 77089 Hard Red	38.20	48.18	42.81	163.75	1.25	85.53
UT 303	1257-6/MNG	37.23	45.58	42.81	158.25	3.50	41.10
EXPERIMENTAL MEANS		65.24	51.08	42.83	159.57	6.36	46.57
LSD (0.05)		17.22	1.98	2.47	3.60	7.43	17.67

1/ Winter Kill = % plot reduction due to winter injury and snow mold
 2/ Lodging Index = lodging prevalence X lodging severity divided by 9

Table 2. Agronomic data from the Western Regional Hard Red Winter Wheat Nursery grown on the Northwestern Agricultural Research Center, Kalispell, MT.
Planted: September 21, 1992 Harvested: August 27, 1993

CI Number	VARIETY	% FCK 1/ 7-19-93	POWDERY MILDEW 2/	LEAF 3/ RUST
INH 1486	HYBRITECH	12.75	17.50	12.50
MT 8713	RRI/MT 6928	6.50	17.50	7.50
OR851911	BNS/LP/3/5*AYR/AGA//	5.75	20.00	7.50
CI 1442	KHARKOF	5.50	7.50	5.00
OR861555	VS 74-709/BUC	5.38	7.50	2.50
OR 2619	NZT/BEZ1//ALD, 31/4/Y	5.25	.00	.00
CI 13844	WANSER	4.88	15.00	20.00
INH 1401	HYBRITECH	4.38	.00	.00
WA 7761	WTH/HTH//WTH, N84091	3.50	5.00	7.50
ID 426	ID 77281 Hard Red	3.50	2.50	15.00
OR870834	VS74-709/NAC	3.38	.00	.00
MT 8719	RRI/MT 6928	3.25	15.00	2.50
WA 7678	CI 14484//BNE/GNS/3/	3.25	5.00	2.50
OR387020	HA160/SDY//BJY.S (38	2.50	5.00	.00
OR850513	RBS/ANZA/3/KVZ/HYS//	2.50	.00	.00
WA 7757	PI173467/GNS//WSR/3/	2.50	40.00	20.00
WA 7752	WA7270/HYAK HW, D86	2.37	12.50	7.50
WA 7758	CI9432/4/908/IN*W//4	2.37	7.50	12.50
WA 7679	N823105/N8106201	1.88	32.50	2.50
OR860247	GNS/LP/3/5*AYR/AGA//	1.62	5.00	5.25
UT187416	FENG KNG15/MANNING	1.50	10.00	7.50
UT 303	1257-6/MNG	1.50	15.00	7.50
ID 453	BEZ-1//CI13438/BURT/	1.00	5.00	32.50
ID 423	ID0076/3 11-60-157/W	.63	20.00	15.00
WA 7759	PI173467/CI13438//NG	.37	3.50	15.00
ID 443	ID 77089 Hard Red	.37	17.50	55.00
IDHW0355	2*MC/NP824/3/LMH56/5	.25	2.50	15.00
WA 7760	KVZ/3/BEZ//MNF/BURT/	.25	10.00	.00
ID 433	II-60-156/CI 14106//	.12	2.50	10.00
SDM206W	SUNDERMAN BLIZZARD R	.12	15.00	10.00
ID 445	ID 77294 Hard White	.12	5.00	5.00
DS 00001	BLIZZARD sib (Sunder	.12	5.00	.00
UT 150	ID51022/MANNING	.12	5.00	20.00
ID 444	ID 77190 Hard Red	.00	5.00	12.50
UT182016	CI12385/UK//CLM/3/CI	.00	.00	22.50
ID 447	RGR/3/II-60-156/CI14	.00	2.50	5.00
UT 190	AG POD/WHEAT	.00	22.50	20.00
ID 454	A742332-9-4/A75284W	.00	7.50	22.50

EXPERIMENTAL MEANS 2.36 9.70 10.66
LSD (0.05) 3.16 19.17 17.93

1/ % FCK smut = ocular observation of % FCK per plot
2/ Powdery Mildew = percent of flag leaf infected with powdery mildew
3/ Leaf Rust = percent of flag leaf infected with leaf rust