PROJECT TITLE: Winter Wheat Variety Evaluations

YEAR/PROJECT: 1990/756

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

OBJECTIVE: To evaluated winter wheat varieties for adaptability, yield, quality, and disease resistance.

RESULTS:

Moderate winter temperatures, ample precipitation through the season and a warm summer contributed to favorable yields in the winter wheat nurseries this year. The regional nurseries survived the winter conditions and were in excellent condition by early spring. Although there were not long periods of snow cover this year dwarf bunt (TCK) levels were moderate to high in some varieties. Excellent yields were harvested from both the Regional Hard Red and Soft White Winter wheat nurseries.

- 1990 Western Regional Hard Red Winter Wheat Nursery

With favorable weather and few disease problems the yields for this nursery were very high ranging from 127.45 bu/A to 46.23 bu/A. Six Oregon entires were the top yielding varieties in the nursery (Table 1). Test weights were good with few varieties weighing below 60 bu/A. Lodging was moderate to severe and occured in all but eight of the thirty-six varieties. Dwarf smut (TCK) was detected in all but six of the entries and was as high as 22.5% in Hybritech QT 549. Table 1.

- 1990 Western Regional Soft White Winter Wheat Nursery

Yields were very good in this nursery. The mean yield was 118.71 bu/A with all but three of the fourty entries having yields in excess of 100 bu/A. The yields of Kharkof and Elgin were depressed due to the degree of lodging and dwarf smut (TCK) infection. Dwarf smut was light throughout the nursery but was found at some level in all but five entries. Test weights were mostly above 60 lbs/bu in this trial with the average being 60.63 lb/bu. Lodging was much less in the soft white winter wheats with only eight varieties having light to moderate levels. Table 2.

- 1990 Intrastate Winter Wheat Nursery

Snow cover on winter wheat has been associated with the high incidence of dwarf smut. Although continuous snow cover was not considerable through out the winter (28 days continuous, 66 total days) there was moderate to high levels of TCK smut in the 1990 Intrastate Winter Wheat nursery. Levels were as high as 9.5% and only two varieties were found to have no smut (Blizzard and MT 8726). Sixteen varieties had levels below the 2% level . Winridge had a very slight evidence of TCK smut (.12%). Yields were good, ranging from 63 to 107 bu/A. Lodging was moderate in one third of the entries. Table 3.

Table 3. Agronomic data from the Intrastate Winter Wheat nursery grown on the Northwestern Agricultural Research Center in Kalispell, MT. Planted: September 20, 1989 Harvested: August 12, 1990 Field X-3

CI/STATE NUMBER	VARIETY	YIELD BU/A	TEST WT LB/BU	HEAD DATE	HEIGHT IN	% TCK SMUT	LODGING -- SEVER.	LODGING -- PREV.
MT 8039	JUDITH	107.49	62.40	162.75	44.78	3.25	.00	.00
MT 8599	CST//FRD1650/OLE	107.41	62.58	163.25	48.33	2.13	2.00	22.50
MT 88064	CST/VT 1230//ID7	105.93	61.30	168.25	47.05	.88	5.50	46.25
MT 88065	CST/VT 1230//ID7	105.21	62.98	168.75	44.49	.50	2.00	6.25
CI 17860	NEELEY	104.05	63.13	168.50	46.65	5.50	2.50	35.00
QT 549	HYBRITECH 549	102.05	62.60	161.25	44.49	4.75	.00	.00
MT 88050	PMN5/MT 77003//H	101.56	62.05	168.25	42.62	3.75	.00	.00
MT 7811	FRD/WNK//MT 692	101.21	62.55	167.75	45.57	3.25	.00	.00
RH78W296	BIGHORN	100.64	62.85	167.75	40.16	1.88	.00	.00
CI 17902	WINRIDGE	98.61	62.80	168.50	50.98	.12	2.25	12.50
MT 8706	MSC/CTK A+//IUL	96.59	61.50	161.50	42.22	.37	.00	.00
MT 8719	RRI/MT 6928	96.25	63.38	167.25	45.18	3.87	.00	.00
MT 88029	HP 340/NRS//MT 7	95.95	63.70	167.00	44.39	.88	.00	.00
ID 279	BLIZZARD	95.76	63.25	166.75	49.41	.00	.50	20.00
MT 8726	CST/VT1230//ID74	95.16	61.08	168.25	39.96	.00	2.25	7.50
QT 542	HYBRITECH 542	94.79	63.28	162.25	46.75	1.50	.00	.00
XNH 1401	HYBRITECH 1401	94.73	63.60	164.00	48.23	3.50	.00	.00
MT 8502	ID745101/LCO	94.51	62.28	166.75	43.01	4.25	.00	.00
CI 15075	CENTURK	94.43	63.50	163.25	48.33	4.63	1.25	18.75
MT 8508	CST//FRD1268/OLE	94.15	63.60	164.00	50.79	1.88	.00	.00
PI517194	TIBER	93.51	63.25	167.50	52.17	7.25	.00	.00
MT 85200	FRD/WNK//MT 692	92.95	62.10	163.25	39.47	4.88	.00	.00
MT 88038	PMN5/WN//MT 7216	92.60	62.28	166.75	50.59	9.50	2.25	21.25
MT 8713	MSC/CTK A+//IUL	92.13	62.80	165.50	38.58	2.00	.00	.00
MT 88017	PMN5/WN//HP 344/	91.85	62.15	163.50	45.96	6.00	.00	.00
MT 8709	MSC/CTK A+//IUL	90.96	62.17	167.50	38.98	3.38	.00	.00
CI 17879	ROCKY	89.61	63.25	165.75	48.82	5.25	5.25	72.50
MT 85202	FRD/WNK//MT 692	87.75	62.10	167.50	50.89	2.62	2.25	47.25
MT 88025	PMN5/WN//HP 344/	86.50	61.50	163.25	45.87	6.00	.00	.00
MT 88021	PMN5/WN//HP 344/	86.49	62.45	164.75	51.38	3.00	.00	.00
MT 88018	PMN5/WN//HP 344/	86.05	62.55	165.00	51.48	6.38	.50	18.75
PI491533	NORWIN	85.85	62.30	168.25	33.66	6.75	.00	.00
CI 17844	REDWIN	85.75	62.40	166.75	50.10	8.50	2.25	7.50
MT 88028	HP 340/NRS//MT 7	85.61	62.38	166.00	49.31	3.38	.75	24.75
MT 88012	CTK 78/MT 77003/	85.55	63.30	162.75	50.79	3.00	.00	.00
MT 88010	CTK 78/MT 77003/	84.86	63.40	164.75	50.10	1.62	.00	.00
MT 88026	PMN5/WN//HP 344/	84.84	62.38	163.75	50.20	6.00	.00	.00
MT 88019	PMN5/WN//HP 344/	84.05	62.78	164.00	50.59	3.25	.00	.00
MT 88027	PMN5/WN//HP 344/	82.70	61.85	161.75	46.95	3.00	.00	.00
ND 8212	RRI//YOGO/TPR	81.80	62.35	167.50	51.67	4.50	.75	15.00
MT 88062	CST/VT 1230//ID7	81.19	62.50	169.25	46.16	.88	6.50	40.00
MT 88024	PMN5/WN//HP 344/	81.16	61.98	163.75	45.28	8.75	.00	.00
MT 88013	PMN5/WN//HP 344/	80.45	62.17	161.50	49.61	5.00	.00	.00
MT 88014	PMN5/WN//HP 344/	80.40	62.40	167.00	51.18	6.25	1.50	43.50

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Table 3 (Cont'd). Agronomic data from the Intrastate Winter Wheat nursery

CI/STATE NUMBER	VARIETY	YIELD BU/A	TEST WT LB/BU	HEAD DATE	HEIGHT IN	% TCK SMUT	-- LODGING -- SEVER.	PREV.
ND 8002	SEWARD	80.31	62.73	167.75	51.87	5.75	3.00	41.25
MT 88030	HP 340/NRS//MT 7	79.54	62.20	166.50	44.78	9.50	.00	.00
MT 88046	PMN5/MT 77003//H	79.29	62.80	161.50	43.80	5.50	.00	.00
MT 88001	SMT/TD//YGSS	79.08	62.93	168.50	32.09	3.63	.00	.00
MT 88023	PMN5/WN//HP 344/	78.91	61.35	163.25	46.46	5.00	.00	.00
PI491532	CREE	78.25	62.43	168.25	53.25	1.75	5.50	79.75
CI 13670	WINALTA	77.18	62.58	167.75	54.23	5.00	3.50	87.50
MT 88035	MT 7216(LR117)/F	76.54	62.70	166.75	53.05	1.25	1.50	12.50
CI 17735	NORSTAR	76.46	62.28	169.75	56.89	9.75	7.25	85.00
MT 88057	MSB 20/CN SR303/	76.20	63.33	166.75	47.74	2.37	.00	.00
MT 88022	PMN5/WN//HP 344/	74.80	61.63	162.75	46.06	3.75	.00	.00
CI 8885	CHEYENNE	74.00	62.30	168.00	51.48	4.75	6.50	91.00
CI 17439	ROUGHRIDER	73.69	62.68	167.50	54.43	3.50	1.25	35.00
ND 8407	CTK/3/FRD*2//ND	73.23	61.23	167.75	53.15	8.25	7.75	73.75
MT 7863	FRD/WNK//CTK	70.23	62.10	163.25	57.38	2.50	.00	.00
MT 88005	WSC/YOGO//RSC/3/	69.56	61.40	167.75	54.33	.88	1.75	71.00
PI478771	AGASSIZ	68.10	62.87	168.75	55.41	2.00	.75	12.50
MT 88006	WSC/YOGO//RSC/3/	63.05	60.20	167.25	53.35	1.00	.00	.00
EXPERIMENTAL MEANS		87.25	62.47	165.85	47.79	3.87	1.27	16.91
F TEST FOR VAR.		8.67**	10.47**	18.64**	64.36**	2.05**	4.37**	5.62**
C.V. 2: (S OF MEAN/MEAN)*		4.13	.34	.33	1.35	45.44	77.23	66.25
LSD (0.05)		10.06	.60	1.55	1.80	4.91	2.75	31.26

** Indicates statistical significance at the .01 level