

PROJECT TITLE: Plant and variety selection in winter wheat for disease resistance to dwarf smut (TCK).

YEAR/PROJECT: 1990/756

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OBJECTIVE: Evaluation of winter wheat varieties for yield, quality and resistance to dwarf bunt.

RESULTS: 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 1.

SUMMARY: TCK smut was found in Winridge winter wheat as well as sixty of the sixty-two varieties tested for disease resistance at Kalispell. Although TCK smut was not the only factor responsible for lower grain yield it was more prevalent and severe in the lower yielding varieties.

FUTURE PLANS: Disease resistant varieties will continued to be evaluated at Kalispell, and across Montana's varied environments through cooperative nurseries.

Table 1. 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

CI/STATE NUMBER	VARIETY	YIELD BU/A	TEST WT LB/BU	HEAD DATE	HEIGHT IN	% TCK SMUT	- LODGING SEVER.	-- 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	PMNS/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	PMNS/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	PMNS/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	PMNS/WN//HP 344/	86.50	61.50	163.25	45.87	6.00	.00	.00
MT 88021	PMNS/WN//HP 344/	86.49	62.45	164.75	51.38	3.00	.00	.00
MT 88018	PMNS/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	PMNS/WN//HP 344/	84.84	62.38	163.75	50.20	6.00	.00	.00
MT 88019	PMNS/WN//HP 344/	84.05	62.78	164.00	50.59	3.25	.00	.00
MT 88027	PMNS/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	PMNS/WN//HP 344/	81.16	61.98	163.75	45.28	8.75	.00	.00
MT 88013	PMNS/WN//HP 344/	80.45	62.17	161.50	49.61	5.00	.00	.00
MT 88014	PMNS/WN//HP 344/	80.40	62.40	167.00	51.18	6.25	1.50	43.50

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Table 1 (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/ PI491532	78.91	61.35	163.25	46.46	5.00	.00	.00
CI 13670	CREE	78.25	62.43	168.25	53.25	1.75	5.50	79.75
CI 173670	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/ MT 88022	76.20	63.33	166.75	47.74	2.37	.00	.00
CI 8885	PMN5/WN//HP 344/ CHEYENNE	74.80	61.63	162.75	46.06	3.75	.00	.00
CI 17439	ROUGH RIDER	74.00	62.30	168.00	51.48	4.75	6.50	91.00
ND 8407	CTK/3/FRD*2//ND	73.69	62.68	167.50	54.43	3.50	1.25	35.00
MT 7863	FRD/WNK//CTK	73.23	61.23	167.75	53.15	8.25	7.75	73.75
MT 88005	WSC/YOGO//RSC/3/ PI478771	70.23	62.10	163.25	57.38	2.50	.00	.00
MT 88006	AGASSIZ	69.56	61.40	167.75	54.33	.88	1.75	71.00
	WSC/YOGO//RSC/3/ MT 88006	68.10	62.87	168.75	55.41	2.00	.75	12.50
		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