PROJECT TITLE: Screening of early generation winter wheat lines for TCK smut and stripe rust resistance in cooperation with Dr. Gene Hockett, Bozeman.

YEAR/PROJECT: 1991/756

INVESTIGATORS: Bob Stougaard, and Todd Keener, NWARC, Kalispell, MT.
Gene Hockett, Plant and Soil Science, Bozeman, MT.

OBJECTIVE: Evaluation of early generation winter wheat lines for yield, quality and resistance to dwarf bunt and stripe rust.

RESULTS: Fifty-two days of continuous snow cover (Dec.16 - Feb.5) contributed to moderate-to-high levels of TCK dwarf bunt in the 1991 Intrastate Winter Wheat Nursery. TCK severity varied from 1.75% (Bighorn) to 10.75% (Norwin) in susceptible varieties. Blizzard and Winridge were the only two varieties that had no TCK infection. No stripe rust was observed in the nursery

Excellent yields were harvested from the majority of entries. The mean yield was 95.24 bu/A and half (51%) of the thirty-nine varieties yielded over 100 bu/A. Judith had the high yield of 128 bu/A. Most varieties had test weights similar to the mean (60.7 lb/bu) except for Tiber and Hybritech QT-2 (62.03 and 62.23 lb/bu, respectively).

Lodging was severe throughout the nursery and may have contributed to lower yields in several varieties.

SUMMARY: Dwarf bunt (TCK) was found in all but two of the thirty-nine entries in the 1991 Intrastate Winter Wheat Nursery. Blizzard and Winridge had no TCK infection. Although lodging was severe in several varieties, 20 entries yielded over 100 bu/a. The mean yield was 95.2 bu/a.

FUTURE PLANS: Disease resistant varieties will continue to be evaluated at Kalispell, and across the varied environments of Montana, 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 18, 1990 Harvested: August 22, 1991

CI or STATE #	VARIETY	YIELD BU/A	TEST WT LB/BU	HEADING DATE	HEIGHT (IN)	% TCK SMUT	LODGING INDEX 1/
MT 8039	JUDITH	127.59	60.57	161.50	44.78	4.75	19.45
MT 8909	MT 8001/MT 7673	119.35	61.50	167.75	42.32	2.37	.00
MT 8957	RDW/FRD//RRI/(TT/BUR	115.66	61.52	164.25	44.78	3.50	12.50
RH78W296	BIGHORN	110.81	60.92	163.50	37.89	1.75	16.10
PI517194	TIBER	109.46	62.03	164.00	50.20	5.75	6.25
MT 8918	MT 7673/MT 7115	109.16	60.13	166.25	44.78	4.25	93.50
QT-2	HYBRITECH	107.46	62.23	160.25	46.75	4.63	12.10
MT 7811	FRD/WNK//MT 6928/TR	106.95	60.65	163.50	43.80	4.50	22.23
QT-1	HYBRITECH	106.83	60.78	159.75	42.81	10.50	43.53
MT 8502	ID745101/LCD	105.85	60.75	162.00	42.32	4.00	2.90
MT 8920	TBR/MT 7673	105.07	61.63	163.00	47.74	6.00	37.50
ID 279	BLIZZARD	104.01	61.75	166.00	47.24	.00	33.48
MT 8949	RDW/FRD//RRI/(TT/BUR	103.49	60.78	164.75	47.24	3.25	39.85
MT 85200	FRD/WNK//MT 6928/TR	102.66	59.65	161.00	39.37	5.00	44.05
MT 8709	MSC/CTK A+//IUL	102.25	59.45	165.75	38.88	5.25	24.25
CI 17860	NEELEY	102.06	60.65	165.50	44.78	4.38	34.93
QT 542	HYBRITECH 542	101.79	61.05	160.00	46.26	7.25	42.35
MT 8719	RRI/MT 6928	101.60	60.85	164.50	43.31	3.50	27.00
MT 8910	MT 8001/MT 7673	101.18	61.45	166.25	48.72	4.13	31.67
MT 8948	RDW/FRD//RRI/(TT/BUR	100.24	61.78	165.75	44.78	4.25	66.55
CI 17844	REDWIN	96.99	61.23	164.25	48.72	3.12	.00
MT 8713	MSC/CTK A+//IUL	96.18	61.58	161.75	37.89	2.87	.00
PI491533	NORWIN	94.29	59.65	166.75	33.46	10.75	.00
MT 8936	MT 7811/WRG	93.43	59.65	167.00	43.31	7.25	.00
MT 8935	MT 7811/WRG	91.55	59.75	165.75	42.81	7.00	.00
CI 17879	ROCKY	91.39	61.70	161.25	46.75	6.50	78.83
MT 85202	FRD/WNK//MT 6928/TR	91.00	60.80	163.75	48.23	2.75	80.78
CI 17902	WINRIDGE	89.45	59.98	168.00	48.72	.00	88.00
MT 8943	MT 7811/NRS	88.55	61.63	163.00	44.29	4.50	62.25
MT 88001	SMT/TD//YGSS	87.93	61.30	166.75	31.00	3.50	.00
CI 15075	CENTURK	86.61	60.65	161.75	44.78	7.00	90.50
ND 8002	SEWARD	85.14	61.25	165.00	51.67	8.75	72.58
CI 17735	NORSTAR	74.53	60.63	170.50	50.69	2.50	82.50
CI 17439	ROUGHRIDER	72.03	60.55	163.50	48.23	5.00	89.00
CI 13670	WINALTA	70.08	61.00	164.25	49.70	6.00	81.72
PI491532	CREE	67.44	59.55	164.75	45.28	5.25	86.75
CI 8885	CHEYENNE	66.83	59.20	165.50	48.23	5.50	96.25
MT 88005	WSC/YOGO//RSC/3/TD25	64.76	58.73	164.00	46.75	4.00	83.50
PI478771	AGASSIZ	62.94	59.53	167.00	49.21	2.75	85.43
EXPERIMENTAL MEANS		95.24	60.73	164.35	44.83	4.72	43.29
F TEST FOR VAR.		7.98**	6.49**	15.66**	24.30**	1.95**	8.36**
C.V. 2: (S OF MEAN/MEAN)*100		5.80	.56	.37	2.04	35.20	27.53
LSD (0.05)		15.49	.95	1.70	2.57	4.65	33.39

1/ Lodging Index: 0=none,99=severe **= Statistical significance at the .01 level