PROJECT TITLE: Winter Wheat Early Generation Screening for TCK.

PROJECT LEADERS: Bob Stougaard and Doug Holen, NWARC-Kalispell, MT.
Phil Bruckner and Jim Berg, Plant Sciences, Bozeman, MT.

OBJECTIVE:
To evaluate winter wheat germplasm responses to introduced and natural TCK (Dwarf Bunt) infection. Agronomic characteristics and additional disease reactions will be documented as well.

RESULTS:
Rhizoctonia Root Rot (Bare Patch) was identified in April throughout the nursery. Approximately 30% of the nursery area was affected, resulting in yields 50% of normal. Injury symptoms expressed were thin stands, reduced height, hastened maturity, and poor seed fill. True varietal resistance is not believed to exist and was not witnessed to any degree. Moderate to high infestations of Tan Spot were documented in May which also contributed to the low yields. Varietal susceptibility differences existed and were recorded. Documentation of genetic TCK responses was not possible as winter conditions were not conducive for spore germination and plant infection.

SUMMARY:
Yield and test weights were poor in response to severe Rhizoctonia and Tan Spot pressure. The winter of 1997 was not favorable for TCK infection in that days of continuous snowcover never approached the approximated 60 days needed to begin the fungus' life-cycle.

FUTURE PLANS:
NWARC will continue to conduct this nursery in an attempt to identify those early generation cultivars with tolerance or resistance to TCK while also evaluating all agronomic attributes.

Table 1. Agronomic data from the Winter Wheat TCK Screen Nursery grown at the Northwestern Agricultural Research Center in Kalispell, MT.

Planted: September 25, 1997 Harvested: August 4, 1998

		YIELD BU/A	TEST WT LBS/BU	LODGE 0-9	HEIGHT INCH	HEADING JULIAN	RHIZOCT PERCENT 1/	TAN SP 0-3 2/
1	PROMONTORY	56.1	57.8	0.0	32	143.0	3.0	2.0
2	BLIZZARD	63.5	57.9	1.0	35	148.0	5.0	1.0
3	WINRIDGE	67.3	57.6	0.0	37	148.0	10.0	2.0
4	YUMA	59.3	56.7	1.0	28	140.0	20.0	1.0
5	5	62.5	58.4	1.0	33	142.0	0.0	1.0
6	6	65.9	59.6	2.0	35	144.0	5.0	1.0
7	7	50.7	60.1	1.0	33	140.0	5.0	1.0
8	8	52.7	59.5	1.0	34	146.0	10.0	1.0
9	9	51.3	59.6	2.0	36	145.0	15.0	1.0
10	10	57.3	58.2	1.0	34	146.0	0.0	2.0
11	11	62.1	59.8	2.0	36	147.0	5.0	2.0
12	12	62.9	58.7	1.0	35	145.0	10.0	1.0
13	13	52.0	58.6	0.0	33	146.0	10.0	1.0
14	14	49.5	58.9	2.0	34	147.0	25.0	3.0
15	15	50.9	56.6	1.0	34	146.0	10.0	2.0
16	16	53.8	59.4	2.0	32	146.0	5.0	1.0
17	17	43.4	58.3	1.0	33	147.0	10.0	2.0
18	18	55.1	56.8	1.0	33	146.0	10.0	2.0
19	19	55.9	57.9	1.0	34	147.0	10.0	2.0
20	20	48.1	59.3	0.0	33	146.0	10.0	1.0
21	21	56.1	60.1	3.0	35	145.0	10.0	1.0
22	22	56.9	59.1	1.0	33	146.0	10.0	2.0
23	23	50.4	59.0	1.0	31	145.0	15.0	1.0
24	24	61.9	58.7	0.0	35	148.0	5.0	1.0
25	25	62.4	58.0	1.0	37	150.0	5.0	2.0
26	26	54.8	59.5	0.0	35	148.0	5.0	2.0
27	27	49.7	57.0	1.0	31	146.0	10.0	2.0
28	28	51.1	57.1	0.0	31	146.0	10.0	2.0
29	29	53.4	59.6	0.0	35	147.0	5.0	2.0
30	30	57.9	60.7	1.0	39	154.0	0.0	2.0
31	31	50.7	58.8	0.0	39	153.0	5.0	2.0
32	32	50.8	58.5	0.0	37	152.0	10.0	1.0
33	33	47.9	59.7	0.0	38	154.0	5.0	1.0
34	34	35.1	56.3	0.0	29	148.0	30.0	1.0
35	35	48.4	58.3	0.0	33	150.0	20.0	2.0
36	36	29.6	50.3	0.0	26	147.0	60.0	1.0
37	37	33.5	50.9	0.0	23	147.0	40.0	1.0
38	38	32.3	58.1	0.0	21	148.0	60.0	2.0
39	39	34.0	57.4	0.0	22	150.0	35.0	2.0
40	40	40.0	58.6	0.0	29	149.0	30.0	1.0
41	41	40.8	58.4	2.0	37	155.0	15.0	2.0
42	42	40.4	58.5	2.0	30	155.0	25.0	3.0
43	43	46.3	57.3	0.0	30	141.0	10.0	1.0
44	PROMONTORY	48.4	58.8	0.0	29	144.0	25.0	2.0
45	BLIZZARD	53.7	58.1	0.0	31	149.0	25.0	1.0
46	WINRIDGE	46.8	58.1	0.0	33	149.0	35.0	2.0
47	YUMA	46.6	57.0	0.0	27	140.0	30.0	1.0

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		YIELD BU/A	TEST WT LBS/BU	LODGE 0-9	HEIGHT INCH	HEADING JULIAN	RHIZOCT PERCENT 1/	TAN SPOT 0-3 2/
48	48	46.7	57.1	0.0	29	142.0	10.0	2.0
49	49	47.2	58.6	1.0	33	142.0	10.0	1.0
50	50	54.1	58.8	1.0	30	141.0	40.0	1.0
51	51	51.0	58.9	0.0	31	148.0	30.0	1.0
52	52	43.3	56.0	1.0	28	147.0	30.0	2.0
53	53	45.2	56.5	0.0	29	146.0	45.0	1.0
54	54	46.5	58.4	0.0	32	144.0	20.0	3.0
55	55	48.0	58.8	1.0	33	145.0	40.0	2.0
56	56	51.1	60.6	0.0	40	146.0	20.0	1.0
57	57	45.0	57.9	1.0	39	145.0	5.0	1.0
58	58	41.5	56.2	0.0	33	152.0	10.0	3.0
59	59	40.4	55.8	0.0	23	145.0	40.0	1.0
60	60	56.6	58.6	0.0	36	150.0	5.0	2.0
61	61	61.5	58.2	1.0	35	156.0	5.0	1.0
62	62	56.7	59.0	0.0	37	150.0	25.0	2.0
63	63	55.6	59.5	0.0	33	146.0	15.0	2.0
64	64	51.3	60.0	0.0	30	141.0	5.0	1.0
65	65	51.8	57.7	0.0	31	140.0	0.0	2.0
66	66	55.7	58.1	1.0	35	147.0	10.0	1.0
67	67	60.3	60.7	0.0	33	146.0	25.0	2.0
68	68	52.5	56.5	0.0	32	143.0	20.0	2.0
69	69	46.8	56.8	1.0	31	149.0	25.0	1.0
70	70	50.8	57.5	0.0	31	146.0	15.0	2.0
71	72	39.6	54.6	0.0	30	146.0	60.0	1.0
72	72	33.3	52.7	0.0	29	148.0	80.0	1.0
73	73	31.4	53.8	0.0	28	148.0	85.0	2.0
74	74	39.9	55.5	1.0	30	147.0	75.0	1.0
75	75	43.8	55.5	1.0	30	147.0	60.0	2.0
76	76	46.3	58.5	0.0	29	140.0	45.0	1.0
77	77	51.0	57.7	1.0	32	146.0	15.0	2.0
78	PROMONTORY	61.2	59.8	0.0	31	144.0	40.0	3.0
79	BLIZZARD	57.8	58.8	0.0	33	148.0	25.0	2.0
80	WINRIDGE	66.7	57.5	1.0	37	150.0	30.0	3.0
81	YUMA	59.9	57.9	0.0	28	140.0	15.0	2.0
	MEAN	50.5	57.9	0.5	32	146.6	20.5	1.6

1/ Rhizoctonia disease rating as percent of plot affected
2/ Tan Spot ratings 0=Highly Resistant, 3=Highly Susceptible