PROJECT TITLE: Early Generation Winter Wheat Screening for TCK (Dwarf Bunt) Fungus (*Tilletia controversa* Kuhn).

PROJECT LEADERS: Bob Stougaard, Weed Scientist, NWARC, Kalispell.

PROJECT COOPERATORS: Qingwu Xue, Research Associate, NWARC, Kalispell.
Phil Bruckner, Winter Wheat Breeder, Bozeman.
Jim Berg, Research Associate, Bozeman

OBJECTIVES:

To evaluate early generation winter wheat lines for agronomic performance and resistance to both introduced and natural TCK inoculums.

RESULTS:

The mild winter resulted in 100% winter survival in all tested entries during 2001-02 winter wheat growing season. The TCK fungus was minimal due to the mild winter and lack of snow cover. 94X129E26-5, 95X185cE93, 94X129E26-2, 95X189cE69, 96X90cC4-10 and Yuma had moderate TCK infection (>2). Yield and test weight were excellent for the tested entries. Yield ranged from 86 bu/a (94X126E20-3 and 95X185cE44) to 152 bu/a (94X129E67-2), and only 4 entries (94X126E40-1, 95X185cE10, 94X126E20-3 and 95X185cE44) had a yield lower than 100 bu/a. Test weight in all entries were over 60 lb/bu, and ranged from 60 (96X95cC2-8) to 66 lb/bu (Promontory). Heading date ranged from Julian 160 to 169 days, with an average of 166 days. The mean plant height was 36 inches and ranged from 32 to 42 inches. No lodging was observed in all entries.

SUMMARY:

The 2001-02 growing conditions permitted minimal opportunity for screening of experimental lines for TCK fungus tolerance. However, these observations will further the selection process toward the release of cultivars suitable for planting in TCK prone areas.

FUTURE PLANS:

Continue to evaluate experimental winter wheat lines for resistance to TCK fungus.

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

Planted: October 1, 2001 Harvested: August 14, 2002

Plot #	Experimental lines	Yield	Test weight	Grain moist	Heading date	Plant height	TCK injury	Winter survival	Lodge score
		Bu/A	Lb/Bu	%	Julian	in	0-3		0-9
24	94X129E67-2	152.4	61.9	10.6	167	38.2	0	100	0
27	94X129E111-5	142.0	63.8	12.4	165	37.4	1	100	0
22	94X129E57-5	141.6	62.5	10.6	167	35.8	1	100	0
20	94X129E26-2	138.9	62.5	10.5	167	37.0	2	100	0
16	94X126E192-5	137.7	63.8	10.9	169	35.0	0	100	0
6	94X126E64-2	137.4	65.3	11.7	165	34.6	1	100	0
19	94X129E17-5	137.3	61.2	10.6	169	36.6	1	100	0
21	94X129E26-5	137.1	62.6	11.3	167	38.2	2.5	100	0
53	95X185cE99	136.8	62.3	10.2	165	39.0	0	100	0
66	Promontory	136.7	65.2	11.0	164	36.2	0	100	0
23	94X129E67-1	135.5	62.6	11.6	167	37.4	0	100	0
14	94X126E184-1	134.9	65.4	11.4	165	35.8	0	100	0
17	94X126E203-6	134.8	64.1	10.6	167	40.6	0	100	0
25	94X129E68-5	133.2	63.6	11.7	167	37.0	1.5	100	0
35	96X95cC2-8	133.0	60.2	10.1	169	37.4	0	100	0
38	96X95cC8-1	132.0	62.0	10.9	169	37.4	0	100	0
15	94X126E186-6	131.8	64.5	10.9	167	39.8	0	100	0
41	Promontory	130.2	65.8	11.1	163	34.3	0	100	0
26	94X129E92-4	129.8	62.4	10.6	167	37.8	1	100	0
11	94X126E119-4	129.8	63.7	10.5	166	39.4	0	100	0
10	94X126E108-6	129.7	64.2	10.9	166	38.2	1	100	0
36	96X95cC4-8	129.0	61.7	10.5	168	34.3	1	100	0
12	94X126E126-1	128.6	63.0	10.4	167	33.1	1	100	0
13	94X126E158-1	128.5	63.8	10.7	166	37.0	1	100	0
18	94X129E9-4	127.9	64.1	12.9	166	37.0	0	100	0
56	95X189cE41	127.8	63.0	10.3	167	40.9	0	100	0
52	95X185cE93	127.8	62.7	11.1	167	42.1	2	100	0
63	95X189cE78	127.7	62.9	10.5	167	40.6	0	100	0
64	95X189cE91	126.6	62.7	10.6	167	40.6	1	100	0
39	96X95cC8-9	126.6	61.1	10.6	169	34.3	0	100	0
48	95X185cE57	125.6	63.4	11.2	168	32.3	0	100	0
3	94X126E13-4	124.2	64.6	11.3	165	33.9	0	100	0
65	Yuma	123.7	63.4	10.4	160	34.3	1.5	100	0
9	94X126E66-5	123.7	63.4	10.7	168	33.5	0	100	0
2	Promontory	123.5	66.1	11.5	163	33.1	0	100	0
37	96X95cC6-2	123.1	62.2	10.2	169	38.2	0	100	0

Continued on next page.

Table 1 (Continued). Agronomic data from the TCK Winter Wheat Screening Nursery grown at the Northwestern Agricultural Research Center Kalispell, MT.

Plot #	Experimental lines	Yield	Test weight	Grain moist	Heading date	Plant height	TCK injury	Winter survival	Lodge score
		Bu/A	Lb/Bu	%	Julian	in	0-3		0-9
33	96X90cC4-10	122.6	64.2	12.4	165	34.3	2	100	0
46	95X185cE38	122.4	63.0	10.4	165	34.3	0.5	100	0
62	95X189cE69	121.5	63.4	10.7	165	36.6	2	100	0
58	95X189cE49	120.8	60.8	10.2	167	37.8	0	100	0
40	Yuma	120.1	64.4	10.6	161	33.1	0	100	0
54	95X189cE18	119.7	62.1	10.5	165	39.4	1.5	100	0
51	95X185cE91	118.5	64.3	10.8	165	41.7	0	100	0
55	95X189cE20	118.4	62.4	10.5	165	37.0	0	100	0
60	95X189cE59	118.1	62.0	10.3	165	35.8	0	100	0
42	95X185cE4	117.7	61.9	10.6	168	34.3	0	100	0
32	96X90cC4-2	114.3	64.1	11.2	164	33.5	0	100	0
59	95X189cE57	114.2	62.5	10.4	167	38.2	1	100	0
49	95X185cE63	113.4	63.2	11.0	165	35.0	0	100	0
34	96X90cC6-2	112.3	63.9	14.3	167	34.3	0.5	100	0
7	94X126E64-6	112.1	65.4	11.3	164	33.5	1.5	100	0
1	Yuma	112.1	64.9	10.9	161	33.5	2	100	0
28	96X90cC1-5	110.2	63.5	16.7	169	33.9	0	100	0
8	94X126E66-2	109.9	63.1	10.6	168	32.7	0	100	0
61	95X189cE65	108.8	62.7	10.2	165	35.8	1	100	0
45	95X185cE34	108.7	64.3	11.4	164	38.6	1	100	0
31	96X90cC2-8	108.0	65.1	11.5	165	33.5	0	100	0
50	95X185cE72	104.9	63.6	11.5	165	33.1	1	100	0
57	95X189cE43	104.4	63.0	10.5	165	37.4	0.5	100	0
44	95X185cE23	104.2	63.9	11.9	167	32.3	0	100	0
29	96X90cC1-9	103.7	64.1	15.9	167	31.9	0	100	0
30	96X90cC2-2	102.9	65.0	11.3	164	33.5	0	100	0
5	94X126E40-1	95.9	64.2	10.6	166	36.6	0	100	0
43	95X185cE10	92.8	63.5	11.9	169	38.6	0	100	0
47	95X185cE44	86.4	64.6	11.5	163	34.3	0	100	0
4	94X126E20-3	86.1	64.3	11.1	164	33.9	1	100	0
	Mean	122.0	63.4	11.1	166.0	36.1	0.5	100.0	0.0