Ks VRS 4

TITLE:

Winter Wheat

PROJECT:

Small Grains Investigations 756

PERSONNEL:

Leader - Vern R. Stewart Cooperator - G. A. Taylor

Cooperating Agencies - Montana Agricultural Experiment Station

Montana Wheat Research and Marketing Committee

OBJECTIVES:

 To obtain the information necessary for making varietal recommendations and evaluating new varieties and selections.

2. To cooperate in a breeding program in Northwestern Montana designed to produce high yielding varieties with particular emphasis on quality, disease resistance, dwarf smut and stripe rust. Other agronomic characteristics such as straw strength, winter hardiness etc. will be evaluated in this program.

1973 EXPERIMENTS:

- 1. Western Regional Hard Red Nursery
- 2. Western Regional White Nursery
- 3. Intrastate Nursery
- 4. Elite Stripe Rust Nursery
- 5. Off Station Nurseries

SUMMARY OF 1973 RESULTS:

Western Regional Hard Red Nursery -

Kalispell - ID70401 was the highest yielding entry in the nursery. Mean for all varieties was 45.6 bu/a. Real differences were found in winter survival of entries. ID33 has a survival reading of 29%, WA5985 and UT80702 had survival readings of 66% and 65% respectively. All other entries exceeded 80%. No dwarf smut was found in this nursery. Table 1.

Stillwater - Stand loss was very high and dwarf bunt infestation low in this nursery due to the extremely low temperatures and no snow cover. No percentage estimates were made on smut. Itana, a very susceptible variety, was smut free in this location. Table 2.

Summary of the data from these two nurseries is found in Table 3. UT755090 is the highest yielding entry, no evidence of dwarf smut, good test weight, fair straw, and somewhat later than Itana, but a little taller.

Western Regional Soft White Nursery:

In 1973 WA5987 and Paha were slightly higher, but not significantly higher, in yield than Nugaines, the check variety, however they are 2 to 3 days later in heading. Three entries were found to be significantly lower in yield. Test weights averaged 60.9 lbs/bu with Nugaines having a test weight of 63.2 lbs/bu, which was the highest in the nursery. WA5987 and Paha had less dwarf smut than Nugaines, however light smut has been found in Paha other seasons. Paha was 5 inches taller than Nugaines in this study. Table 4.

Using Nugaines as a check variety over a ten year period, eight varieties were found to exceed the check. Of these varieties only Luke has satisfactory dwarf smut and stripe rust resistance. Table 5.

4

Results (con't)

Intrastate Nursery -

The highest yielding entry in this nursery was McCall, however it was not significantly higher than Crest, the check variety. McCall, Wanser and Centurk are usually higher in yield but all 3 are susceptible to dwarf smut in this location. Table 6.

A summary of selected winter wheat varieties grown at the Northwestern Agricultural Research Center 1962-1973 are found in Table 7.

Elite Stripe Rust Nursery -

In this nursery lines from the breeding lines in advance stages are evaluated. Many lines were not harvested this year because of milling quality evaluation received after seeding indicated no need to continue their evaluation. The data obtained from this nursery are recorded in the wheat research committee report.

Off Station -

Three nurseries were seeded in the fall of 1972 in Lake, Sanders, Ravalli and Missoula Counties. The nursery in Missoula county was not harvested because of poor stands and high weed population.

<u>Lake County</u> - Because of the very dry conditions yields were low in this location. Yields were not statistically significant, however Hyslop was the highest yielding entry. Table 8.

Sanders County - Stands and yields were average in this location. McCall is the highest yielding variety in the nursery and is significantly higher in yield than Crest. Table 9.

Agronomic data from the western regional hard red winter wheat nursery grown at the Northwestern Table 1 . Agricultural Research Center, Kalispell, Montana, 1973 in Field R-8a.

Date Seeded: September 20, 1972

Date Harvested: August 10, 1973

Size of Plot:

16 sq. ft.

C.I. or	W	Yield	Test Wt.	Heading	Plant	Lodging		%	Smut at	
State No	• Variety	Bu/A	Lbs/Bu.	Date	Height	% Prev	Sev.	Stand	Stillwater	
ID 7104		53.87a	57.80	168.25a	32.00	.00b	.00b	97.50		
ID 72505		53.17a	61.20	167.50a	32.50	.00b	.00b	100.00a		
UT 81911		52.92a	61.40	163.75	40.25a	.00b	.00b	91.25		
WA 583		52.84a	60.60	169.00a	32.25	.00b	.00b	97.50		
ID 72505	,	51.94a	60.60	171.00a	40.25a	.00b	.00b	97.50	x	
UT 75509		51.02a	61.40	165.00a	37.00a	24.75b	و25 م	93.75		
ID 72505		50.97a	58.50	171.25a	31.75	.00b	.00b	100.00a		
CI 1384		50.47a	62.50	163.50	36.25a	.00b	.00b	97.50	x	
UT 75520	그렇다 그렇다면 나는 아이들은 아이들은 아이들은 아이들은 아이들은 아이들은 아이들은 아이들은	49.89a	62.90	164.75a	40.25a	99.00	1.00	96.25	x	
ID 3		49.54a	63.40	164.75a	38.75a	99.00	2.50	96.25		
CI 1531		48.97a	60.80	167.50a	40.50a	49.50b	.50b	96.25	x	
UT 8455		48.52a	60.80	166.00a	40.25a	99.00	2.50	96.25		
MT 682	,	47.09	60.40	163.75	34.75a	24.75b	.25b	97.50		
UT 82125	, ,	47.02	59.10	166.50a	37.00a	24.75b	.25b	97.50		
WA 583	,, ,,	46.92	61.40	163.50	25°25b	.00b	.00b			
ID 7	그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그	46.52	61.20	166.00a	40.50a	74.25	1.00	100.00a	Х	
WA 598	4 BNK 1205/Burt//14/53-1	46.42	59.00	164.25a	31.50	24.75b	.25b	100.00a		
CI 1528		45.54	62.60	164.50a	38.25a	49.50b		86.25		
CI 1531	6 Ranger	44.94	62.50	160.75	36.00a	99.00	.50b	98.75a	x	
CI 144	2 Kharkof	42.94	59.50	168.75a	42.25a	99.00	1.00	97.50		
ID 7	5 CI 14106/CLM//McCall	40.86	61.90	166.75a	35.75a		1.50	100.00a	X	
MT 682		40.76	58.70	168.50a	33.75a	74.25b	2.25	92.50		
MT 682	8 Burt/PJ 178383 13-1201	39.74	59.10	166.00a	34.00a	.00b	.00b	91.25		
CI 1293		37.29	60.90	162.25	31.50	d00°	.00b	90.00		
WA 598	5 BNK 1205/Burt//14/53-1	36.76	58.50	166.50a	31.00	99.00	1.75	82.50		
UT 8070	2 DM/173438//CLM/3/DM	32.74	62.60	165.00a	38.00a	.00b	.00b	66.25b	X	
ID 3:	3 MN60157/McCall//Moran	22.21b	58.40	166.75a		24.75b	1.00	65.00ъ		
			30140	100.738	35.75a	24.75b	•50b	28.75b		
		15 6	60.7	400 0						
	× F2/	45.6 3.90**	60.7	166.0	35.8	36.7	.6	90.9		
	S.E.X		.0	8.44**	26.75**	6.50**	4.35**	7.72**		
	L.S.D.(.05)	3.67	.0	•86	.78	15.78	。39	5.53		
		10.31	.0	2.41	2.19	44.38	1.10	15.56		
1/ Check	C.V.% variety a/	8.04	.0	۰52	2.17	43.03	61.85	6.09		
	_	values si	gnificantly	greater t	han the c	check .05	1 2		es statistica	7
= , 41106	b/	Values si	gnificantly	less t	han the c	heck .05	level s	i ani fi cana	e at .01 leve	15

Table 2. Agronomic data from the western regional hard red winter wheat nursery grown on the Lance Claridge farm, Kalispell, Montana in 1973. Random block design, four replications.

Date Seeded: September 20, 1972 Date Harvested: August 14, 1973 Size of Plot: 16 sq. ft.

C.I. or State No.	Variety	Yield Bu/A.	Test Wt. Lbs/Bu.	Plant Height	% Stand	Smut
WA 5836	Bez-1//CI13438/Burt	24.98		20.00	65.00	
WA 5984			58.10		65.00	Х
	Bnk 1205/Burt//14/53-1	23.78	52.50	26.25a		
UT 755090	DM/178383/Clm	23.61	59.00	27.00a	55.00	
UT 755204	DM/178383/Clm	23.21	.00	31.00	50.00	1221
WA 5985	BNK 1205/Burt//14/53-1	23.06	56.00	23.75	52.50	x
ID 37	IT//KO/PI17.8383	22.93	59.40	28.25a	42.50	x
ID 725056	ID 5011/WA 4765, Sel.1	22.81	53.10	25.25	67.50a	Х
CI 15316	Ranger	22.61	56.00	27.00a	65.00	
CI 1442	Kharkof	21.43	53.20	32°25a	75.00a	x
ID 725058	ID 5011/WA 4765, Sel. 3	21.38	55.20	30.00a	55.00	
ID 72	CNN*2/PI 178383	21.16	56.00	29.75a	60.00	
ID 75	CI 14106/Clm//McCall	20.81	.00	28.00a	37.50	
UT 84557	DM/173438//Clm/3/DM/4/CO	20.66	57.00	29.75a	42.50	
ID 71040	Moscow 71040	19.23	52.70	26.25a	57.50	
ID 725055	ID 5011/ID 5006	19.18	.00	24.50	47.50	
CI 15286	Ark	18.98	.00	29.25a	60.00	x
UT 819116	DM/Clm//Burt/PI 178383	18.66	.00	30.25a	50.00	
CI 15317	Franklin	18.66	 00	29.75a	42.50	
CI 13844	Wanser	18.21	.00	26.75a	57.50	x
MT 6829	Burt/PI 178383 101-1200	17.56	57.30	27.25a	52.50	
WA 5835	Bez-1//Bnk1205/CI 13438	16.73	.00	23.75	32.50	x
CI 12933	Itana—	16.43	.00	22.25	42.50	
UT 80702	DM/173438//Clm/3/DM	16.21	.00	28.50a	7.50	
MT 6828	Burt/PI 178383 13-1201	15.15	.00	24.00	45.00	x
ID 33	MN60157/McCall//Moran	15.00	.00	24.00	22.50	x
UT 821252	Warror//Burt/PI 178383	14.45	.00	26.50a	43 75	
	1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 :				45.00	
MT 6827	Burt/PI 178383 14-1202	12.85	.00	23.50	45.00	
		19.6	26.9	26.8	49.6	
	<u>x</u> 2/	1.19NS	.0	6.31**	2.66**	
	S.E.X	3.01	.0	1.18	8.77	
	L.S.D.(.05)	8.48	.0	3.32	24.67	
	C.V.%	15.37	.0	4.40	17.69	

^{1/} Check variety 2/ Value for variety comparison

a/ Values significantly greater than the check .05

b/ Values significantly less than the check .05
Indicates statistical riving:

Indicates statistical significance .05 level

^{**} Indicates statistical significance .01 level

Summary of agronomic data from the western regional hard red winter wheat nursery, grown at Northwestern Table 3 . Agricultural Research Center and Stillwater in 1973.

ID 71040 Moscow 71040 36.55 55.25½ 168.25a .00 .00 29.13 77.50 ID 725055 ID5011/ID5006 36.18 61.20½ 167.50a .00 .00 28.50 73.75 UT 819116 DM/Clm//Burt/PI178383 35.79 61.40½ 163.75a .00 .00 35.25 70.63 WA 5835 Bez-1//Ehk1205/CI13438 34.79 60.60½ 169.00a .00 .00 35.25 70.63 WA 5836 Bez-1//Bhk1205/CI13438 34.79 60.60½ 169.00a .00 .00 .00 28.00 65.00 ID 725058 ID5011/Wa4765, Sel. 3 36.66 57.90₺ 171.00a .00 .00 .00 35.13 76.25 UT 755090 DM/178383/Clm 37.32 60.20₺ 171.25a .00 .00 .00 28.50 83.75 CI 13844 Wanser 34.34 62.50₺ 163.50 .00 .00 .00 88.50 83.75 CI 13844 Wanser 34.34 62.50₺ 164.75a 99.00 1.00 35.63 73.13 ID 37 IT//KO/FI 178383 36.24 61.40₺ 164.75a 99.00 2.50 33.50 69.38 CI 15317 Franklin 33.82 60.80₺ 164.75a 99.00 2.50 33.50 69.38 CI 15317 Franklin 33.82 60.80₺ 166.00a 99.00 2.50 35.00 69.38 DMT 6829 Burt/PI178383 101-1200 32.33 58.85₺ 166.00a 99.00 2.50 35.00 69.38 DMT 6829 Burt/PI178383 30.74 59.10₺ 166.00a 99.00 2.50 35.00 69.38 DMT 6829 Burt/PI178383 33.84 58.60₺ 166.00a 24.75 .25 31.00 75.00 UT 821252 Warrior//Burt/PI178383 33.84 58.60₺ 166.00a 24.75 .25 31.00 75.00 UT 821252 Warrior/Burt/PI178383 33.84 58.60₺ 166.00a 74.25 1.00 35.13 80.00 WA 5836 Bez-1//CI13438/Eurt 35.95 59.75₺ 163.50 .00 .00 22.63 82.50 ID 72 CNN*2/PI 178383 33.84 58.60₺ 160.75 99.00 1.00 31.50 81.25 CI 1442 Kharkof 32.9 56.35₺ 166.00a 74.25 1.00 35.13 80.00 WA 5984 BNK1205/Burt/14/53-1 35.10 55.75₺ 166.50a 24.75 .25 31.88 65.00 WT 6828 Burt/PI178383 13-1201 27.45 59.10₺ 166.50a .00 .00 28.63 68.13 WT 6828 Burt/PI178383 13-1201 27.45 59.10₺ 166.50a .00 .00 29.00 67.50 CI 12933 Ithan 26.86 60.90₺ 166.50a .00 .00 29.00 67.50 CI 12933 Ithan 26.86 60.90₺ 166.500 .00 .00 27.38 59.38 UT 80702 DM/173438/Clm/3/DM 24.48 62.60₺ 166.500 .00 .00 24.75 1.00 33.25 36.25	.I. or		Yield,	Test Wt.	Heading	Lodgin	ig <u>=</u> /	Plant-	%1/	Dwarf
## 5835 Bez-1//Bmk1205/CT14438 34.79 60.607 169.00a .00 .00 28.00 65.00	State No.	Variety	Yield Bu/A	Lbs/Bu.	Heading Date				Stand	Smut
## 5835 Bez-1//Bmk1205/CT13438 34.79 60.607 169.00a .00 .00 28.00 65.00		Moscow 71040	36.55	$55.25\frac{1}{2}$	168.25a	.00	.00	29.13	77.50	
## 5835 Bez-1//Bmk1205/CT14438 34.79 60.607 169.00a .00 .00 28.00 65.00	D 725055	ID5011/ID5006	36.18	$61.20\frac{2}{3}$						
Nat	JT 819116	DM/Clm//Burt/PI178383	35.79	$61.40\frac{2}{2}$						
ID 725058 ID5011/Wa4765, Sel. 3		Bez-1//Bnk1205/CI13438	34.79	60.60-	169.00a					x
DM/178383/Clm		ID5011/Wa4765, Sel. 3	36.66	$57.90\frac{1}{4}$.00				
DD 725056	JT 755090	DM/178383/Clm	37.32	$60.20\frac{1}{4}$	165.00a	24.75				
TI 13844 Wanser	D 725056	ID5011/Wa4765, Sel. 1	36.89	55.80-1/	171.25a					x
TT 755204 DM/178383/Clm 36.55 62.902/1 164.75a 99.00 1.00 35.63 73.13 TT//KO/FI 178383 36.24 61.402/2 164.75a 99.00 2.50 33.50 69.38 TT 15317 Franklin 33.82 60.802/1 167.50a 49.50 .50 35.13 69.38 TT 84557 DM/173438//Clm/3/DM/4/CO 34.59 58.901/1 166.00a 99.00 2.50 35.00 69.38 TT 6829 Burt/PI178383 101-1200 32.33 58.852/1 163.75 24.75 .25 31.00 75.00 TT 821252 Warrior/Burt/PI178383 30.74 59.101/1 166.50a 24.75 .25 31.00 75.00 TT 821252 Warrior/Burt/PI178383 30.74 59.101/1 166.50a 24.75 .25 31.57 70.63 TT 5836 Bez-1//CI13438/Burt 35.95 59.751/1 163.50 .00 .00 22.63 82.50 TT 72 CNN*2/FI 178383 33.84 58.601/1 166.00a 74.25 1.00 35.13 80.00 TT 15286 Ark 32.26 62.601/1 164.50a 49.50 .50 33.75 79.38 TT 15286 Ranger 33.78 59.251/1 160.75 99.00 1.00 31.50 81.25 TT 1412 Kharkof 32.19 56.352/1 160.75 99.00 1.50 37.25 87.50 TT 14106/Clm//McCall 30.84 61.902/1 166.50a .00 .00 28.63 68.13 TT 6827 Burt/PI178383 13-1201 27.45 59.102/1 166.00a .00 .00 29.00 67.50 TT 12933 Thana- TH 6828 Burt/PI178383 13-1201 27.45 59.102/1 166.50a .00 .00 27.38 59.38 TT 80702 DM/173438//Clm/3/DM 24.48 62.602/1 165.00a 24.75 1.00 33.25 36.25		Wanser	34.34		163.50					x
37 IT/KO/PI 178383 36.24 61.40½/ 164.75a 99.00 2.50 33.50 69.38 II 15317 Franklin 33.82 60.80½/ 167.50a 49.50 .50 35.13 69.38 II 15317 Franklin 33.82 60.80½/ 167.50a 49.50 .50 35.13 69.38 III 15317 Franklin 33.82 60.80½/ 166.00a 99.00 2.50 35.00 69.38 III 15318 III 15318 III 15318 III 15319 III 15319 III 15319 III 15319 III 15316 Ranger 33.78 59.25½/ 164.50a 49.50 .50 35.00 35.00 III 15316 Ranger 33.78 59.25½/ 166.75 99.00 1.00 31.50 81.25 III 1442 Kharkof 32.19 56.35½/ 166.75 99.00 1.50 37.25 87.50 III 16828 Burt/PI178383 14-1202 26.81 58.70½/ 166.00a .00 .00 29.00 67.50 III 12933 Itana/ 26.86 60.90½/ 162.25 99.00 1.75 26.88 62.50 III 12933 Itana/ 26.86 60.90½/ 162.25 99.00 1.75 26.88 62.50 III 12933 Itana/ 26.86 60.90½/ 162.25 99.00 1.75 26.88 62.50 III 129.31 Itana/ 26.86 60.90½/ 166.50a .00 .00 .00 27.38 59.38 III 12933 Itana/ 26.86 60.90½/ 162.25 99.00 1.75 26.88 62.50 III 129.31 Itana/ 26.86 60.90½/ 162.25 99.00 1.75 26.88 62.50 III 129.33 Itana/ 26.86 60.90½/ 166.50a .00 .00 .00 .27.38 59.38 III 12933 Itana/ 26.86 60.90½/ 166.50a .00 .00 .00 .27.38 59.38 III 12930 IM/173438/CIm/3/DM 24.48 62.60½/ 165.00a 24.75 1.00 33.25 36.25	T 755204	DM/178383/Clm	36.55	$62.90\frac{2}{1}$	164.75a	99.00				
TI 15317 Franklin 33.82 60.802/ 167.50a 49.50 .50 35.13 69.38 DM 173438//Clm/3/DM/4/CO 34.59 58.901/ 166.00a 99.00 2.50 35.00 69.38 DM 6829 Burt/PI178383 101-1200 32.33 58.852/ 163.75 24.75 .25 31.00 75.00 DM 5836 Bez-1//CI13438/Burt 35.95 59.751/ 163.50 .00 .00 22.63 82.50 DM 5836 Bez-1//CI13438/Burt 35.95 59.751/ 163.50 .00 .00 22.63 82.50 DM 5984 BNK1205/Burt//14/53-1 35.10 55.752/ 164.25a 24.75 .25 28.88 75.63 DM 5984 BNK1205/Burt//14/53-1 35.10 55.752/ 164.25a 24.75 .25 28.88 75.63 DM 15316 Ranger 33.78 59.251/ 160.75 99.00 1.00 31.50 81.25 DM 15316 Ranger 33.78 59.251/ 160.75 99.00 1.00 31.50 81.25 DM 6827 Burt/PI178383 14-1202 26.81 58.702/ 166.50a .00 .00 28.63 68.13 DM 6828 Burt/PI178383 13-1201 27.45 59.102/ 166.50a .00 .00 29.00 67.50 DM 15985 BNK 1205/Burt//14/53-1 29.91 57.252/ 166.50a .00 .00 27.38 59.38 DM 173438//Clm/3/DM 24.48 62.602/ 166.50a .00 .00 27.38 59.38 DM 173438//Clm/3/DM 24.48 62.602/ 166.50a .00 .00 27.38 59.38 DM 173438//Clm/3/DM 24.48 62.602/ 165.00a 24.75 1.00 33.25 36.25	D 37	IT//KO/PI 178383	36.24	$61.40\frac{1}{2}$	164.75a					x
Mathematical Color Mathema		Franklin	33.82	$60.80\frac{2}{4}$	167.50a					
ET 6829 Burt/PI178383 101-1200 32.33 58.85½ 163.75 24.75 .25 31.00 75.00 PT 821252 Warrior/Burt/PI178383 30.74 59.10½ 166.50a 24.75 .25 31.75 70.63 PT 821252 Warrior/Burt/PI178383 30.74 59.10½ 166.50a 24.75 .25 31.75 70.63 PT 821252 Warrior/Burt/PI178383 30.74 59.10½ 166.50a 24.75 .25 31.75 70.63 PT 821252 Warrior/Burt/PI178383 33.84 58.60½ 166.00a 74.25 1.00 35.13 80.00 PT 5984 BNK1205/Burt//14/53-1 35.10 55.75½ 164.25a 24.75 .25 28.88 75.63 PT 15286 Ark 32.26 62.60½ 164.50a 49.50 .50 33.75 79.38 PT 15316 Ranger 33.78 59.25½ 160.75 99.00 1.00 31.50 81.25 PT 15316 Ranger 33.78 59.25½ 168.75a 99.00 1.00 31.50 81.25 PT 168.75a 99.00 1.50 37.25 87.50 PT 168.75a 99.00 1.50 37.25 87.50 PT 168.75a 99.00 1.50 37.25 87.50 PT 168.75a PT		DM/173438//Clm/3/DM/4/CO	34.59	$58.90\frac{1}{4}$						
Record R	T 6829	Burt/PI178383 101-1200	32.33	58.85-1/	163.75					
A 5836 Bez-1//CI13438/Burt 35.95 59.75	T 821252	Warrior//Burt/PI178383	30.74	59.102/	166.50a					
TD 72 CNN*2/PI 178383 33.84 58.60 1/2 166.00a 74.25 1.00 35.13 80.00	IA 5836	Bez-1//CI13438/Burt	35.95	$59.75\frac{1}{4}$						x
BNK 1205/Burt//14/53-1 35.10 55.75 1/2/ 164.25a 24.75 .25 28.88 75.63 EL 15286 Ark 32.26 62.60 1/2/ 164.50a 49.50 .50 33.75 79.38 EL 15316 Ranger 33.78 59.25 1/2/ 160.75 99.00 1.00 31.50 81.25 EL 1442 Kharkof 32.19 56.35 168.75a 99.00 1.50 37.25 87.50 EL 1442 Kharkof 32.19 56.35 168.75a 99.00 1.50 37.25 87.50 EL 1442 Kharkof 32.19 56.35 168.75a 99.00 1.50 37.25 87.50 EL 1442 Kharkof 32.19 56.35 168.75a 99.00 1.50 37.25 87.50 EL 1442 Kharkof 32.19 56.35 168.75a 99.00 1.50 37.25 87.50 EL 1442 Kharkof 32.19 56.35 168.75a 99.00 1.50 37.25 87.50 EL 1442 Kharkof 32.19 56.35 166.75a 74.25 2.25 31.88 65.00 EL 1442 Kharkof 32.19 56.35 166.75a 74.25 2.25 31.88 65.00 EL 1442 Kharkof 32.19 56.35 166.75a 74.25 2.25 31.88 65.00 EL 1442 Kharkof 32.19 56.35 166.75a 74.25 2.25 31.88 65.00 EL 1442 Kharkof 32.19 56.35 166.75a 74.25 2.25 31.88 65.00 EL 1442 Kharkof 32.19 56.35 166.75a 74.25 2.25 31.88 65.00 EL 1442 Kharkof 32.19 56.35 166.75a 74.25 2.25 31.88 65.00 EL 1442 Kharkof 32.19 56.35 166.75a 74.25 2.25 31.88 65.00 EL 1442 Kharkof 32.19 56.35 166.75a 74.25 2.25 31.88 65.00 EL 1442 Kharkof 32.19 56.35 166.75a 0.00 0.00 28.63 68.13 EL 1442 Kharkof 32.19 56.35 166.75a 0.00 0.00 29.00 67.50 EL 1442 Kharkof 32.19 56.35 166.75a 0.00 0.00 29.00 67.50 EL 1442 Kharkof 32.19 56.35 166.75a 0.00 0.00 27.38 59.38 EL 15316 Ranger 32.19 57.25 166.50a 0.00 0.00 27.38 59.38 EL 15316 Ranger 32.19 57.25 166.50a 0.00 0.00 27.38 59.38 EL 15316 Ranger 32.19 57.25 166.50a 0.00 0.00 27.38 59.38 EL 15316 Ranger 32.19 57.25 166.50a 0.00 0.00 27.38 59.38 EL 15316 Ranger 32.19 57.25 166.50a 0.00 0.00 27.38 59.38 EL 15316 Ranger 32.19 57.25 166.50a 0.00 0.00 27.38 59.38 EL 15316 Ranger 32.19 57.25 166.50a 0.00 0.00 27.38 59.38 EL 15316 Ranger 32.19 57.25 166.50a 0.00 0.00 27.38 59.38 EL 15316 Ranger 32.19 57.25 166.50a 0.00 0.00 27.38 59.38 EL 15316 Ranger 32.19 57.25 166.50a 0.00 0.00 27.38 59.38 EL 1442 Kharkof 32.19 56.35 166.50a 0.00 0.00 27.38 59.38 EL 1442 Kharkof 32.19 56.35 16	D 72	CNN*2/PI 178383	33.84	58.60-						^
II 15286 Ark 32.26 62.60 1/2 164.50a 49.50 .50 33.75 79.38	IA 5984	BNK1205/Burt//14/53-1	35.10	55.75-1/	164.25a					
15316 Ranger 33.78 59.25 160.75 99.00 1.00 31.50 81.25 1442 Kharkof 32.19 56.35 168.75a 99.00 1.50 37.25 87.50 168.75a	II 15286	Ark	32.26	62.602						x
TI 1442 Kharkof 32.19 56.35	CI 15316	Ranger	33.78	59.25-						
TF 6828 Burt/PT178383 13-1201 27.45 59.10 166.00a .00 .00 29.00 67.50 1 12933 Itana 26.86 60.90 1/2 162.25 99.00 1.75 26.88 62.50 1 12935 BNK 1205/Burt//14/53-1 29.91 57.25 166.50a .00 .00 27.38 59.38 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	I 1442	Kharkof	32.19	56.35-						x
TF 6828 Burt/PI178383 13-1201 27.45 59.10 166.00a .00 .00 29.00 67.50 1 12933 Itana 26.86 60.90 162.25 99.00 1.75 26.88 62.50 1 12935 BNK 1205/Burt//14/53-1 29.91 57.25 166.50a .00 .00 27.38 59.38 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	D 75	CI14106/Clm//McCall	30.84	$61.90\frac{2}{2}$	166.75a	74.25				26
TF 6828 Burt/PI178383 13-1201 27.45 59.10 166.00a .00 .00 29.00 67.50 1 12933 Itana 26.86 60.90 162.25 99.00 1.75 26.88 62.50 1 12935 BNK 1205/Burt//14/53-1 29.91 57.25 166.50a .00 .00 27.38 59.38 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	T 6827	Burt/PI178383 14-1202	26.81	$58.70\frac{2}{2}$						
I 12933 Itana 26.86 $60.90\frac{27}{1}$ 162.25 99.00 1.75 26.88 62.50 A 5985 BNK 1205/Burt//14/53-1 29.91 57.25 $\frac{27}{1}$ 166.50a .00 .00 27.38 59.38 TE 80702 DM/173438//Clm/3/DM 24.48 62.60 $\frac{27}{1}$ 165.00a 24.75 1.00 33.25 36.25	T 6828	Burt/PJ178383 13-1201	27.45	59.10=						
TA 5985 BNK 1205/Burt//14/53-1 29.91 57.25 $\frac{1}{2}$ / 166.50a .00 .00 27.38 59.38 TE 80702 DM/173438//Clm/3/DM 24.48 62.60 $\frac{1}{2}$ / 165.00a 24.75 1.00 33.25 36.25	I 12933	Itana4/	26.86	60.902	162.25	99.00				
T 80702 DM/173438//Clm/3/DM 24.48 $62.60\frac{27}{2}$, $165.00a$ 24.75 1.00 33.25 36.25	IA 5985	BNK 1205/Burt//14/53-1	29.91	57.25-						x
	JT 80702	DM/173438//Clm/3/DM	24.48	$62.60\frac{2}{3}$	165.00a					
	D 33	MN 60157/McCall//Moran	18.61	58.402/	166.75a			29.88	25.63	
	x for N				k-1-					
/ x for Northwestern Agricultural Research Center only	/ x indic		no percen	rtage estimat	es were tak	en				
/ x indicates presence of dwarf smut, no percentage estimates were taken	/ Check v	ariety								

x indicates presence of dwarf smut, no percentage estimates were taken