S
105
.E55
no.974
cop. 2
Unbound issue
Does not circulate
Analytics

Results of the Eighteenth International Early Maturing Winter X Spring Wheat Screening Nursery (1995 - 1996)

Special Report 974
Volume 18(1)

Agricultural Experiment Station
Oregon State University, Corvallis

The Agency for International Development
U.S. Department of State

The International Maize and Wheat
Improvement Center

JUL 1997
LIBRARY
OREGON STATE
UNIVERSITY

For additional copies of this publication, write:

Warren Kronstad
Crop & Soil Science Department
Crop Science Bldg., Rm. 231
Oregon State University
Corvallis, OR 97331-3002

Agricultural Experiment Station
Oregon State University
Special Report 974
June 1997

Results of the Eighteenth International Early Maturing - Winter x Spring Wheat Screening Nursery

About This Report

This publication, Oregon Agricultural Experiment Station Special Report 974 reports the results of the 18th international *early* maturing winter x spring wheat screening nursery. It is identified as volume 18(2). Oregon Agricultural Experiment Station Special Report 973 is a companion publication, designated as volume 18(1). It reports the results of the 18th international *late* maturing winter x spring wheat screening nursery.

CONTENTS

INTRODUCTION		1
RESULTS AND DISCUSSION		4
ACKNOWLEDGEMENTS		5
TABLE 1.	Pedigrees of Lines Included in the 18th Early International Winter x Spring Wheat Screening Nursery IWSWSN	6
TABLE 2a.	Location Information Including Dates of Planting and Harvest for each Location Returning Data	7
TABLE 2b.	Locations not Returning Data	8
TABLE 3.	Cultural Practices & Climatological Data	9
FIGURE 1.	Geographic Locations of Cooperators Returning Data from the 18th Early International Winter x Spring Wheat Screening Nursery IWSWSN	10
TABLE 4.	Tabulation of Agronomic Characteristics by Location	11
TABLE 5.	Tabulation of Agronomic Characteristics by Entry	33
TABLE 6.	Entries Selected for Earliness	55
TABLE 7.	Entries Selected for Winterhardiness	56
TABLE 8.	Entries Selected for Stand Establishment	57
TABLE 9.	Entries Selected for Resistance to *P. striiformis*	58
TABLE 10.	Entries Selected for Resistance to *P. recondita*	59
TABLE 11.	Entries Selected for Resistance to *P. graminis*	60
TABLE 12.	Entries Selected for Resistance to *Septoria tritici*	61
TABLE 13.	Entries Selected for Resistance to *Erysiphe graminis*	62

INTRODUCTION

This cooperative program provides (a) a source of exchanged wheat germplasm, (b) agronomic and disease data, (c) visits to cooperating locations by participating scientists, (d) exchange of research information, and (e) a means of identifying future students for graduate study at OSU and other institutes. The overall objective is to strengthen national programs in developing countries.

Since the inception of the screening nursery in 1973, Oregon State University has closely coordinated the development of germplasm with the International Maize and Wheat Improvement Center (CIMMYT). This has included exchange of winter and spring wheat parents, F_1 and early generation populations, data on this germplasm, and personnel from both institutes. CIMMYT objectives have been to provide spring-type cereal germplasm to cooperating programs throughout the world, and short-term training for scientists from these programs as requested. OSU objectives are to provide winter and intermediate-type wheat germplasm to the colder and higher elevation cereal regions worldwide, and graduate training for scientists from Less Developed Countries (LDCs). The total program allows for an active exchange of diverse wheat germplasm with cooperating institutes. Approximately 2,000 wheat accessions are received and evaluated at OSU annually from cooperators in winter cereal regions of the world.

This program was expanded in 1985 with the establishment of a CIMMYT winter and facultative germplasm enhancement program in Turkey. Also, an international shuttle breeding system has been established where F_3 lines selected in Oregon are sent to Turkey and Toluca, Mexico. After two years of selection in these locations selected lines are returned to Oregon and distributed in the screening nursery. Lines selected under Turkish conditions are sent out in the Facultative and Winter Wheat Observation Nursery (FAWWON), and distributed by CIMMYT/Turkey to areas where short cycle winter and facultative wheats are required. At Toluca, Mexico, in addition to exposing the material to different disease complexes, selections for day-length insensitivity earliness can be made.

As a consequence of cooperator input and some encouragement as to continued funding, the winter x spring enhanced wheat germplasm program was reinitiated in 1992 after a short postponement. This year a new format for reporting and summarizing data will be employed. In addition, selected F_4 lines will be sent to international centers in Mexico and Turkey for further selection with promising lines evaluated in regional screening nurseries. Also, a greater effort will be placed on developing germplasm for high elevation winter and facultative growing areas.

The 18th International Winter x Spring Wheat Screening Nursery represented both early and late maturing lines. Summary of results obtained from the 19th IWSWSN is underway and we are now receiving data from the 20th IWSWSN. The 21st screening nursery will again be divided based on material classes and will represent lines resulting from the international shuttle breeding approach. Results of the early maturity nursery are reported herein.

Nursery Locations

Pedigrees for the entries included in the 18th International Winter x Spring Wheat Screening Nursery are provided in Table 1.

Cooperating countries are listed alphabetically in Tables 2a and 2b along with the names of their respective stations, and/or cooperating scientists, and location information. Those cooperators returning data are listed in Table 2a while locations from which we did not receive data are listed in Table 2b.

Climatological data and management practices are provided in Table 3 for each location returning data. Plot size information is given by the column labeled "number of rows x the length of each row." This column allows each cooperator to compare yields of lines they are interested in across locations. Table 3 also lists the name of the local check variety.

Each cooperator has an assigned code number that is listed in Table 3 and appears on Figure 1 (if data was returned) at the approximate location of each experimental site within the respective country.

Dates of planting, heading, and maturity vary greatly between and within certain countries. The growing season for each location returning data is listed in Table 2a. Elevation is also included since it influences the length of the crop season. These reported data are based on the heading date of the local check variety for each location. The locations having a length of growing season less than seven months require materials that combine characteristics of early maturity and frost tolerance.

Method of Summarizing Results

Data are reported by location code in Table 4. Data for entry 5, the local check, are tabulated for each specific location in Table 4; however, the check was only provided for comparison and not included in the overall summary. Grain yield is reported in grams per plot (g/plot). Yield of a given entry is also listed as the percent of the local check. Seed density has been measured either as test weight recorded in kilograms per hectoliter (Kg/ha) or 1,000 kernel weight in grams. Plant height is reported in centimeters (cm). Lodging is noted as the percentage of leaning or fallen tillers in the plot. Days to flowering are computed from January 1 (Julian Days). Rust disease (*Puccinia sp.*) data are reported according to modified Cobb's scale unless otherwise indicated by the cooperator. Leaf blotch (*Septoria* spp.) and powdery mildew (*Erysiphe graminis tritici*) are reported on a zero-to-nine scale with nine being the most susceptible. Stand establishment is noted as percent of stand in the fall. Winterhardiness is noted as the percent survival recorded in the spring. The selection (lines selected) column is provided for the cooperator to note the most promising entries in the nursery. These entries may have been chosen for advancement to yield trials or for possible parental use.

Data are reported by entry number in Table 5. Data for entry 5, the local check, were not included in this summary.

Many locations returned information on several of the same characteristics for all entries. Therefore, it was possible to identify lines that demonstrated earliness (Table 6), winterhardiness (Table 7), and stand establishment (Table 8). The most disease-resistant lines were also identified at several locations for stripe rust (Table 9), leaf rust (Table 10), stem rust (Table 11), Septoria leaf blotch (Table 12), and powdery mildew (Table 13). Eight entries (numbers: 10, 15, 16, 21, 39, 40, 43, and 44) were selected for two of these characteristics.

RESULTS AND DISCUSSION

Data in Tables 4 and 5 provide a basis for identifying those entries selected for specific traits in Tables 6 through 13. It should be emphasized that due to limited seed supplies, observation rows are small and unreplicated; therefore, yield data are largely subjective. Yield is not used in identifying superior lines for this reason. However, harvested seed from selected plots should provide adequate quantities for replicated yield trials to be conducted the following year. As previously mentioned, similar comparisons for the other traits are found in Tables 6 through 13.

Selections Advanced

In Tables 4 and 5, where the results for specific entries are tested for the various agronomic traits, those entries that were selected for further evaluations are noted. This information is useful in evaluating the importance of parental lines or specific attributes to emphasize in planning for future crossing strategies. This past year, 32 lines were selected for further testing. Entry number 10 was selected by four cooperators for further evaluation.

Importance of Continued Exchange of Germplasm and Information

It has been stated that genetic diversity or germplasm is the life blood of all plant improvement programs. Certainly any productive plant breeder or related plant scientist would agree with this statement. Breeders today are highly indebted to those who have preceded them in adding, in a step-wise fashion, improved genetic combinations. With concerns about genetic erosion, laws such as varietal protection, and political issues regarding access to germplasm, the importance of such programs as promoted by CIMMYT, ICARDA, and OSU for the enhancement and distribution of wheat germplasm is clear. Breeders have an obligation to ensure that future scientists have adequate genetic diversity if further progress is to be made to produce food more efficiently. It is equally true that even with the promise offered by biotechnology and recombinant DNA, there is still no substitute for the enhancement and distribution of germplasm.

ACKNOWLEDGEMENTS

The excellent cooperation of all cooperators throughout the world who carefully evaluate the entries and return data is greatly appreciated. It is only through this continued interest and cooperation that the objectives of the nursery can be realized.

Support for the International Winter X Spring Wheat Improvement Program is provided by the United States Agency for International Development (USAID).

TABLE 1. Pedigrees for all lines included in the 18th International Winter x Spring Wheat Screening Nursery - EARLY.

ENTRY	ID	PEDIGREE
1	3910270	BEZOSTAJA
2	4870581	YECORA R050
3	3865313	ROUSSALKA
4	4890001	KLASSIC
5	CHECK	LOCAL CHECK
6	860247	GNS/LP/3/5*ATR/AGA//TF/BULG88/4/ANI,F1/5/INIA//HBGN/CD
7	851911	GNS/LP/3/5*ATR/AGA//TF/BULG88/4/ANI,F1/5/INIA//HBGN/CD
8	870812	BEZ/ALD,F1/5/AU/3/MINN//HK/38MA/4/YMH/ERA
9	2619	NZT/BEZ1//ALD,F1/4/F1,NAD//TMP/CI12406/3/EMU
10	889128	VPM/MOS83-11-4-8//PEW
11	899135	OWA852256/5/ZT/BEZ1//ALD/4/NAD//TMP/CI12406/3/EMU
12	850513	RBS/ANZA/3/KVZ/HYS//YMH/TOB/4/BOW.S
13	889071	RMN,F12-71/JUP.S
14	889088	RMN,F12-71/JUP.S
15	880017	S148/PCHS//SPN
16	890074	AU/MINN/HK/38MA/YMH/ERA/CLLF/BEZ/SU/CI13645/NAI/EMU
17	890145	MNM/SNBS
18	908103	TJB368-251/BUC//WA 6816
19	908109	RONDEVOUS/3/CARSTEN/GIGANT
20	3910270	BEZOSTAJA
21	908110	RONDEVOUS/3/CARSTEN/GIGANT
22	908263	TJB916.46/CB306//2*HBT/3/BUC.S/4/HAHN.S*2/PRL.S
23	910117	KVZ/3/BB/CHA/TRM/4/TEMU/5/WA4303/VKG//820/OMAR/1864/178
24	910186	MHTM//VPM/MOS,SP101/3/M1223-3D-1D (MI76-77-S29)/ALD
25	910187	MHTM//VPM/MOS,SP101/3/M1223-3D-1D (MI76-77-S29)/ALD
26	910215	CNO/INIA//HN7/3/CC//CAL/SR/4/M1223-3D-1D (MI76-77-S29)/A
27	910231	CLLF/BEZ//SU92/CI13645/3/NA160/4/EMU/5/TJB788-1089/ALDA
28	910233	CLLF/BEZ//SU92/CI13645/3/NA160/4/EMU/5/TJB788-1089/ALDA
29	910241	KVZ/3/BB/CHA//TRM/4/TEMU 33-78/5/FW771595G02
30	910263	GRTPL85504//M1223-3D-1D (MI76-77-S29)/ALD
31	910285	F12.71/COC//SERI
32	910313	VORO/3/TOB/CNO67//ANZA/4/SERI
33	920064	PDGA/TALENT*2//SHANGHAI5/6/ID#3701
34	920070	TEMU39.76/CHAT.S//CUCURPE 86/3/M1223-3D-1D (MI76-77-S29)/ALD
35	920071	TEMU39.76/CHAT.S//CUCURPE 86/3/M1223-3D-1D (MI76-77-S29)/ALD
36	920072	TEMU39.76/CHAT.S//CUCURPE 86/3/M1223-3D-1D (MI76-77-S29)/ALD
37	920078	85 ZHONG 139/CUCURPE86/3/BPRE.S//CNO.S/GLL
38	920093	F1271/BZ//TJB368.251/BUC.S/4/D6301/HN7//ERA/3/BUC
39	920169	GMS/ORCR8313//ORCR8313[MS]
40	4870581	YECORA R050
41	920173	GMS/ORCR8313//ORCR8313[MF]
42	920467	TJB368-251/BUC/3/PMF//CNO S/GLL
43	920491	TOPO.S/NAR 59*2//BDFN/3/BOW.S/4/PMF//CNO.S/GLL
44	928009	RONDEZVOUS/3/VPM/MOS83-11-4-8//PEW

Table 2a. Location names and dates of planting (P) & harvest (H) for all locations reporting data from the 18th IWSWSN - EARLY.

Loc #	Location	Length of Season A M J J A S O N D J F M A M J J A	Elev. (M)	Latitude	Longitude
7	Argentina, Buck	P -- -- -- -- -- -- H	72	38°20'	59°0'
171	Argentina, Cordoba	P -- -- -- -- -- H	110	32°42'	62°07'
172	Armenia,Yerevan	P -- -- -- -- -- -- -- -- -- -- H	1850	40°30'	44°30'
9	Australia, Cobbity	P -- -- -- -- -- -- -- -- -- H	125	34°5'	150°44'
18	Chile, Hidango	P -- -- -- -- -- -- -- H	296	34°6'	71°47'
20	Chile,Quilamapu	P -- -- -- -- -- -- -- H	217	36°31'	71°55'
35	France, INRA	N/A	N/A	N/A	N/A
158	France, Svalov Weibull	P -- -- -- -- -- -- -- ?	130	48°5'	01°8'
43	Hungary, C. R. I.	P -- -- -- -- -- -- -- -- H	90	46°11'	20°25'
46	Iran, Karaj	P -- -- -- -- -- -- -- -- H	1238	35°48'	51°02'
47	Iran, Arak	P -- -- -- -- -- -- -- -- H	1757	34°5'	42°49'
167	Iran, Rokh	P -- -- -- -- -- -- -- -- H	1650	58°60'	35°50'
22	P. R. C., Nanjing	P -- -- -- -- -- -- -- H	19.4	32°0'	119°0'
24	P. R. C., C. A. A. S.	P -- -- -- -- -- -- -- -- H	53	39°59'	116°17'
26	P. R. C., Shaanxi	P -- -- -- -- -- -- -- H	N/A	34°15'	108°0'
27	P. R. C., Shaanxi	P -- -- -- -- -- -- -- -- H	368	34°53'	109°55'
65	Poland, Laski	P -- -- -- -- -- -- -- -- H	N/A	51°45'	21°15
187	Poland, DANKO	P -- -- -- -- -- -- -- -- -- H	72	52°3'	16°43'
162	Slovakia, Piestany	P -- -- -- -- -- -- -- -- H	157	48°34'	17°45'
103	Ukraine, Odessa	P -- -- -- -- -- -- -- -- H	42	46°	31°
193	U. S. A., Virginia	P -- -- -- Not Harvested	30.4	37°57'	76°45'

Table 2b. List of all locations and cooperating station or cooperater name not returning data for the 18th IWSWSN - EARLY.

Loc #	Location	Station/Cooperator	Loc #	Location	Station/Cooperator
1	Afghanistan	Agric. Research Inst.	184	P.R.C.	Agric. Univ. of Shandong
4	Argentina	Nat'l Program INTA-Central	25	P.R.C.	Agric. Univ. of Shandong
5	Argentina	INTA-E. E. A. Bordenave	67	Romania	I. C. C. P. T.
6	Argentina	E. E. A. INTA Balcarce	66	Portugal	Estacao Nacional
109	Argentina	Ruben Miranda	101	Russia	Krasnodar Res. Inst.
169	Argentina	Nat'l Program INTA-Central	72	Syria	ICARDA
170	Argentina	Cargill, S. A.	74	Tunisia	Amor Yahyaoui
8	Australia	Univ. of Adelaide	75	Turkey	Turkish\CIMMYT
156	Brazil	Instituto Agrinomico	166	Turkey	Turkish\CIMMYT
163	Brazil	Universidad Federal	188	Turkey	Turkish\CIMMYT
110	Brazil	Ricardo Matzenbacher	189	Uruguay	Ing. Ruben Varges
12	Brazil	Fundacep Fecotrigo	190	U.S.A.	N. Florida Res. & Ext.
173	Bulgaria	Inst. of Intro. & Plant...	191	U.S.A.	Aristeo Acosta-Carreon
176	Finland	Boreal Plant Breeding	82	U.S.A.	Univ. of Arkansas
36	France	Hybritech	194	U.S.A.	Montana State Univ.
159	France	Station de Recherche	85	U.S.A.	Fort Hayes Expt. Stn.
164	Germany	Sudwestdeutsche Saatzucht	195	U.S.A.	Cargill Seed, CO
41	Greece	N. A. G. R. E. F.	83	U.S.A.	Colorado State Univ.
42	Hungary	Agric. Research Inst.	86	U.S.A.	Kansas State Univ.
161	Iran	Resources Res. Org.	87	U.S.A.	Univ. of Kentucky
48	Japan	Regional Wheat Breeding Lab	92	U.S.A.	Sunbeam Extract Company
180	Jordan	N. C. A. R. T. T.	196	U.S.A.	Texas A & M Univ.
181	Lebanon	Ag. Res. Inst.	197	U.S.A.	Univ. of Idaho
55	Mexico	CIMMYT	198	Vietnam	National Maize Res. Inst.
182	Paraguay	MAG/CIMMYT	104	Yemen	A. R. E. A.
150	P.R.C.	Inst. of Crop Science	168	Yugoslavia	Inst. of Field & Indust. Crops
183	P.R.C.	Cereals Research Inst.			

TABLE 3. Summary Climatological data and Cultural practice information for all locations reporting results for the 18th International Winter x Spring Wheat Screening Nursery - Early Lines.

Loc.	Country	Station	Cooperator	Local Check	No. Days < 0° C	No. x length of ea. row	Total Precip.	Applied N	Applied P	Applied K
7	Argentina	Buck	Lisardo Gonzalez	Buck Catriel	34	21	436	N/A	N/A	N/A
171	Argentina	INTA Cordoba	Carlos Bainotti	Prointa Super	50	9	196	-	-	-
18	Chile	Hidango	I. Remirez	Patagua INIA	N/A	4	423	75	90	-
20	Chile	Quilamapu	A. Marino B.	Candela-INIA	30	4	785	150	65	82
22	P. R. C.	Nanjing	Cao Yang	Yang Mai 158	N/A	4	327	250	-	-
24	P. R. C.	Beijing	Pang Jiazhi	Jing 411	66	4	95	248	70	46.4
158	France	Weibull S.S.R.L.	Jean-Pierre Josset	Soissons	73	N/A	269	170	100	120
43	Hungary	C. R. I.	J. Matuz	N/A	18	6.6	N/A	-	-	-
46	Iran	Arak	Nasser Banisadr	N/A	112	5	426	130	90	-
47	Iran	S. P. I. I. Karaj	Nasser Banisadr	Alamoot	N/A	5	N/A	143	90	-
167	Iran	Rokh	Nasser Banisadr	Navid	131	5	260	150	90	-
187	Poland	DANKO	Barbara Weiss	Lama	N/A	3.2	638	91	69	84
162	Slovakia	Piestany	Zofajova Alzbeta	N/A	90	3	518	30	-	-
172	Armenia	Yerevan	Artashes Ghandilian	Voskeask	97	6	315	30	-	-
26	P. R. C.	Yangling	Ning Kun	Shaan 229	40	4	100	200	400	-
193	U. S. A.	Va. Ag. Ctr.	C. A. Griffey	Jackson	N/A	1.2	N/A	90	-	-
65	Poland	Laski PBS	Tarostaw Gryka	Begra	N/A	4	423	76	60	90
152	France	INRA	M. Rousset/J. Koenig	N/A	N/A	N/A	N/A	N/A	N/A	N/A
27	P. R. C.	Dali 715105	Fang Zhen	LF 1	32	5.2	229	174.75	138	-
103	Ukraine	P. B. I. Oddesa	V. M. Sokolov	Albatros Odessk	44	5	365	60	-	-
9	Australia	P. B. I. Cobbity	R. A. McIntosh	N/A	0	1.16	183	30	-	-

Figure 1. Map indicating the locations of all cooperators returning data for the 18th IWSWSN - EARLY.

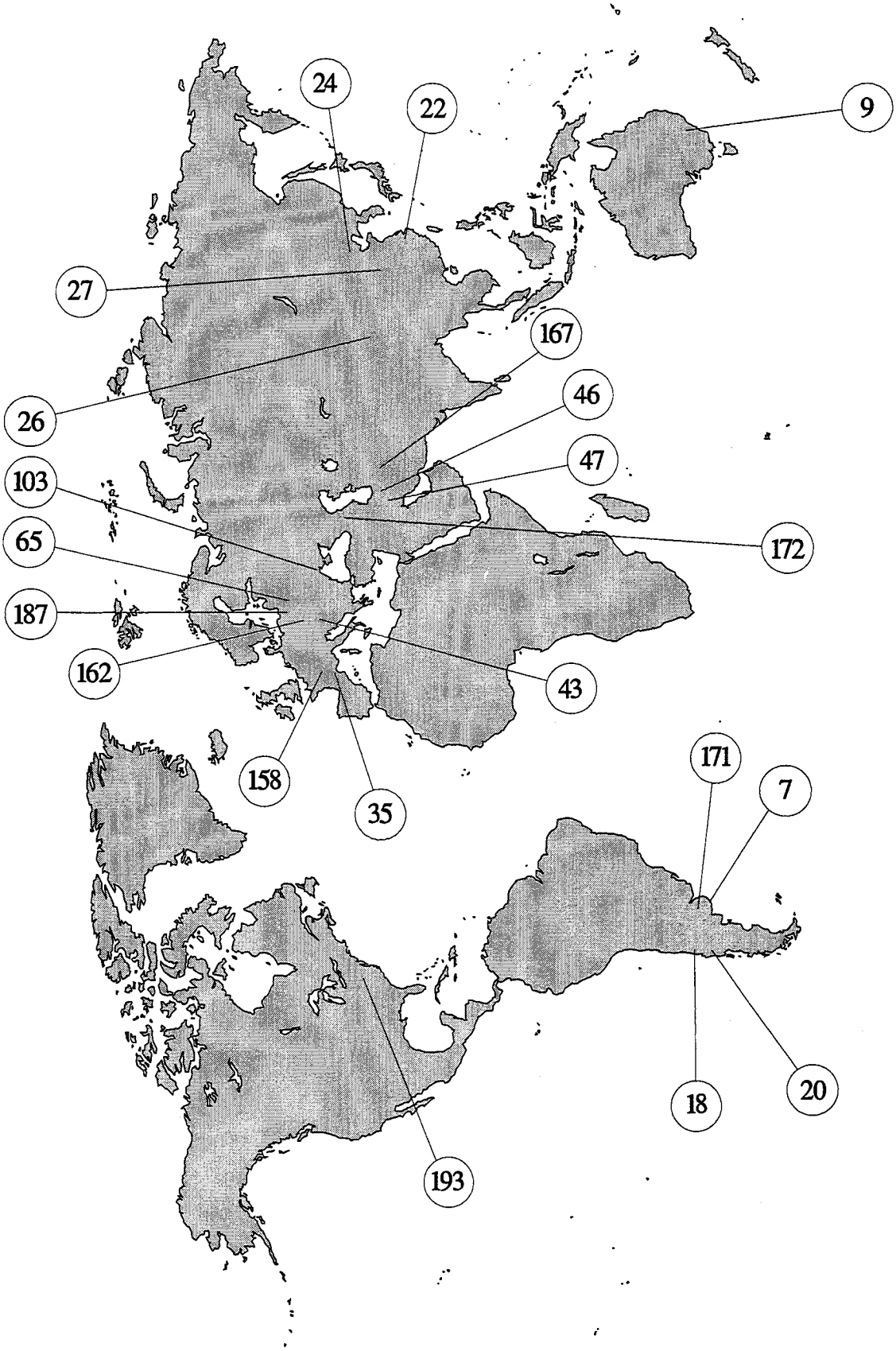

TABLE 4. Summary information of all Agronomic Characteristics measured for all entries at all locations reporting results for the 18th International Winter x Spring Wheat Screening Nursery (IWSWSN) - EARLY.

Information reported for the following traits by location: 20

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1		302		110				40MS	0		3		
2		262		70				N	N		9		
3		284		90				50MS	30S		4		
4		263		75				N	N		9		
5		309		105				105	0		6		
6		304		100				50MS	70S		5		
7		302		95				30MS	0		6		
8		303		90				90S	30S		2		
9		301		100				70S	30S		4		
10		299		100				0	0		4		
11		303		110				40MS	40S		6		
12		295		105				40MS	20S		5		
13		295		95				0	30S		5		
14		295		95				5MR	40S		5		
15		296		110				0	50S		3		
16		297		85				70S	10MS		3		
17		297		105				0	30S		4		
18		304		105				30MS	40S		3		
19		303		120				0	0		4		
20		303		125				30MS	0		4		
21		303		125				20MS	40S		3		
22		288		95				10MS	70S		4		
23		295		100				70S	0		4		
24		296		100				30MS	0		4		
25		300		95				50MS	5MR		5		
26		308		100				60S	30S		4		
27		308		120				60MS	20MS		4		
28		308		110				50MS	20S		4		
29		297		100				50MS	20S		3		
30		287		95				60MS	30S		4		
31		298		105				20MR	60S		5		
32		287		105				30MS	30S		6		
33		302		115				30MS	20MS		4		
34		299		110				10MR	60S		4		
35		297		115				30MS	40S		5		
36		286		115				70S	0		3		
37		292		105				60MS	30S		5		
38		296		105				20MS	5MS		5		
39		305		125				30MS	40MS		5		

Information reported for the following traits by location: 20

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
40		263		70				N	N		9		
41		301		125				60MS	0		4		
42		295		110				20MS	20MS		3		
43		310		110				10MS	20MS		4		
44		302		100				0	0		3		

Information reported for the following traits by location: 18

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1	512	165	84.8	120	3								
2	305	125	83.5	65	2								
3	461	150	83.0	100	2								
4	386	127	84.8	70	2								
5	655	145	82.8	95	2								
6	476	165	82.6	90	2				S				
7	608	160	83.9	90	2								
8	437	167	78.3	85	2			S					
9	529	167	82.6	95	2								
10	585	165	78.1	95	2								*
11	374	167	81.3	100	2								
12	592	167	83.5	100	2								
13	630	156	89.3	95	2								
14	691	156	84.8	100	2								**
15	596	160	82.6	100	3								
16	623	156	79.4	95	2			S					*
17	907	163	79.4	100	2								***
18	807	167	82.4	105	3								*
19	608	167	82.6	115	2								
20	764	167	85.9	105	2								
21	596	167	80.1	130	3								
22	900	156	83.5	100	2								**
23	749	155	77.4	115	2								**
24	666	156	81.9	95	3								
25	749	160	80.8	95	2								
26	681	167	79.4	100	2								*
27	991	170	83.3	105	2								**
28	601	170	82.1	95	2								
29	553	170	82.6	90	2								
30	811	147	83.3	100	2			S					**
31	659	155	84.6	105	2				S				
32	1035	143	84.1	110	2								*
33	859	160	83.9	110	2								
34	871	156	81.9	110	2				S				*
35	970	156	83.7	110	2								*
36	422	165	81.9	105	2			S					
37	953	150	80.6	110	2			S					**
38	1188	153	83.0	105	2								*
39	910	165	86.2	125	3								
40	655	123	86.4	80	2								
41	766	165	85.3	120	3								
42	687	156	85.5	100	1								*
43	1133	160	82.8	110	2								**
44	813	167	78.1	105	1								

Information reported for the following traits by location: 171

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1				65					5MS	40S			
2				50					40MS	trace			
3				55					60S	30S			
4				50					50MS	5MS			
5				55					trace	trace			
6				60					80S				
7				55					80S	30S			
8				60					5MR	trace			*
9				60					90S	30S			
10				60						60S			
11				65					90S				
12				70					80S				
13				60					80S				
14				60					90S				
15				65						60S			
16				60					80S				
17				65					80S				
18				60					90S				
19				70						70S			
20													
21				75						60S			
22				60						70S			
23				65					80S				
24				60					90S				
25				60					80S	40S			
26				65									
27				70									
28				65									
29				60									
30				65									
31				65									
32				70						70S			
33				70						30S			
34				65									
35				65						trace			*
36				65									
37				65						60S			
38				65						50S			
39				75						60S			
40													
41				75									
42				60									
43				60						60S			
44				75						50S			

Information reported for the following traits by location: 35

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1		127		115					30S			5	
2		110		70					R			8	
3		118		80					20MS			2	
4		110		75				50S	R			3	
5		127		90					R			2	
6		129		95				60S	trace			3	
7		128		90					20MS			7	
8		128		80				10MS	trace			5	
9		128		90					10MR			3	
10		125		85				10MS	trace			2	*
11		125		90					R			1	*
12		125		100					20MS			3	
13		127		85					trace			4	*
14		127		85					30S			4	
15		124		100					50S			1	
16		124		90					R			3	
17		123		100				5MR	R			2	*
18		123		100					40R			4	
19		129		110					0R			2	
20		128		110					40S			6	
21		128		115					40S			3	
22		122		90				20MS	20MS			4	
23		130		110					10MR			5	
24		124		90					60S			6	
25		124		90					60S			5	
26		129		95					R			5	
27		120		100					R			4	
28		130		100					R			3	
29		129		95				0.5MR	30S			5	
30		129		95					R			5	
31		128		95					trace			5	
32		124		100					R			3	
33		125		110					50S			5	
34		129		100					trace			6	
35		121		100					trace			5	
36		125		100					60S			6	
37		124		95					30S			5	
38		125		95					30S			7	
39		122		110				20MS	0.5R			6	
40		110		75				30S	R			8	
41		127		115					R			6	
42		128		90					10MR			4	
43		131		110				10MS	30S			5	
44		128		105					R			1	

Information reported for the following traits by location: 43

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1		141		110	90	90	100		40			7	
2		132		70	80	90	100		30			9	
3		132		80	80	100	100		30			9	
4		131		63	80	90	100		0			9	
5		140		90	80	90	100		70			1	
6		142		85	80	100	100		70			9	
7		141		100	90	100	100		60			9	
8		143		80	80	80	100		60			9	
9		143		90	80	100	100		60			7	
10		139		85	80	100	100		0			3	
11		144		100	90	100	100		80			6	
12		142		90	65	100	100		50			8	
13		142		80	65	100	100		50			7	
14		142		80	60	100	100		35			5	
15		138		100	90	100	100		60			4	
16		138		80	80	90	100		60			9	
17		143		90	80	80	100		40			3	
18		141		90	80	100	100		70			3	
19		138		95	80	100	100		70			7	
20		140		105	95	100	100		70			6	
21		143		115	100	100	100		70			3	
22		144		105	100	90	100		trace			1	
23		145		100	80	100	100		80			6	
24		137		85	60	100	100		60			7	
25		139		85	60	100	100		70			7	
26		142		90	80	100	100		80			5	
27		142		90	80	100	100		80			7	
28		142		90	80	90	100		70			7	
29		144		90	80	90	100		70			9	
30		143		85	65	90	100		trace			9	
31		139		90	85	100	100		60			9	
32		138		95	85	90	100		40			6	
33		142		95	85	100	100		80			7	
34		149		90	65	100	100		80			9	
35		139		95	65	100	100		80			9	
36		141		95	100	90	100		80			9	
37		137		90	100	100	100		50			9	
38		140		90	80	100	100		90			9	
39		139		100	100	100	100		80			9	
40		132		70	80	100	100		35			9	
41		139		110	100	100	100		70			8	
42		139		90	80	90	100		0			4	
43		145		100	90	100	100		70			6	
44		139		90	80	90	100		70			3	

Information reported for the following traits by location: 158

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1		135			25						2		
2							0						
3		125			10						3		
4		110					25				3		
5		133									3		
6		141									3		
7		141									4		
8		141									4		
9		143									6		
10		141									4		
11		140									4		
12		136			10						5		
13		137			10						4		
14		130			15						3		
15		137			15						5		
16		135			10						5		*
17		136			45						4		
18		138			5								
19		137			4								
20		132			75						2		
21		141			25						3		
22		141			10						3		
23		140									4		*
24		141			10						3		
25		142			20						3		
26		136			20						4		
27		137			15						4		
28		141			15						5		
29		132			20						4		*
30		140			15						5		
31		130			30						5		
32		144									5		
33		141									4		
34		144									4		
35		128			10						2		
36		137			40						4		
37		142			25						8		
38		140			25						4		
39		140			10						5		*
40		110					60				6		
41		130			10						5		
42		139			15						5		
43		140			5						3		
44		133			60						4		

Information reported for the following traits by location: 65

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1	480	155	48.4	95			75					4	
2	360	146	48.2	60			65					5	
3	520	148	47.2	75			65					6	
4	360	145	50.4	60			65					4	
5	700	157	50.2	85			100					2	
6	700	153	41.2	85			75					3	
7	560	156	41.8	80			65					3	
8	510	156	42.4	85			100					4	
9	550	157	39.4	90			100					5	
10	660	156	46.6	95			100					4	
11	660	158	45.2	85			100					1	
12	550	153	41.6	80			100					6	
13	480	156	41.8	85			75					4	
14	590	156	45.0	85			100					2	
15	570	156	42.4	80			100					4	
16	680	156	47.4	90			100					2	
17	580	153	46.0	100			100					4	
18	570	156	40.2	75			100					3	
19	650	156	45.8	85			100					5	
20	580	153	49.4	100			100					4	
21	680	156	42.8	75			100					2	
22	650	156	42.8	80			65					2	
23	700	156	48.6	80			100					1	
24	490	156	38.0	85			100					6	
25	640	156	49.0	90			100					4	
26	710	153	45.6	105			100					3	
27	580	153	43.4	100			90					5	
28	650	158	40.8	90			100					2	
29	690	156	42.2	85			100					6	
30	680	155	44.4	100			100					6	
31	700	152	46.4	90			100					4	
32	660	158	41.6	90			100					3	
33	750	158	41.4	85			100					3	
34	710	158	41.0	85			100					3	
35	400	158	34.8	85			100					5	
36	720	153	46.4	95			100					3	
37	560	156	39.4	95			100					5	
38	700	158	45.2	90			100					6	
39	680	156	42.6	80			100					3	
40	330	148	44.2	65			50					6	
41	730	156	46.0	85			100					1	
42	640	155	44.6	95			100					3	
43	640	156	45.4	95			100					4	
44	620	153	38.8	80			75					5	

Information reported for the following traits by location: 187

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1	540	150			88						4	5	
2		146			100						5	7	
3		142			100						7	6	
4		144			100						5	6	
5		153			88						3	5	
6		148			75						4	7	
7	760	148			100						4	8	
8		149			100						5	7	
9		149			100						4	7	
10		148			100						3	5	
11		150			100						5	6	
12		150			100						4	6	
13		150			75						6	7	
14		150			88						5	7	
15		146			100						6	4	
16	440	147			88						4	5	
17	550	148			50						5	4	
18	430	150			75						5	6	
19	640	150			75						5	5	
20	460	151			88						4	6	
21	800	150			88						3	5	
22		145			100						3	5	
23		151			88						4	7	
24		148			88						5	7	
25	540	149			88						5	6	
26	620	150			75						5	6	
27	470	150			88						4	5	
28	680	149			88						4	6	
29	600	150			88						4	6	
30	620	149			88						5	4	
31	620	148			75						5	6	
32	600	147			63						4	5	
33	620	150			63						4	5	
34	400	150			75						5	6	
35		148			88						4	7	
36		147			100						5	8	
37		148			88						5	7	
38		148			88						5	7	
39	690	146			63						4	6	
40	230	145			75						4	7	
41	865	149			88						3	6	
42		148			100						3	6	
43	805	150			88						4	6	
44	655	149			88						4	4	

Information reported for the following traits by location: 193

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1		119											
2		109											
3		108											
4		107											
5		117											
6		119											
7		115											
8		117											
9		117											
10		113											
11		119											
12		115											
13		115											
14		115											
15		115											
16		113											
17		112											
18		119											
19		119											
20		119											
21		117											
22		109											
23		115											
24		115											
25		115											
26		119											
27		119											
28		119											
29		117											
30		115											
31		115											
32		112											
33		117											
34		117											
35		113											
36		115											
37		112											
38		113											
39		118											
40		109											
41		117											
42		115											
43		124											
44		117											

Information reported for the following traits by location: 103

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1	1090	143	42.0	100	30	55			40MR			3	
2	40	138	42.0	58	0	49			trace			0	
3	1000	136	44.0	85	0	51			60S			5	
4	100	136	41.5	61	0	43			trace			0	
5	860	141	37.6	92	0	40			trace			3	
6	870	142	33.0	90	0	61			40S			5	
7	700	143	34.0	87	0	76			trace			7	
8	570	144	29.0	86	0	52			60S			7	
9	730	145	32.0	87	0	71			trace			7	
10	700	143	37.5	86	0	57			0			0	*
11	860	145	41.0	90	0	46			40S			3	
12	620	147	32.0	90	0	33			100S			5	
13	700	144	34.0	86	0	46			trace			5	
14	1030	145	36.0	86	0	62			0			5	
15	1070	144	44.0	90	0	46			0			1	
16	750	144	30.0	85	0	81			0			3	
17	780	144	41.0	83	0	35			0			1	
18	1070	144	33.5	95	0	53			0			0	*
19	610	146	38.0	102	0	43			0			0	*
20	940	145	42.0	105	50	52			trace			1	
21	560	146	42.5	110	0	47			0			0	
22	620	142	37.0	77	0	53			0			5	
23	680	148	37.0	90	0	42			0			5	
24	500	144	37.0	85	0	38			0			7	
25	480	144	34.0	88	0	58			trace			5	
26	620	145	34.0	88	0	50			trace			5	
27	750	147	28.0	88	0	56			0			5	
28	710	145	32.0	92	0	54			0			1	*
29	630	148	30.0	87	0	52			0			5	
30	670	146	34.0	90	0	58			0			7	
31	820	144	37.0	90	0	68			0			1	
32	800	142	37.0	96	0	55			0			1	*
33	720	145	33.0	90	0	53			40MR			5	
34	700	147	34.5	87	0	50			trace			7	
35	820	145	33.5	85	0	26			0			5	*
36	630	144	32.0	88	0	42			trace			7	
37	810	143	31.0	95	0	61			trace			5	
38	720	145	29.0	85	0	52			10MR			0	*
39	1240	142	45.0	101	0	55			0			1	*
40	110	140	45.5	60	0	59			0			3	
41	1030	144	44.0	115	0	64			0			5	*
42	610	145	28.5	87	0	63			0			1	*
43	1120	147	35.0	96	0	61			0			7	
44	620	144	34.5	87	0	53			0			0	*

Information reported for the following traits by location: 7

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1		398		70					0		8		
2		291		55					0		8		
3		297		65					60S		9		
4		293		55					0		8		
5		310		85					0		6		
6		309		85					80S		8		
7		307		75					0		8		
8		308		70					0		8		
9		309		75					60S		6		
10		306		70					0		5		
11		309		90					5S		4		
12		307		85					40S		4		
13		309		70					0		9		
14		308		70					20MS		8		
15		307		80					50S		4		
16		305		80					0		8		
17		303		85					30S		4		
18		307		80					50S		5		
19		308		85					0		3		
20		308		85					30S		7		
21		310		85					80S		2		
22		305		75					50S		7		
23		310		80					50S		7		
24		305		75					15S		5		
25		307		70					60S		4		
26		309		80					60S		5		
27		307		75					40MS		4		*
28		312		85					60S		3		
29		312		95					40MS		3		
30		312		95					60S		4		
31		306		85					60S		7		
32		302		80					30S		5		
33		311		90					40MS		3		
34		310		80					60S		8		
35		305		80					40S		9		
36		306		80					20MS		9		
37		303		75					60S		8		
38		307		75					10MS		9		
39		310		85					70S		8		
40		291		55					0		9		
41		308		85					60MS		4		
42		307		80					10MS		6		
43		313		95					trace		2		
44		307		75					0		1		

Information reported for the following traits by location: 9

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1									0	10R			
2									10R	0			
3									0	70S			
4									-	-			
5									-	-			
6									0	0			
7									10S	80S			
8									0	trace			
9									0	70S			
10									0	trace			
11									0	trace			
12									0	90S			
13									0	10R			
14									0	10R			
15									0	90S			
16									0	5R			
17									0	5R			
18									0	100S			
19									0	trace			
20									0	60S			
21									0	N			
22									0	30M			
23									0	20M			
24									0	trace			
25									30S	30S			
26									0	trace			
27									0	trace			
28									0	trace			
29									0	trace			
30									0	10R			
31									0	5R			
32									0	20MR			
33									0	60S			
34									0	15R			
35									0	trace			
36									0	10R			
37									N	40S			
38									20S	80S			
39									0	80S			
40									0	40S			
41									0	40M			
42									0	trace			
43									0	N			
44									0	N			

Information reported for the following traits by location: 27

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1	836	164	37.1	106	40	71	100				1	2	
2	172	458	27.3	67		64	85				4	3	
3	1007	462	35.7	98		70	700				3	3	
4	552	158	33.8	71		68	92				3	3	
5	750	159	38.5	83		68	100				2	1	
6	661	164	28.6	95		70	100				3	4	
7	583	164	28.2	90		72	100				2	3	
8	655	164	24.8	86		74	100				3	4	
9	582	165	25.6	100		69	100				2	3	
10	464	164	26.6	95		62	100				3	1	
11	620	167	32.7	110		61	100				2	2	
12	753	166	27.2	100		61	100				2	2	
13	690	163	29.0	90		69	100				2	2	
14	572	163	26.2	93		65	100				3	0	
15	835	163	33.6	105		74	100				3	0	
16	459	164	23.2	92		73	100				3	2	
17	475	165	30.7	98		73	100				3	0	
18	560	165	24.5	101	60	71	100				3	0	
19	553	166	30.2	100		71	100				2	0	
20	453	164	32.8	100	95	71	100				1	0	
21	463	165	28.8	115	95	69	100				2	0	
22	386	165	26.1	85		69	100				2	0	
23	571	166	29.1	103		64	100				2	0	
24	403	164	27.8	95		63	100				2	0	
25	447	164	26.9	95		63	100				3	0	
26	457	164	25.9	95		68	100				3	0	
27	467	165	22.4	95		67	99				3	0	
28	382	164	24.8	95		66	100				3	0	
29	556	166	25.9	101		67	100				3	0	
30	475	165	26.6	98		69	100				3	0	
31	416	163	25.5	100		70	100				5	0	
32	572	163	25.2	102		72	100				5	0	
33	640	167	25.9	100		72	100				3	0	
34	470	165	26.4	106		71	100				3	2	
35	595	162	25.8	106		69	100				3	0	
36	535	165	26.0	97	5	73	100				3	3	
37	543	164	24.6	97	50	72	100				3	0	
38	430	165	26.6	95	50	69	100				2	2	
39	814	163	28.6	103		71	100				2	0	
40	230	158	23.8	65		68	82				5	0	
41	973	165	34.3	110		69	100				1	0	
42	473	166	23.4	90		68	100				3	0	
43	634	167	28.5	100		72	100				1	0	
44	462	164	25.4	95		69	100				3	0	

Information reported for the following traits by location: 162

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1	640	146	46.5	111	0	80	100				1	6	
2	550	131	41.0	77	0	100	100				2	8	
3	770	133	48.0	97	0	80	100				2	8	
4	790	130	48.0	82	0	100	100				1	6	
5	820	144	48.0	80	0	100	100				1	3	
6	855	146	40.0	97	0	80	100				3	7	
7	705	144	40.0	92	0	80	100				2	7	
8	650	146	36.0	98	0	80	100				2	7	
9	760	146	40.0	92	0	80	100				2	7	
10	845	146	44.5	95	0	80	100				1	4	
11	895	147	48.0	116	0	80	100				3	6	
12	930	146	39.0	106	0	80	100				3	7	
13	710	146	40.0	92	0	80	100				2	7	
14	695	146	40.5	86	0	80	100				2	7	
15	940	141	52.5	105	0	80	100				1	6	
16	680	141	40.0	134	0	80	100				2	8	
17	915	142	52.0	97	0	80	100				2	7	
18	815	144	36.0	102	0	80	100				2	6	
19	860	148	47.0	112	0	80	100				3	2	
20	700	148	47.5	115	0	80	100				1	7	
21	930	147	49.0	121	0	80	100				3	5	
22	810	141	42.0	89	0	100	100				2	7	
23	451	148	35.0	103	0	100	100				4	6	
24	720	142	46.0	104	0	80	100				1	7	
25	645	144	45.5	101	0	80	100				3	7	
26	765	147	48.0	109	0	80	100				2	6	
27	745	146	35.0	99	0	80	100				2	6	
28	795	146	43.0	96	0	80	100				2	5	
29	650	148	35.0	99	0	100	100				3	6	
30	735	148	39.0	108	0	80	100				3	7	
31	615	146	41.5	103	0	80	100				2	7	
32	735	142	43.0	107	0	80	100				2	6	
33	795	147	40.0	108	0	80	100				2	5	
34	449	150	39.5	104	0	100	100				2	7	
35	650	147	40.5	109	0	100	100				1	6	
36	555	147	39.5	112	0	80	100				2	8	
37	680	142	37.5	100	0	80	100				1	7	
38	790	147	45.0	98	0	100	100				3	8	
39	860	146	47.5	105	0	100	100				2	4	
40	570	131	42.0	77	0	100	100				2	9	
41	840	146	51.0	112	0	100	100				3	7	
42	665	146	42.5	98	0	100	100				2	6	
43	880	147	43.5	106	0	80	100				2	6	
44	800	147	44.5	99	0	80	100				2	4	

Information reported for the following traits by location: 24

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1		129		89	0								
2		-		-	0								
3		127		75	0								
4		-		-	0								
5		119		78	0								
6		129		73	0								
7		131		77	0								
8		133		70	0								
9		120		73	0								
10		128		78	0								*
11		132		80	0								
12		128		75	0								
13		131		70	0								
14		130		74	0								
15		128		79	0								
16		128		70	0								
17		132		70	0								
18		130		76	0								*
19		133		77	0								
20		129		90	0								
21		129		82	0								
22		128		64	0								
23		138		73	0								
24		128		75	0								
25		128		70	0								
26		128		73	0								
27		128		77	0								
28		133		70	0								
29		133		76	0								
30		129		75	0								
31		130		75	0								*
32		129		84	0								
33		135		77	0								
34		133		70	0								*
35		129		77	0								
36		130		77	0								
37		128		80	0								
38		131		78	0								
39		130		88	0								
40		-		-	0								
41		129		85	0								
42		130		68	0								
43		136		80	0								
44		128		78	0								

Information reported for the following traits by location: 46

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1	545	123						0	0				
2	375	120						5MS	0				
3	470	117						trace	trace				
4	545	115						0	0				
5	1175	119						0	0				
6	775	123						40S	0				
7	950	121						10S	0				
8	870	127						5MR	0				
9	905	124						5S	0				
10	360	121						5MR	0				
11	680	125						5R	0				
12	835	124						5MR	0				
13	880	124						5S	0				
14	1030	125						5S	0				
15	575	121						5MS	0				
16	885	122						trace	0				
17	640	122						10S	0				
18	800	126						5S	0				
19	545	125						0	5MR				
20	595	124						0	0				
21	655	124						5R	0				
22	630	120						5S	0				
23	560	127						trace	trace				
24	575	120						0	0				
25	530	120						trace	0				
26	585	124						0	0				
27	525	127						5MR	0				
28	665	127						5MR	0				
29	590	125						trace	0				
30	470	125						0	0				
31	555	127						10S	trace				
32	635	119						trace	0				
33	570	127						trace	0				
34	270	127						5MR	0				
35	480	119						trace	0				
36	590	119						trace	0				
37	770	119						5S	0				
38	915	120						5S	5MS				
39	920	122						5MR	10MR				
40	330	116						10S	0				
41	485	125						5S	0				
42	395	125						5MS	0				
43	620	127						10S	0				
44	600	125						0	trace				

Information reported for the following traits by location: 47

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1	500	122	41.3	100	-	85	15	0	0	0	0	0	
2	-	-	-	-	-	20	80	0	0	0	0	0	
3	700	114	41.0	90	-	85	15	25MS	0	0	0	0	
4	-	-	-	-	-	20	80	N	N	N	N	N	
5	-	-	-	-	-	-	-	N	N	N	N	N	
6	900	122	34.0	85	-	80	20	50S	0	0	0	0	
7	550	122	30.7	80	-	75	25	R	0	0	0	0	
8	850	124	34.6	80	-	80	20	10MS	0	0	0	0	
9	500	127	36.5	75	-	70	30	10MS	0	0	0	0	
10	800	120	39.2	85	-	75	25	R	0	0	0	0	
11	900	120	38.1	105	-	85	15	100S	-	0	0	0	
12	900	122	43.1	90	-	85	15	10MR	0	0	0	0	
13	750	122	37.1	80	-	70	30	50S	0	0	0	0	
14	550	122	31.6	65	-	65	35	-	0	0	0	0	
15	850	124	36.2	90	-	75	25	-	0	0	0	0	
16	950	124	35.3	90	-	80	20	50S	0	0	0	0	
17	850	122	45.6	90	-	80	20	10MR	0	0	0	0	
18	700	122	36.1	90	-	75	25	10MR	25MR	0	0	0	
19	500	122	34.6	90	-	75	25	0	0	0	0	0	
20	550	127	43.9	90	-	80	20	0	0	0	0	0	
21	700	127	42.0	115	-	70	30	0	0	0	0	0	
22	500	122	38.3	85	-	65	35	0	0	0	0	0	
23	750	124	34.6	100	-	70	30	100S	0	0	0	0	
24	800	122	40.0	100	-	70	30	0	0	0	0	0	
25	700	122	41.2	95	-	75	25	R	-	0	0	0	
26	750	122	40.5	95	-	80	20	-	0	0	0	0	
27	920	127	37.3	80	-	80	20	30MR	0	0	0	0	
28	800	122	38.0	90	-	75	25	50S	0	0	0	0	
29	950	122	33.8	90	-	75	25	30MS	0	0	0	0	
30	500	122	33.6	80	-	55	45	40MR	0	0	0	0	
31	900	122	40.3	90	-	75	25	65S	0	0	0	0	
32	850	120	35.1	90	-	80	20	0	0	0	0	0	
33	600	127	32.5	90	-	70	30	0	0	0	0	0	
34	600	119	37.3	90	-	60	40	0	0	0	0	0	
35	600	124	39.1	100	-	70	30	0	0	0	0	0	
36	1000	124	38.3	110	-	85	15	100S	0	0	0	0	
37	750	124	34.4	95	-	80	20	100S	0	0	0	0	
38	850	124	39.5	75	-	75	25	0	0	0	0	0	
39	650	127	39.2	80	-	80	20	R	0	0	0	0	
40	-	-	-	-	-	-	-	N	N	N	N	N	
41	550	127	37.1	90	-	75	25	40MS	0	0	0	0	
42	450	127	32.7	75	-	70	30	10MR	0	0	0	0	
43	850	127	39.5	80	-	75	25	0	0	-	0	0	
44	670	127	39.3	85	-	80	20	0	0	0	0	0	

Information reported for the following traits by location: 167

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1	601	135	40.0	90	0	95	0	0	0	0	0	0	
2	295	133	38.0	60	0	95	0	0	0	0	0	0	
3	657	133	42.0	80	0	95	0	0	0	0	0	0	
4	437	133	43.0	60	0	95	0	0	0	0	0	0	
5	960	133	39.0	110	0	90	0	0	0	0	0	0	
6	1110	138	36.0	95	0	85	0	0	0	0	0	0	*
7	1035	135	38.0	90	0	95	0	0	0	0	0	0	*
8	922	138	39.0	85	0	90	0	0	0	0	0	0	
9	958	138	37.0	85	0	90	0	0	0	0	0	0	
10	821	139	28.0	85	0	90	0	0	0	0	0	0	
11	767	140	39.0	95	0	90	0	0	0	0	0	0	
12	1086	140	33.0	100	0	90	0	0	0	0	0	0	*
13	984	140	41.0	85	0	90	0	0	0	0	0	0	
14	817	140	41.0	85	0	95	0	0	0	0	0	0	
15	933	135	46.0	95	0	95	0	0	0	0	0	0	
16	945	135	34.0	90	0	95	0	0	0	0	0	0	
17	1120	141	46.0	90	0	90	0	0	0	0	0	0	*
18	955	139	36.0	95	0	90	0	0	0	0	0	0	
19	453	141	39.0	105	0	90	0	0	0	0	0	0	
20	925	135	42.0	95	0	95	0	0	0	0	0	0	
21	682	141	40.0	110	0	95	0	0	0	0	0	0	
22	1139	138	36.0	95	0	90	0	0	0	0	0	0	*
23	918	142	38.0	90	0	90	0	0	0	0	0	0	
24	857	138	38.0	85	0	90	0	0	0	0	0	0	
25	754	138	39.0	85	0	90	0	0	0	0	0	0	
26	830	139	38.0	90	0	90	0	0	0	0	0	0	
27	998	141	34.0	95	5	90	0	0	0	0	0	0	*
28	1028	140	37.0	100	5	90	0	0	0	0	0	0	*
29	1042	140	38.0	85	0	90	0	0	0	0	0	0	*
30	834	140	39.0	85	0	90	0	0	0	0	0	0	
31	911	140	40.0	95	5	90	0	0	0	0	0	0	
32	980	140	37.0	85	0	90	0	0	0	0	0	0	
33	939	142	35.0	85	0	85	0	0	0	0	0	0	
34	799	142	39.0	90	5	85	0	0	0	0	0	0	
35	737	139	33.0	105	10	85	0	0	0	0	0	0	
36	950	140	38.0	100	5	90	0	0	0	0	0	0	
37	935	139	35.0	95	5	90	0	0	0	0	0	0	
38	1056	140	37.0	95	0	85	0	0	0	0	0	0	*
39	837	138	40.0	100	10	85	0	0	0	0	0	0	
40	584	135	44.0	65	0	95	0	0	0	0	0	0	
41	822	138	33.0	105	10	95	0	0	0	0	0	0	
42	854	142	37.0	95	5	95	0	0	0	0	0	0	
43	1255	142	39.0	95	5	90	0	0	0	0	0	0	*
44	514	140	36.0	95	0	90	0	0	0	0	0	0	

Information reported for the following traits by location: 172

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1	480	189	45.7	80		75							
2	-												
3	402	183	42.8	70		70							
4	-												
5	490	192	45.1	94		75							
6	383	189	37.2	75		45							
7	404	189	41.5	67		45							
8	420	190	37.5	72		80							
9	448	190	43.6	75		65							
10	420	190	43.2	81		80							
11	418	189	40.4	77		68							
12	380	189	39.5	70		40							
13	320	189	37.4	65		55							
14	317	186	40.3	70		53							
15	362	186	45.8	68		57							
16	360	189	40.2	72		60							
17	494	186	53.0	67		80							
18	404	189	41.8	75		70							
19	396	186	43.8	77		48							
20	472	189	44.9	80		72							
21	347	189	46.5	70		50							
22	394	194	42.0	70		50							
23	428	186	42.4	72		50							
24	420	189	45.7	74		65							
25	434	189	43.9	76		75							
26	418	190	44.1	80		73							
27	413	186	41.2	78		70							
28	492	194	42.4	74		70							
29	415	194	38.0	72		49							
30	440	189	39.2	75		73							
31	370	190	40.8	77		60							
32	420	196	41.6	81		48							
33	415	196	38.4	81		68							
34	428	190	39.2	80		68							
35	395	196	44.4	75		60							
36	420	186	41.2	78		63							
37	390	186	38.8	77		73							
38	416	186	42.9	74		70							
39	420	186	46.0	76		71							
40	-												
41	395	190	43.7	81		65							
42	442	194	45.6	72		70							
43	408	190	45.2	73		80							
44	430	191	44.6	75		78							

Information reported for the following traits by location: 26

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1		125	40.0	110		90		0	0	0	2	0	
2		114	40.0	80		85		0	0	0	3	0	
3		119	42.0	90		90		0	0	0	2	0	
4		114	40.0	60		90		0	0	0	1	0	
5		115	38.0	80		95		0	0	0	3	0	
6		125	44.0	80		90		0	0	0	2	0	
7		124	40.0	80		90		0	0	0	1	0	
8		129	40.0	80		90		0	0	0	2	0	
9		127	42.0	85		90		0	0	0	1	0	
10		122	40.0	85		90		0	0	0	2	0	
11		129	40.0	100		90		0	0	0	1	0	
12		125	40.0	95		90		0	0	0	3	0	
13		125	40.0	85		90		0	0	0	2	0	
14		125	40.0	85		90		0	0	0	3	0	
15		120	41.0	110		90		0	0	0	2	0	
16		123	40.0	85		90		0	0	0	1	0	
17		124	41.0	85		90		0	0	0	2	0	
18		126	40.0	100		90		0	0	0	2	0	
19		127	40.0	106		90		0	0	0	2	0	
20		126	39.0	110		90		0	0	0	1	0	
21		127	40.0	110		90		0	0	0	2	0	
22		119	42.0	80		90		0	0	0	1	0	
23		127	41.0	100		90		0	0	0	2	0	
24		122	41.0	90		90		0	0	0	1	0	
25		122	42.0	95		90		0	0	0	2	0	
26		129	42.0	85		90		0	0	0	2	0	
27		128	41.0	90		90		0	0	0	3	0	
28		129	40.0	90		90		0	0	0	1	0	
29		128	40.0	90		90		0	0	0	2	0	
30		127	40.0	95		90		0	0	0	1	0	
31		126	41.0	95		90		0	0	0	2	0	
32		120	40.0	95		90		0	0	0	1	0	
33		129	41.0	95		90		0	0	0	2	0	
34		129	40.0	95		90		0	0	0	3	0	
35		122	40.0	95		90		0	0	0	1	0	
36		122	40.0	95		90		0	0	0	2	0	
37		122	40.0	90		90		0	0	0	3	0	
38		124	40.0	90		90		0	0	0	1	0	
39		123	40.0	110		90		0	0	0	2	0	
40		115	38.0	65		90		0	0	0	3	0	
41		124	40.0	120		90		0	0	0	4	0	
42		126	40.0	85		90		0	0	0	2	0	
43		131	41.0	95		90		0	0	0	1	0	
44		125	40.0	90		90		0	0	0	3	0	

Information reported for the following traits by location: 22

Entry Number	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1		121	41.1	112	0		100						*
2		111	35.0	80	0		100						
3		116	36.4	95	0		100						*
4		111	42.8	77	0		100						
5		111	43.6	97	0		100						
6		112	40.8	79	0		100						
7		120	31.5	100	0		100						
8		120	30.0	95	0		100						
9		120	28.5	97	0		100						
10		116	29.3	96	0		100						
11		120	40.6	107	0		100						*
12		116	-	102	0		100						
13		118	27.6	95	0		100						
14		119	22.9	86	0		100						
15		116	30.6	105	0		100						
16		117	19.8	92	0		100						
17		118	43.1	102	0		100						
18		118	27.4	96	0		100						
19		119	28.5	109	0		100						
20		120	33.7	112	0		100						
21		120	31.9	115	0		100						
22		115	30.0	93	0		100						
23		119	31.8	104	0		100						
24		117	36.8	106	0		100						
25		117	33.9	99	0		100						
26		122	31.5	93	0		100						
27		124	23.4	84	0		100						
28		122	32.9	92	0		100						
29		116	31.0	96	0		100						
30		116	33.6	98	0		100						
31		115	28.4	98	0		100						
32		116	31.7	94	0		100						
33		120	30.3	95	0		100						
34		120	32.3	98	0		100						
35		116	34.1	103	0		100						
36		116	29.1	105	0		100						
37		118	27.8	97	0		100						
38		120	26.1	95	0		100						
39		127	20.9	101	0		100						
40		116	16.9	60	0		100						
41		122	34.5	104	0		100						
42		122	24.2	85	0		100						
43		127	19.4	-	0		100						
44		122	23.8	88	0		100						

Table 5. Tabulation of Agronomic Characters by Entry for the 18th IWSWSN-EARLY.

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
1		302		110				40MS	0		3		
1	512	165	84.8	120	3								
1				65					5MS	40S			
1		127		115					30S			5	
1		141		110	90	90	100		40			7	
1		135			25						2		
1	480	155	48.4	95			75					4	
1	540	150			88						4	5	
1		119											
1	1090	143	42.0	100	30	55			40MR			3	
1		398		70					0		8		
1									0	10R			
1	836	164	37.1	106	40	71	100				1	2	
1	640	146	46.5	111	0	80	100				1	6	
1		129		89	0								
1	545	123						0	0				
1	500	122	41.3	100	-	85	15	0	0	0	0	0	
1	601	135	40.0	90	0	95	0	0	0	0	0	0	
1	480	189	45.7	80		75							
1		125	40.0	110		90		0	0	0	2	0	
1		121	41.1	112	0		100						*
MEAN	570.4	152.6	45.7	98.9	27.0	80.1	70.0				2.9	3.2	
2		262		70				N	N		9		
2	305	125	83.5	65	2								
2				50					40MS	trace			
2		110		70					R			8	
2		132		70	80	90	100		30			9	
2							0						
2	360	146	48.2	60			65					5	
2		146			100						5	7	
2		109											
2	40	138	42.0	58	0	49			trace			0	
2		291		55					0		8		
2									10R	0			
2	172	458	27.3	67		64	85				4	3	
2	550	131	41.0	77	0	100	100				2	8	
2		-		-	0								
2	375	120						5MS	0				
2	-	-	-	-	-	20	80	0	0	0	0	0	
2	295	133	38.0	60	0	95	0	0	0	0	0	0	
2	-												
2		114	40.0	80		85		0	0	0	3	0	
2		111	35.0	80	0		100						
MEAN	342.8	168.4	44.4	66.3	22.8	71.9	65.3				3.3	4.0	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
3		284		90				50MS	30S		4		
3	461	150	83.0	100	2								
3				55					60S	30S			
3		118		80					20MS			2	
3		132		80	80	100	100		30			9	
3		125			10						3		
3	520	148	47.2	75			65					6	
3		142			100						7	6	
3		108											
3	1000	136	44.0	85	0	51			60S			5	
3		297		65					60S		9		
3									0	70S			
3	1007	462	35.7	98		70	100				3	3	
3	770	133	48.0	97	0	80	100				2	8	
3		127		75	0								
3	470	117						trace	trace				
3	700	114	41.0	90	-	85	15	25MS	0	0	0	0	
3	657	133	42.0	80	0	95	0	0	0	0	0	0	
3	402	183	42.8	70		70							
3		119	42.0	90		90		0	0	0	2	0	
3		116	36.4	95	0		100						*
MEAN	623.4	166.5	46.2	82.8	21.3	80.1	58.6				3.3	3.9	
4		263		75				N	N		9		
4	386	127	84.8	70	2								
4				50					50MS	5MS			
4		110		75				50S	R			3	
4		131		63	80	90	100		0			9	
4		110					25				3		
4	360	145	50.4	60			65					4	
4		144			100						5	6	
4		107											
4	100	136	41.5	61	0	43			trace			0	
4		293		55					0		8		
4									-	-			
4	552	158	33.8	71		68	92				3	3	
4	790	130	48.0	82	0	100	100				1	6	
4		-		-	0								
4	545	115						0	0				
4	-	-	-	-	-	20	80	N	N	N	N	N	
4	437	133	43.0	60	0	95	0	0	0	0	0	0	
4	-												
4		114	40.0	60		90		0	0	0	1	0	
4		111	42.8	77	0		100						
MEAN	452.9	145.4	48.0	65.1	22.8	72.3	70.3				5.8	3.4	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
6		304		100				50MS	70S		5		
6	476	165	82.6	90	2				S				
6				60					80S				
6		129		95				60S	trace			3	
6		142		85	80	100	100		70			9	
6		141									3		
6	700	153	41.2	85			75					3	
6		148			75						4	7	
6		119											
6	870	142	33.0	90	0	61			40S			5	
6		309		85					80S		8		
6									0	0			
6	661	164	28.6	95		70	100				3	4	
6	855	146	40.0	97	0	80	100				3	7	
6		129		73	0								
6	775	123						40S	0				
6	900	122	34.0	85	-	80	20	50S	0	0	0	0	
6	1110	138	36.0	95	0	85	0	0	0	0	0	0	*
6	383	189	37.2	75		45							
6		125	44.0	80		90		0	0	0	2	0	
6		112	40.8	79	0		100						
MEAN	747.8	157.9	41.7	85.6	19.6	75.4	70.7				3.1	3.5	
7		302		95				30MS	0		6		
7	608	160	83.9	90	2								
7				55					80S	30S			
7		128		90					20MS			7	
7		141		100	90	100	100		60			9	
7		141									4		
7	560	156	41.8	80			65					3	
7	760	148			100						4	8	
7		115											
7	700	143	34.0	87	0	76			trace			7	
7		307		75					0		8		
7									10S	80S			
7	583	164	28.2	90		72	100				2	3	
7	705	144	40.0	92	0	80	100				2	7	
7		131		77	0								
7	950	121						10S	0				
7	550	122	30.7	80	-	75	25	R	0	0	0	0	
7	1035	135	38.0	90	0	95	0	0	0	0	0	0	*
7	404	189	41.5	67		45							
7		124	40.0	80		90		0	0	0	1	0	
7		120	31.5	100	0		100						
MEAN	685.5	157.4	41.0	84.3	24.0	78.1	70.0				3.0	4.1	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
8		303		90				90S	30S		2		
8	437	167	78.3	85	2			S					
8				60					5MR	trace			*
8		128		80				10MS	trace			5	
8		143		80	80	80	100		60			9	
8		141									4		
8	510	156	42.4	85			100					4	
8		149			100						5	7	
8		117											
8	570	144	29.0	86	0	52			60S			7	
8		308		70					0		8		
8									0	trace			
8	655	164	24.8	86		74	100				3	4	
8	650	146	36.0	98	0	80	100				2	7	
8		133		70	0								
8	870	127						5MR	0				
8	850	124	34.6	80	-	80	20	10MS	0	0	0	0	
8	922	138	39.0	85	0	90	0	0	0	0	0	0	
8	420	190	37.5	72		80							
8		129	40.0	80		90		0	0	0	2	0	
8		120	30.0	95	0		100						
MEAN	663.8	159.3	69.25	81.0	22.8	78.3	74.3				2.9	4.5	
9		301		100				70S	30S		4		
9	529	167	82.6	95	2								
9				60					90S	30S			
9		128		90					10MR			3	
9		143		90	80	100	100		60			7	
9		143									6		
9	550	157	39.4	90			100					5	
9		149			100						4	7	
9		117											
9	730	145	32.0	87	0	71			trace			7	
9		309		75					60S		6		
9									0	70S			
9	582	165	25.6	100		69	100				2	3	
9	760	146	40.0	92	0	80	100				2	7	
9		120		73	0								
9	905	124						5S	0				
9	500	127	36.5	75	-	70	30	10MS	0	0	0	0	
9	958	138	37.0	85	0	90	0	0	0	0	0	0	
9	448	190	43.6	75		65							
9		127	42.0	85		90		0	0	0	1	0	
9		120	28.5	97	0		100						
MEAN	682.4	158.7	49.7	85.6	22.8	75.4	75.7				2.8	3.9	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
10		299		100				0	0		4		
10	585	165	78.1	95	2								*
10				60						60S			
10		125		85				10MS	trace			2	*
10		139		85	80	100	100		0			3	
10		141									4		
10	660	156	46.6	95			100					4	
10		148			100						3	5	
10		113											
10	700	143	37.5	86	0	57			0			0	*
10		306		70					0		5		
10									0	trace			
10	464	164	26.6	95		62	100				3	1	
10	845	146	44.5	95	0	80	100				1	4	
10		128		78	0								*
10	360	121						5MR	0				
10	800	120	39.2	85	-	75	25	R	0	0	0	0	
10	821	139	28.0	85	0	90	0	0	0	0	0	0	
10	420	190	43.2	81		80							
10		122	40.0	85		90		0	0	0	2	0	
10		116	29.3	96	0		100						
MEAN	628.3	156.9	41.3	86.0	22.3	79.3	75.0				2.4	1.9	
11		303		110				40MS	40S		6		
11	374	167	81.3	100	2								
11				65					90S				
11		125		90					R			1	*
11		144		100	90	100	100		80			6	
11		140									4		
11	660	158	45.2	85			100					1	
11		150			100						5	6	
11		119											
11	860	145	41.0	90	0	46			40S			3	
11		309		90					5S		4		
11									0	trace			
11	620	167	32.7	110		61	100				2	2	
11	895	147	48.0	116	0	80	100				3	6	
11		132		80	0								
11	680	125						5R	0				
11	900	120	38.1	105	-	85	15	100S	-	0	0	0	
11	767	140	39.0	95	0	90	0	0	0	0	0	0	
11	418	189	40.4	77		68							
11		129	40.0	100		90		0	0	0	1	0	
11		120	40.6	107	0		100						*
MEAN	686.0	159.4	44.6	95.0	24.0	77.5	73.6				2.8	2.5	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
12		295		105				40MS	20S		5		
12	592	167	83.5	100	2								
12				70					80S				
12		125		100					20MS			3	
12		142		90	65	100	100		50			8	
12		136			10						5		
12	550	153	41.6	80			100					6	
12		150			100						4	6	
12		115											
12	620	147	32.0	90	0	33			100S			5	
12		307		85					40S		4		
12									0	90S			
12	753	166	27.2	100		61	100				2	2	
12	930	146	39.0	106	0	80	100				3	7	
12		128		75	0								
12	835	124						5MR	0				
12	900	122	43.1	90	-	85	15	10MR	0	0	0	0	
12	1086	140	33.0	100	0	90	0	0	0	0	0	0	*
12	380	189	39.5	70		40							
12		125	40.0	95		90		0	0	0	3	0	
12		116	-	102	0		100						
MEAN	738.4	157.5	42.8	91.1	19.7	72.4	73.5				2.9	3.7	
13		295		95				0	30S		5		
13	630	156	89.3	95	2								
13				60					80S				
13		127		85					trace			4	*
13		142		80	65	100	100		50			7	
13		137			10						4		
13	480	156	41.8	85			75					4	
13		150			75						6	7	
13		115											
13	700	144	34.0	86	0	46			trace			5	
13		309		70					0		9		
13									0	10R			
13	690	163	29.0	90		69	100				2	2	
13	710	146	40.0	92	0	80	100				2	7	
13		131		70	0								
13	880	124						5S	0				
13	750	122	37.1	80	-	70	30	50S	0	0	0	0	
13	984	140	41.0	85	0	90	0	0	0	0	0	0	
13	320	189	37.4	65		55							
13		125	40.0	85		90		0	0	0	2	0	
13		118	27.6	95	0		100						
MEAN	682.7	147.3	43.7	82.4	16.9	75.0	72.1				3.5	3.6	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
14		295		95				5MR	40S		5		
14	691	156	84.8	100	2								**
14				60					90S				
14		127		85					30S			4	
14		142		80	60	100	100		35			5	
14		130			15						3		
14	590	156	45.0	85			100					2	
14		150			88						5	7	
14		115											
14	1030	145	36.0	86	0	62			0			5	
14		308		70					20MS		8		
14									0	10R			
14	572	163	26.2	93		65	100				3	0	
14	695	146	40.5	86	0	80	100				2	7	
14		130		74	0								
14	1030	125						5S	0				
14	550	122	31.6	65	-	65	35	-	0	0	0	0	
14	817	140	41.0	85	0	95	0	0	0	0	0	0	
14	317	186	40.3	70		53							
14		125	40.0	85		90		0	0	0	3	0	
14		119	22.9	86	0		100						
MEAN	657.8	156.8	40.8	81.9	18.3	76.3	75.4				3.2	3.0	
15		296		110				0	50S		3		
15	596	160	82.6	100	3								
15				65						60S			
15		124		100					50S			1	
15		138		100	90	100	100		60			4	
15		137			15						5		
15	570	156	42.4	80			100					4	
15		146			100						6	4	
15		115											
15	1070	144	44.0	90	0	46			0			1	
15		307		80					50S		4		
15									0	90S			
15	835	163	33.6	105		74	100				3	0	
15	940	141	52.5	105	0	80	100				1	6	
15		128		79	0								
15	575	121						5MS	0				
15	850	124	36.2	90	-	75	25	-	0	0	0	0	
15	933	135	46.0	95	0	95	0	0	0	0	0	0	
15	362	186	45.8	68		57							
15		120	41.0	110		90		0	0	0	2	0	
15		116	30.6	105	0		100						
MEAN	707.8	135.5	45.5	92.5	23.1	77.1	75.0				3.7	2.0	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
16		297		85				70S	10MS		3		
16	623	156	79.4	95	2			S					*
16				60					80S				
16		124		90					R			3	
16		138		80	80	90	100		60			9	
16		135			10						5		*
16	680	156	47.4	90			100					2	
16	440	147			88						4	5	
16		113											
16	750	144	30.0	85	0	81			0			3	
16		305		80					0		8		
16									0	5R			
16	459	164	23.2	92		73	100				3	2	
16	680	141	40.0	134	0	80	100				2	8	
16		128		70	0								
16	885	122						trace	0				
16	950	124	35.3	90	-	80	20	50S	0	0	0	0	
16	945	135	34.0	90	0	95	0	0	0	0	0	0	
16	360	189	40.2	72		60							
16		123	40.0	85		90		0	0	0	1	0	
16		117	19.8	92	0		100						
MEAN	677.2	155.7	38.9	86.9	20.0	81.1	74.3				2.9	3.2	
17		297		105				0	30S		4		
17	907	163	79.4	100	2								***
17				65					80S				
17		123		100				5MR	R			2	*
17		143		90	80	80	100		40			3	
17		136			45						4		
17	580	153	46.0	100			100					4	
17	550	148			50						5	4	
17		112											
17	780	144	41.0	83	0	35			0			1	
17		303		85					30S		4		
17									0	5R			
17	475	165	30.7	98		73	100				3	0	
17	915	142	52.0	97	0	80	100				2	7	
17		132		70	0								
17	640	122						10S	0				
17	850	122	45.6	90	-	80	20	10MR	0	0	0	0	
17	1120	141	46.0	90	0	90	0	0	0	0	0	0	*
17	494	186	53.0	67		80							
17		124	41.0	85		90		0	0	0	2	0	
17		118	43.1	102	0		100						
MEAN	791.1	156.5	47.8	89.2	19.7	76.0	74.3				2.7	2.7	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
18		304		105				30MS	40S		3		
18	807	167	82.4	105	3								*
18				60					90S				
18		123		100					40R			4	
18		141		90	80	100	100		70			3	
18		138			5								
18	570	156	40.2	75			100					3	
18	430	150			75						5	6	
18		119											
18	1070	144	33.5	95	0	53			0			0	*
18		307		80					50S		5		
18									0	100S			
18	560	165	24.5	101	60	71	100				3	0	
18	815	144	36.0	102	0	80	100				2	6	
18		130		76	0								*
18	800	126						5S	0				
18	700	122	36.1	90	-	75	25	10MR	25MR	0	0	0	
18	955	139	36.0	95	0	90	0	0	0	0	0	0	
18	404	189	41.8	75		70							
18		126	40.0	100		90		0	0	0	2	0	
18		118	27.4	96	0		100						
MEAN	671.2	158.3	39.8	90.1	22.3	75.6	75.0				2.6	2.2	
19		303		120				0	0		4		
19	608	167	82.6	115	2								
19				70						70S			
19		129		110					0R			2	
19		138		95	80	100	100		70			7	
19		137			4								
19	650	156	45.8	85			100					5	
19	640	150			75						5	5	
19		119											
19	610	146	38.0	102	0	43			0			0	*
19		308		85					0		3		
19									0	trace			
19	553	166	30.2	100		71	100				2	0	
19	860	148	47.0	112	0	80	100				3	2	
19		133		77	0								
19	545	125						0	5MR				
19	500	122	34.6	90	-	75	25	0	0	0	0	0	
19	453	141	39.0	105	0	90	0	0	0	0	0	0	
19	396	186	43.8	77		48							
19		127	40.0	106		90		0	0	0	2	0	
19		119	28.5	109	0		100						
MEAN	581.5	159.5	48.0	97.1	17.9	74.6	75.0				2.7	2.1	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
20		303		125				30MS	0		4		
20	764	167	85.9	105	2								
20													
20		128		110					40S			6	
20		140		105	95	100	100		70			6	
20		132			75						2		
20	580	153	49.4	100			100					4	
20	460	151			88						4	6	
20		119											
20	940	145	42.0	105	50	52			trace			1	
20		308		85					30S		7		
20									0	60S			
20	453	164	32.8	100	95	71	100				1	0	
20	700	148	47.5	115	0	80	100				1	7	
20		129		90	0								
20	595	124						0	0				
20	550	127	43.9	90	-	80	20	0	0	0	0	0	
20	925	135	42.0	95	0	95	0	0	0	0	0	0	
20	472	189	44.9	80		72							
20		126	39.0	110		90		0	0	0	1	0	
20		120	33.7	112	0		100						
MEAN	643.9	158.3	46.1	101.3	40.5	80.0	74.3				2.2	3.0	
21		303		125				20MS	40S		3		
21	596	167	80.1	130	3								
21				75						60S			
21		128		115					40S			3	
21		143		115	100	100	100		70			3	
21		141			25						3		
21	680	156	42.8	75			100					2	
21	800	150			88						3	5	
21		117											
21	560	146	42.5	110	0	47			0			0	
21		310		85					80S		2		
21									0	N			
21	463	165	28.8	115	95	69	100				2	0	
21	930	147	49.0	121	0	80	100				3	5	
21		129		82	0								
21	655	124						5R	0				
21	700	127	42.0	115	-	70	30	0	0	0	0	0	
21	682	141	40.0	110	0	95	0	0	0	0	0	0	
21	347	189	46.5	70		50							
21		127	40.0	110		90		0	0	0	2	0	
21		120	31.9	115	0		100						
MEAN	641.8	158.5	44.4	104.4	41.1	75.1	75.7				2.0	1.8	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
22		288		95				10MS	70S		4		
22	900	156	83.5	100	2								**
22				60						70S			
22		122		90				20MS	20MS			4	
22		144		105	100	90	100		trace			1	
22		141			10						3		
22	650	156	42.8	80			65					2	
22		145			100						3	5	
22		109											
22	620	142	37.0	77	0	53			0			5	
22		305		75					50S		7		
22									0	30M			
22	386	165	26.1	85		69	100				2	0	
22	810	141	42.0	89	0	100	100				2	7	
22		128		64	0								
22	630	120						5S	0				
22	500	122	38.3	85	-	65	35	0	0	0	0	0	
22	1139	138	36.0	95	0	90	0	0	0	0	0	0	*
22	394	194	42.0	70		50							
22		119	42.0	80		90		0	0	0	1	0	
22		115	30.0	93	0		100						
MEAN	689.9	155.3	42.0	83.9	23.6	75.9	77.4				2.4	2.3	
23		295		100				70S	0		4		
23	749	155	77.4	115	2								**
23				65					80S				
23		130		110					10MR			5	
23		145		100	80	100	100		80			6	
23		140									4		*
23	700	156	48.6	80			100					1	
23		151			88						4	7	
23		115											
23	680	148	37.0	90	0	42			0			5	
23		310		80					50S		7		
23									0	20M			
23	571	166	29.1	103		64	100				2	0	
23	451	148	35.0	103	0	100	100				4	6	
23		138		73	0								
23	560	127						trace	trace				
23	750	124	34.6	100	-	70	30	100S	0	0	0	0	
23	918	142	38.0	90	0	90	0	0	0	0	0	0	
23	428	186	42.4	72		50							
23		127	41.0	100		90		0	0	0	2	0	
23		119	31.8	104	0		100						
MEAN	645.2	149.1	41.0	92.8	21.2	75.8	75.7				2.0	3.0	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
24		296		100				30MS	0		4		
24	666	156	81.9	95	3								
24				60					90S				
24		124		90					60S			6	
24		137		85	60	100	100		60			7	
24		141			10						3		
24	490	156	38.0	85			100					6	
24		148			88						5	7	
24		115											
24	500	144	37.0	85	0	38			0			7	
24		305		75					15S		5		
24									0	trace			
24	403	164	27.8	95		63	100				2	0	
24	720	142	46.0	104	0	80	100				1	7	
24		128		75	0								
24	575	120						0	0				
24	800	122	40.0	100	-	70	30	0	0	0	0	0	
24	857	138	38.0	85	0	90	0	0	0	0	0	0	
24	420	189	45.7	74		65							
24		122	41.0	90		90		0	0	0	1	0	
24		117	36.8	106	0		100						
MEAN	603.2	166.0	48.2	87.8	17.9	74.5	75.7				2.4	4.0	
25		300		95				50MS	5MR		5		
25	749	160	80.8	95	2								
25				60					80S	40S			
25		124		90					60S			5	
25		139		85	60	100	100		70			7	
25		142			20						3		
25	640	156	49.0	90			100					4	
25	540	149			88						5	6	
25		115											
25	480	144	34.0	88	0	58			trace			5	
25		307		70					60S		4		
25									30S	30S			
25	447	164	26.9	95		63	100				3	0	
25	645	144	45.5	101	0	80	100				3	7	
25		128		70	0								
25	530	120						trace	0				
25	700	122	41.2	95	-	75	25	R	-	0	0	0	
25	754	138	39.0	85	0	90	0	0	0	0	0	0	
25	434	189	43.9	76		75							
25		122	42.0	95		90		0	0	0	2	0	
25		117	33.9	99	0		100						
MEAN	591.9	156.8	43.8	86.6	18.9	73.9	76.0				2.6	3.4	

Entry	Yield (g/plot)	Days to Flower	Test Wt or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
26		308		100				60S	30S		4		
26	681	167	79.4	100	2								*
26				65									
26		129		95					R			5	
26		142		90	80	100	100		80			5	
26		136			20						4		
26	710	153	45.6	105			100					3	
26	620	150			75						5	6	
26		119											
26	620	145	34.0	88	0	50			trace			5	
26		309		80					60S		5		
26									0	trace			
26	457	164	25.9	95		68	100				3	0	
26	765	147	48.0	109	0	80	100				2	6	
26		128		73	0								
26	585	124						0	0				
26	750	122	40.5	95	-	80	20	-	0	0	0	0	
26	830	139	38.0	90	0	90	0	0	0	0	0	0	
26	418	190	44.1	80		73							
26		129	42.0	85		90		0	0	0	2	0	
26		122	31.5	93	0		100						
MEAN	643.5	159.1	43.9	90.2	19.7	75.9	74.3				2.8	3.0	
27		308		120				60MS	20MS		4		
27	991	170	83.3	105	2								**
27				70									
27		120		100					R			4	
27		142		90	80	100	100		80			7	
27		137			15						4		
27	580	153	43.4	100			90					5	
27	470	150			88						4	5	
27		119											
27	750	147	28.0	88	0	56			0			5	
27		307		75					40MS		4		*
27									0	trace			
27	467	165	22.4	95		67	99				3	0	
27	745	146	35.0	99	0	80	100				2	6	
27		128		77	0								
27	525	127						5MR	0				
27	920	127	37.3	80	-	80	20	30MR	0	0	0	0	
27	998	141	34.0	95	5	90	0	0	0	0	0	0	*
27	413	186	41.2	78		70							
27		128	41.0	90		90		0	0	0	3	0	
27		124	23.4	84	0		100						
MEAN	686.2	159.2	38.9	90.1	21.1	79.1	77.				2.7	3.2	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
28		308		110				50MS	20S		4		
28	601	170	82.1	95	2								
28				65									
28		130		100					R			3	
28		142		90	80	90	100		70			7	
28		141			15						5		
28	650	158	40.8	90			100					2	
28	680	149			88						4	6	
28		119											
28	710	145	32.0	92	0	54			0			1	*
28		312		85					60S		3		
28									0	trace			
28	382	164	24.8	95		66	100				3	0	
28	795	146	43.0	96	0	80	100				2	5	
28		133		70	0								
28	665	127						5MR	0				
28	800	122	38.0	90	-	75	25	50S	0	0	0	0	
28	1028	140	37.0	100	5	90	0	0	0	0	0	0	*
28	492	194	42.4	74		70							
28		129	40.0	90		90		0	0	0	1	0	
28		122	32.9	92	0		100						
MEAN	650.3	160.6	41.3	89.6	21.1	75.9	75.0				2.4	2.4	
29		297		100				50MS	20S		3		
29	553	170	82.6	90	2								
29				60									
29		129		95				0.5MR	30S			5	
29		144		90	80	90	100		70			9	
29		132			20						4		*
29	690	156	42.2	85			100					6	
29	600	150			88						4	6	
29		117											
29	630	148	30.0	87	0	52			0			5	
29		312		95					40MS		3		
29									0	trace			
29	556	166	25.9	101		67	100				3	0	
29	650	148	35.0	99	0	100	100				3	6	
29		133		76	0								
29	590	125						trace	0				
29	950	122	33.8	90	-	75	25	30MS	0	0	0	0	
29	1042	140	38.0	85	0	90	0	0	0	0	0	0	*
29	415	194	38.0	72		49							
29		128	40.0	90		90		0	0	0	2	0	
29		116	31.0	96	0		100						
MEAN	587.6	150.5	39.7	88.2	21.1	75.6	75.0				3.4	3.	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
30		287		95				60MS	30S		4		
30	811	147	83.3	100	2			S					**
30				65									
30		129		95					R			5	
30		143		85	65	90	100		trace			9	
30		140			15						5		
30	680	155	44.4	100			100					6	
30	620	149			88						5	4	
30		115											
30	670	146	34.0	90	0	58			0			7	
30		312		95					60S		4		
30									0	10R			
30	475	165	26.6	98		69	100				3	0	
30	735	148	39.0	108	0	80	100				3	7	
30		129		75	0								
30	470	125						0	0				
30	500	122	33.6	80	-	55	45	40MR	0	0	0	0	
30	834	140	39.0	85	0	90	0	0	0	0	0	0	
30	440	189	39.2	75		73							
30		127	40.0	95		90		0	0	0	1	0	
30		116	33.6	98	0		100						
MEAN	623.5	157.1	41.8	89.9	6.9	75.6	77.9				2.8	3.8	
31		298		105				20MR	60S		5		
31	659	155	84.6	105	2				S				
31				65									
31		128		95					trace			5	
31		139		90	85	100	100		60			9	
31		130			30						5		
31	700	152	46.4	90			100					4	
31	620	148			75						5	6	
31		115											
31	820	144	37.0	90	0	68			0			1	
31		306		85					60S		7		
31									0	5R			
31	416	163	25.5	100		70	100				5	0	
31	615	146	41.5	103	0	80	100				2	7	
31		130		75	0								*
31	555	127						10S	trace				
31	900	122	40.3	90	-	75	25	65S	0	0	0	0	
31	911	140	40.0	95	5	90	0	0	0	0	0	0	
31	370	190	40.8	77		60							
31		126	41.0	95		90		0	0	0	2	0	
31		115	28.4	98	0		100						
MEAN	555.6	145.5	42.8	91.1	21.9	79.1	75.0				3.3	3.2	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
32		287		105				30MS	30S		6		
32	1035	143	84.1	110	2								*
32				70						70S			
32		124		100					R			3	
32		138		95	85	90	100		40			6	
32		144									5		
32	660	158	41.6	90			100					3	
32	600	147			63						4	5	
32		112											
32	800	142	37.0	96	0	55			0			1	*
32		302		80					30S		5		
32									0	20MR			
32	572	163	25.2	102		72	100				5	0	
32	735	142	43.0	107	0	80	100				2	6	
32		129		84	0								
32	635	119						trace	0				
32	850	120	35.1	90	-	80	20	0	0	0	0	0	
32	980	140	37.0	85	0	90	0	0	0	0	0	0	
32	420	196	41.6	81		48							
32		120	40.0	95		90		0	0	0	1	0	
32		116	31.7	94	0		100						
MEAN	728.7	154.6	41.6	92.8	18.8	75.6	74.3				3.1	2.4	
33		302		115				30MS	20MS		4		
33	859	160	83.9	110	2								
33				70						30S			
33		125		110					50S			5	
33		142		95	85	100	100		80			7	
33		141									4		
33	750	158	41.4	85			100					3	
33	620	150			63						4	5	
33		117											
33	720	145	33.0	90	0	53			40MR			5	
33		311		90					40MS		3		
33									0	60S			
33	640	167	25.9	100		72	100				3	0	
33	795	147	40.0	108	0	80	100				2	5	
33		135		77	0								
33	570	127						trace	0				
33	600	127	32.5	90	-	70	30	0	0	0	0	0	
33	939	142	35.0	85	0	85	0	0	0	0	0	0	
33	415	196	38.4	81		68							
33		129	41.0	95		90		0	0	0	2	0	
33		120	30.3	95	0		100						
MEAN	590.8	160.1	40.1	99.5	18.8	77.3	75.7				3.1	3.0	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
34		299		110				10MR	60S		4		
34	871	156	81.9	110	2				S				*
34				65									
34		129		100					trace			6	
34		149		90	65	100	100		80			9	
34		144									4		
34	710	158	41.0	85			100					3	
34	400	150			75						5	6	
34		117											
34	700	147	34.5	87	0	50			trace			7	
34		310		80					60S		8		
34									0	15R			
34	470	165	26.4	106		71	100				3	2	
34	449	150	39.5	104	0	100	100				2	7	
34		133		70	0								*
34	270	127						5MR	0				
34	600	119	37.3	90	-	60	40	0	0	0	0	0	
34	799	142	39.0	90	5	85	0	0	0	0	0	0	
34	428	190	39.2	80		68							
34		129	40.0	95		90		0	0	0	3	0	
34		120	32.3	98	0		100						
MEAN	569.7	159.7	41.1	91.3	18.4	78.0	77.1				3.2	4.0	
35		297		115				30MS	40S		5		
35	970	156	83.7	110	2								*
35				65						trace			*
35		121		100					trace			5	
35		139		95	65	100	100		80			9	
35		128			10						2		
35	400	158	34.8	85			100					5	
35		148			88						4	7	
35		113											
35	820	145	33.5	85	0	26			0			5	*
35		305		80					40S		9		
35									0	trace			
35	595	162	25.8	106		69	100				3	0	
35	650	147	40.5	109	0	100	100				1	6	
35		129		77	0								
35	480	119						trace	0				
35	600	124	39.1	100	-	70	30	0	0	0	0	0	
35	737	139	33.0	105	10	85	0	0	0	0	0	0	
35	395	196	44.4	75		60							
35		122	40.0	95		90		0	0	0	1	0	
35		116	34.1	103	0		100						
MEAN	627.4	136.0	40.9	91.1	19.4	75.0	75.7				2.8	3.7	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
36		286		115				70S	0		3		
36	422	165	81.9	105	2			S					
36				65									
36		125		100					60S			6	
36		141		95	100	90	100		80			9	
36		137			40						4		
36	720	153	46.4	95			100					3	
36		147			100						5	8	
36		115											
36	630	144	32.0	88	0	42			trace			7	
36		306		80					20MS		9		
36									0	10R			
36	535	165	26.0	97	5	73	100				3	3	
36	555	147	39.5	112	0	80	100				2	8	
36		130		77	0								
36	590	119						trace	0				
36	1000	124	38.3	110	-	85	15	100S	0	0	0	0	
36	950	140	38.0	100	5	90	0	0	0	0	0	0	
36	420	186	41.2	78		63							
36		122	40.0	95		90		0	0	0	2	0	
36		116	29.1	105	0		100						
MEAN	646.9	155.2	41.2	91.8	25.2	76.6	73.6				3.1	4.4	
37		292		105				60MS	30S		5		
37	953	150	80.6	110	2			S					**
37				65						60S			
37		124		95					30S			5	
37		137		90	100	100	100		50			9	
37		142			25						8		
37	560	156	39.4	95			100					5	
37		148			88						5	7	
37		112											
37	810	143	31.0	95	0	61			trace			5	
37		303		75					60S		8		
37									N	40S			
37	543	164	24.6	97	50	72	100				3	0	
37	680	142	37.5	100	0	80	100				1	7	
37		128		80	0								
37	770	119						5S	0				
37	750	124	34.4	95	-	80	20	100S	0	0	0	0	
37	935	139	35.0	95	5	90	0	0	0	0	0	0	
37	390	186	38.8	77		73							
37		122	40.0	90		90		0	0	0	3	0	
37		118	27.8	97	0		100						
MEAN	710.1	155.2	38.9	91.2	27.0	80.8	74.8				3.7	3.8	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
38		296		105				20MS	5MS		5		
38	1188	153	83.0	105	2								*
38				65						50S			
38		125		95					30S			7	
38		140		90	80	100	100		90			9	
38		140			25						4		
38	700	158	45.2	90			100					6	
38		148			88						5	7	
38		113											
38	720	145	29.0	85	0	52			10MR			0	*
38		307		75					10MS		9		
38									20S	80S			
38	430	165	26.6	95	50	69	100				2	2	
38	790	147	45.0	98	0	100	100				3	8	
38		131		78	0								
38	915	120						5S	5MS				
38	850	124	39.5	75	-	75	25	0	0	0	0	0	
38	1056	140	37.0	95	0	85	0	0	0	0	0	0	*
38	416	186	42.9	74		70							
38		124	40.0	90		90		0	0	0	1	0	
38		120	26.1	95	0		100						
MEAN	785.0	158.9	41.4	88.1	24.5	80.1	75.0				3.2	3.9	
39		305		125				30MS	40MS		5		
39	910	165	86.2	125	3								
39				75						60S			
39		122		110				20MS	0.5R			6	
39		139		100	100	100	100		80			9	
39		140			10						5		*
39	680	156	42.6	80			100					3	
39	690	146			63						4	6	
39		118											
39	1240	142	45.0	101	0	55			0			1	*
39		310		85					70S		8		
39									0	80S			
39	814	163	28.6	103		71	100				2	0	
39	860	146	47.5	105	0	100	100				2	4	
39		130		88	0								
39	920	122						5MR	10MR				
39	650	127	39.2	80	-	80	20	R	0	0	0	0	
39	837	138	40.0	100	10	85	0	0	0	0	0	0	
39	420	186	46.0	76		71							
39		123	40.0	110		90		0	0	0	2	0	
39		127	20.9	101	0		100						
MEAN	753.7	153.2	43.8	97.6	20.7	81.5	74.3				3.1	2.9	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
40		263		70				N	N		9		
40	655	123	86.4	80	2								
40													
40		110		75				30S	R			8	
40		132		70	80	100	100		35			9	
40		110					60				6		
40	330	148	44.2	65			50					6	
40	230	145			75						4	7	
40		109											
40	110	140	45.5	60	0	59			0			3	
40		291		55					0		9		
40									0	40S			
40	230	158	23.8	65		68	82				5	0	
40	570	131	42.0	77	0	100	100				2	9	
40		-		-	0								
40	330	116						10S	0				
40	-	-	-	-	-	-	-	N	N	N	N	N	
40	584	135	44.0	65	0	95	0	0	0	0	0	0	
40	-												
40		115	38.0	65		90		0	0	0	3	0	
40		116	16.9	60	0		100						
MEAN	379.9	146.4	42.6	87.3	19.8	85.3	70.3				4.8	4.7	
41		301		125				60MS	0		4		
41	766	165	85.3	120	3								
41				75									
41		127		115					R			6	
41		139		110	100	100	100		70			8	
41		130			10						5		
41	730	156	46.0	85			100					1	
41	865	149			88						3	6	
41		117											
41	1030	144	44.0	115	0	64			0			5	*
41		308		85					60MS		4		
41									0	40M			
41	973	165	34.3	110		69	100				1	0	
41	840	146	51.0	112	0	100	100				3	7	
41		129		85	0								
41	485	125						5S	0				
41	550	127	37.1	90	-	75	25	40MS	0	0	0	0	
41	822	138	33.0	105	10	95	0	0	0	0	0	0	
41	395	190	43.7	81		65							
41		124	40.0	120		90		0	0	0	4	0	
41		122	34.5	104	0		100						
MEAN	716.0	158.0	44.9	102.3	23.7	82.3	75.0				2.7	3.9	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
42		295		110				20MS	20MS		3		
42	687	156	85.5	100	1								*
42				60									
42		128		90					10MR			4	
42		139		90	80	90	100		0			4	
42		139			15						5		
42	640	155	44.6	95			100					3	
42		148			100						3	6	
42		115											
42	610	145	28.5	87	0	63			0			1	*
42		307		80					10MS		6		
42									0	trace			
42	473	166	23.4	90		68	100				3	0	
42	665	146	42.5	98	0	100	100				2	6	
42		130		68	0								
42	395	125						5MS	0				
42	450	127	32.7	75	-	70	30	10MR	0	0	0	0	
42	854	142	37.0	95	5	95	0	0	0	0	0	0	
42	442	194	45.6	72		70							
42		126	40.0	85		90		0	0	0	2	0	
42		122	24.2	85	0		100						
MEAN	579.6	158.2	40.4	86.3	22.3	80.8	75.7				2.7	2.1	
43		310		110				10MS	20MS		4		
43	1133	160	82.8	110	2								**
43				60						60S			
43		131		110				10MS	30S			5	
43		145		100	90	100	100		70			6	
43		140			5						3		
43	640	156	45.4	95			100					4	
43	805	150			88						4	6	
43		124											
43	1120	147	35.0	96	0	61			0			7	
43		313		95					trace		2		
43									0	N			
43	634	167	28.5	100		72	100				1	0	
43	880	147	43.5	106	0	80	100				2	6	
43		136		80	0								
43	620	127						10S	0				
43	850	127	39.5	80	-	75	25	0	0	-	0	0	
43	1255	142	39.0	95	5	90	0	0	0	0	0	0	*
43	408	190	45.2	73		80							
43		131	41.0	95		90		0	0	0	1	0	
43		127	19.4	-	0		100						
MEAN	802.8	151.6	41.9	93.7	21.1	81.0	75.0				1.9	3.3	

Entry	Yield (g/plot)	Days to Flower	Test WT or 1000 KW	Plant Height	Lodging (%)	Stand Estab.	Winter Hardiness	Puccinia striiformis	Puccinia recondita	Puccinia graminis	Septoria (0-9)	Mildew (0-9)	Line Selected
44		302		100				0	0		3		
44	813	167	78.1	105	1								
44				75						50S			
44		128		105					R			1	
44		139		90	80	90	100		70			3	
44		133			60						4		
44	620	153	38.8	80			75					5	
44	655	149			88						4	4	
44		117											
44	620	144	34.5	87	0	53			0			0	*
44		307		75					0		1		
44									0	N			
44	462	164	25.4	95		69	100				3	0	
44	800	147	44.5	99	0	80	100				2	4	
44		128		78	0								
44	600	125						0	trace				
44	670	127	39.3	85	-	80	20	0	0	0	0	0	
44	514	140	36.0	95	0	90	0	0	0	0	0	0	
44	430	191	44.6	75		78							
44		125	40.0	90		90		0	0	0	3	0	
44		122	23.8	88	0		100						
MEAN	618.4	156.3	40.5	88.9	25.4	78.8	70.7				2.2	1.7	

Table 6. Entries selected for Earliness over all locations reporting data.

ENTRY	ID	PEDIGREE
15	880017	S148/PCHS//SPN
16	890074	AU/MINN/HK/38MA/YMH/ERA/CLLF/BEZ/SU/CI13645/NAI/EMU
32	910313	VORO/3/TOB/CNO67//ANZA/4/SERI
37	920078	85 ZHONG 139/CUCURPE86/3/BPRE.S//CNO.S/GLL
38	920093	F1271/BZ//TJB368.251/BUC.S/4/D6301/HN7//ERA/3/BUC
39	920169	GMS/ORCR8313//ORCR8313[MS]
40	4870581	YECORA R050

Table 7. Entries selected for Winterhardiness over all locations reporting data.

ENTRY	ID	PEDIGREE
14	889088	RMN,F12-71/JUP.S
30	910263	GRTPL85504//M1223-3D-1D (MI76-77-S29)/ALD
34	920070	TEMU39.76/CHAT.S//CUCURPE 86/3/M1223-3D-1D (MI76-77-S29)/ALD

Table 8. Entries selected for Stand Establishment over all locations reporting data.

ENTRY	ID	PEDIGREE
16	890074	AU/MINN/HK/38MA/YMH/ERA/CLLF/BEZ/SU/CI13645/NAI/EMU
39	920169	GMS/ORCR8313//ORCR8313[MS]
40	4870581	YECORA R050
41	920173	GMS/ORCR8313//ORCR8313[MF]
43	920491	TOPO.S/NAR 59*2//BDFN/3/BOW.S/4/PMF//CNO.S/GLL

Table 9. Entries selected for resistance to Stripe Rust (*Puccinia striiformis*) over all locations reporting data.

ENTRY	ID	PEDIGREE
19	908109	RONDEVOUS/3/CARSTEN/GIGANT
44	928009	RONDEZVOUS/3/VPM/MOS83-11-4-8//PEW

Table 10. Entry selected for resistance to Leaf Rust (*Puccinia recondita*) over all locations reporting data.

ENTRY	ID	PEDIGREE
10	889128	VPM/MOS83-11-4-8//PEW

Table 11. Entry selected for resistance to Stem Rust (*Puccinia graminis tritici*) over all locations reporting data.

ENTRY	ID	PEDIGREE
6	860247	GNS/LP/3/5*ATR/AGA//TF/BULG88/4/ANI,F1/5/INIA//HBGN/CD
8	870812	BEZ/ALD,F1/5/AU/3/MINN//HK/38MA/4/YMH/ERA
24	910186	MHTM//VPM/MOS,SP101/3/M1223-3D-1D (MI76-77-S29)/ALD
26	910215	CNO/INIA//HN7/3/CC//CAL/SR/4/M1223-3D-1D (MI76-77-S29)/A
27	910231	CLLF/BEZ//SU92/CI13645/3/NA160/4/EMU/5/TJB788-1089/ALDA
28	910233	CLLF/BEZ//SU92/CI13645/3/NA160/4/EMU/5/TJB788-1089/ALDA
29	910241	KVZ/3/BB/CHA//TRM/4/TEMU 33-78/5/FW771595G02
35	920071	TEMU39.76/CHAT.S//CUCURPE 86/3/M1223-3D-1D (MI76-77-S29)/ALD
42	920467	TJB368-251/BUC/3/PMF//CNO S/GLL

Table 12. Entry selected for resistance to Leaf Blotch (*Septoria* spp.) over all locations reporting data.

ENTRY	ID	PEDIGREE
21	908110	RONDEVOUS/3/CARSTEN/GIGANT
43	920491	TOPO.S/NAR 59*2//BDFN/3/BOW.S/4/PMF//CNO.S/GLL

Table 13. Entry selected for resistance to Powdery Mildew (*Erysiphe graminis tritici*) over all locations reporting data.

ENTRY	ID	PEDIGREE
10	889128	VPM/MOS83-11-4-8//PEW
15	880017	S148/PCHS//SPN
21	908110	RONDEVOUS/3/CARSTEN/GIGANT
44	928009	RONDEZVOUS/3/VPM/MOS83-11-4-8//PEW