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RESULTS OF THE TENTH INTERNATIONAL BREAD WHEAT SCREENING NURSERY (IBWSN) 1976-77

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO

INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER

México

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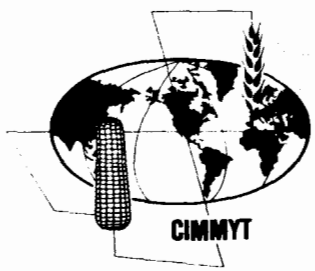

CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO
INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER
Londres 40 Apartado Postal 6-641 México 6, D. F., México

CONTENTS

ACKNOWLEDGMENTS

The data and cooperation received from cereal scientists and institutions around the world are greatly appreciated. This combined effort makes possible the selection of high yielding, widely adapted, disease resistant cultivars.

GLOSSARY OF TERMS USED IN TABLES

ACI	Average Coefficient of Infection
DAYS FLOWER	Days to flower
DAYS MATURE	Days to maturity
LEAF R	Leaf rust
PLANT HT	Plant height (cm)
SEED COLOR B	White
SEED COLOR BS	White, soft grain
SEED COLOR R	Red
SEED COLOR RS	Red, soft grain
SEPT NODO	Septoria nodorum
SEPT TRIT	Septoria tritici
STEM R	Stem rust
STRP R	Stripe rust
YIELD KG/HA	Yield kilograms/hectare

INTRODUCTION

The CIMMYT Bread Wheat Program annually makes more than 10,000 crosses in order to broaden the germ plasm base and to obtain better adaptation, higher yields and resistance to various diseases.

The best F_2 materials from these crosses are distributed as segregating populations to more than 200 sites, world wide. From these lines and other populations, selections are made alternately at Toluca and Cd. Obregon, Sonora, Mexico. Additionally each year, about 1500-1700 advanced lines are bulked from F_5-F_8 generations. These are yield tested in Cd. Obregon, Sonora, as well as screened at various localities in Mexico for disease resistance.

The best yielding and most resistant lines to disease, lodging, and shattering are distributed each year to more than 180 cooperators around the world in the form of the International Bread Wheat Screening Nursery (IBWSN), which is a non replicated trial. Thus cooperators are able to obtain the best advanced lines for observation, evaluation, and possible direct release. The cooperators may also use this material in their crossing programs.

CIMMYT requests that the cooperators return yield, agronomic and pathological data from their trials in order to obtain information concerning the most widely adapted and broadly resistant lines for cycling in the CIMMYT breeding program. These data are summarized in this bulletin to provide information to the cooperators for their own breeding programs.

CIMMYT hopes that the IBWSN will serve as a vehicle to help stabilize wheat production in the developing countries.

MATERIALS AND METHODS

As indicated previously, the entries for the 10th IBWSN were obtained from uniform populations of F_5-F_8 generation material. The bulk selections were made in Cd. Obregon, Sonora and Toluca, Mexico. Obregon is characterized by an arid desert climate where wheat is grown under irrigated, optimum conditions for testing yield potential. It is located 40 m above sea level at a latitude of 27°20'N and a longitude of 109°54'W. The most dominant disease is leaf rust. In contrast, Toluca is characterized by a humid cool climate and is located at 2649 m elevation, latitude 19°16'N, longitude 99°51'W. The prevalent diseases are stripe rust and leaf rust, but in certain years, *Septoria nodorum*, *Septoria tritici*, *Fusarium roseum*, and *Fusarium nivale* may be present. In both locations, predominant as well as low frequency strains of leaf and stem rust are inoculated in the nursery to provide uniform disease conditions for selection.

In addition, localities such as Los Mochis, Sinaloa; El Refugio, Guanajuato; and Río Bravo, Tamaulipas; Mexico, where climatic conditions as well as virulence gene spectra differ from the above, are used for screening candidates for the IBWSN.

Yield potential is determined at Cd. Obregon in replicated trials under the most uniform conditions possible. Yield is compared with the highest yielding commercial cultivars. At the same time, the candidate lines are grown in small multiplication plots and seed from these plots is used to assemble the nursery. Under these arid conditions, there is little chance of transferring seed-borne diseases. However, seed is treated for smut control.

Although 180 sets of the 10th IBWSN were sent out in 1976, the results are based only on the data returned to CIMMYT, as indicated in Table 1. The geographical response is shown in Figure 1.

Table 2 lists the crosses and pedigrees of all the 10th IBWSN entries in conjunction with the means of all the variables analyzed. Certain characters listed in Table 2 are not presented separately because data were insufficient to make an adequate analysis.

Yield data were analyzed in three forms -(a) based upon the average yield at 48 sites, (b) on the average per cent above the mean yield of all entries at individual sites and (c), the frequency in the top 10 per cent of the high yielders at individual locations.

Cooperators were requested to utilize the methodology for recording agronomic and disease data which is published in CIMMYT's Information Bulletin No. 38. Disease data recorded in the Modified Cobb Scale were converted to

the Average Coefficient of Infection (ACI), as explained in the yearly results of the USDA International Spring Wheat Rust Nursery.

RESULTS AND DISCUSSION

A mean overall summary for all characters recorded for each entry in the 10th IBWSN is presented in Table 2.

As indicated earlier, three simple approaches were taken to ascertain the lines with the broadest adaptation. In Table 3, a simple ranking of the mean yields of the top 10 per cent of lines over all sites was used. In Table 4, the frequency of times that a line showed up in the top 10 per cent, was used. In Table 6, performance was based upon individual lines occurring on the average,10 per cent above the yield mean. This last table attempts to reduce the effects of the environment upon yield analysis.

Observation of the lines included in Tables 3,4 and 6 show that most of the lines present in Table 3 are also included in Table 4 and 6. Therefore very few additional, highly adapted entries were identified using the analysis in Tables 4 and 6. The following lines appeared to have broad adaptation based upon their yields: Chiroca "S" (CM-8963), Pavon "S" (CM-8399), Brochis "S" (CM-5872), Hork "S" (CM-8874), Bluejay (CM-5287), Moncho"S" (CM-8288), Sapsucker"S" (BR-69) and Bobolink (CM-5349). Three lines that were not identified in the ranking were noted in the frequency and per cent analysis. They were Glea-Gaines, Mexp 65 x Sal. Sea. P106-19, and Oldafo 41A.

Table 5 shows a pattern analysis of adaptation obtained from the data in Table 4. It is apparent that the lines represented are adapted to the range of sites tested. They represent a broad spectrum of genes for adaptation because even among sister lines, coincidence is not common. This demonstrates ample broad adaptation among the lines tested.

Eight lines obtained from the 10th IBWSN have been released as commercial cultivars in different areas of the world (Table 7).

Often lines which are early maturing are needed in areas where double cropping is important. CIMMYT therefore identified the earliest lines, which are listed in Table 8.

Tables 9-12 present those lines which have the highest levels of disease resistance to stem rust, leaf rust, stripe rust and powdery mildew respectively. The cut-off point for these tables was subjective. Many other lines which displayed what would be considered adequate levels of resistance are shown in the summary in Table 2.

Races 34-1,2,3,4,5,6,7,8,9 and 11 of stem rust and 162-1,2 and 3 GTS of leaf rust were inoculated on all entries of the 10th IBWSN in the seedling stage. This work was carried out by Professor I.A.S. Watson, University of Sydney, Australia. The majority of lines were resistant to both cultures of rust, and field readings of adult plants indicated that almost all the lines were resistant to these diseases in that area.

Several entries showed outstanding overall disease resistance as well as broad adaptation. Entry 74 (Emu"S") was highly resistant to stem rust, leaf rust, stripe rust and powdery mildew. Pavon"S" (entry 75) indicated excellent resistance to stem, leaf and stripe rust. Entry 81 (Pavon"S") was outstanding with respect to stem rust, stripe rust and powdery mildew resistance.

Results on *Septoria tritici* and *S. nodorum* were very erratic and no separate tabular analysis was made although the overall means are presented in Table 2. Nevertheless, the analysis of five sites with fairly uniform data on *S. tritici*, and with an average reading of 6.8, showed the following lines to have moderate ($\leq$5.8) resistance: Sapsucker "S" (entry 23), Pavon"S" (entry 82), Ang-My54 x Ti71 (entry 123), Chris-S948.A1 x Chris^4 (entry 197), Chris-S948.A1 Chris^4 /II-8156 (B) (entries 198, 199), S948.A1-Crim^4 (entry 202).

FIGURE 1. 10th IBWSN LOCATIONS WHICH RETURNED DATA. (TABLE 1 LISTS THESE NUMBERED LOCATIONS).

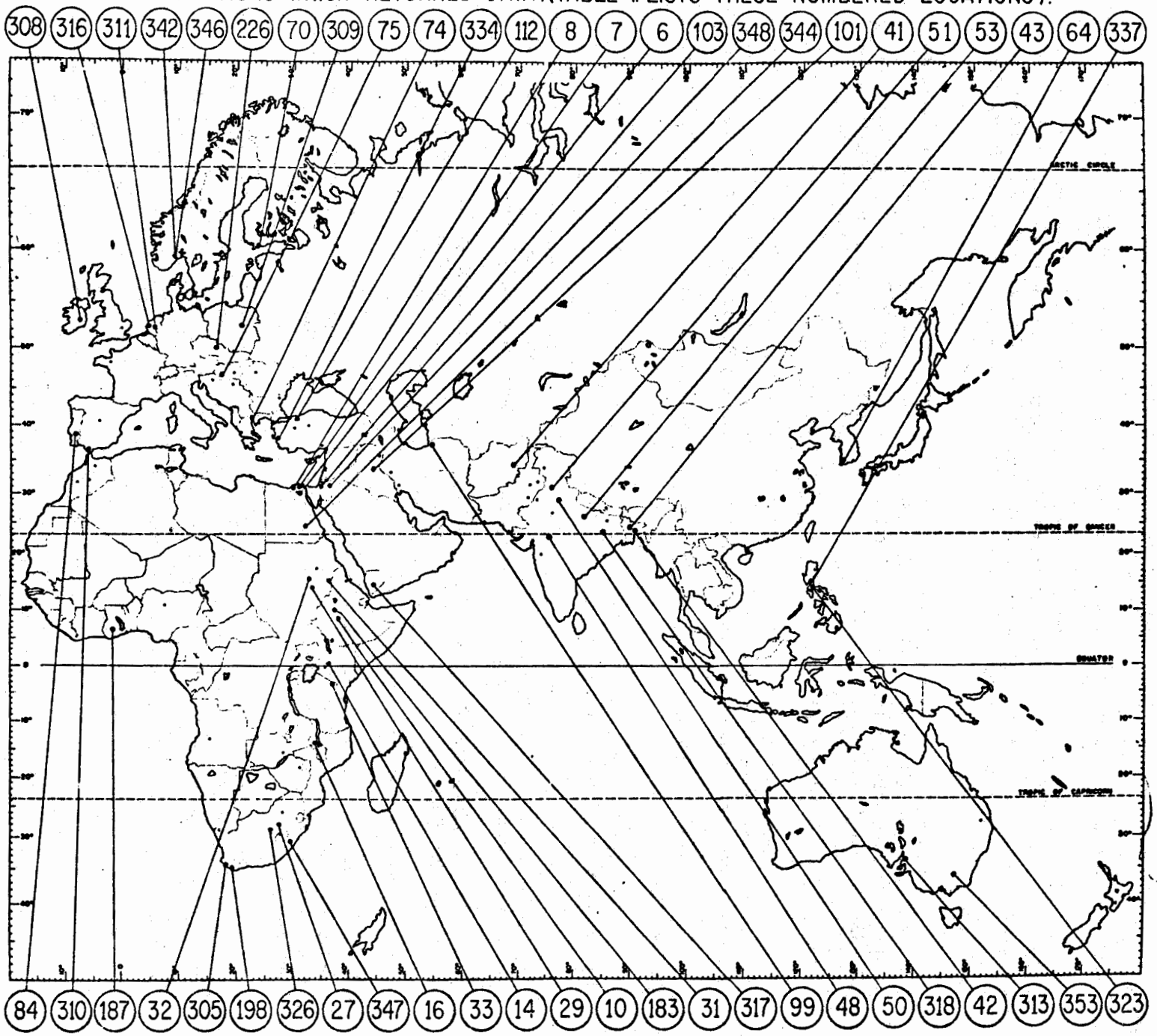

FIGURE 1. Continued

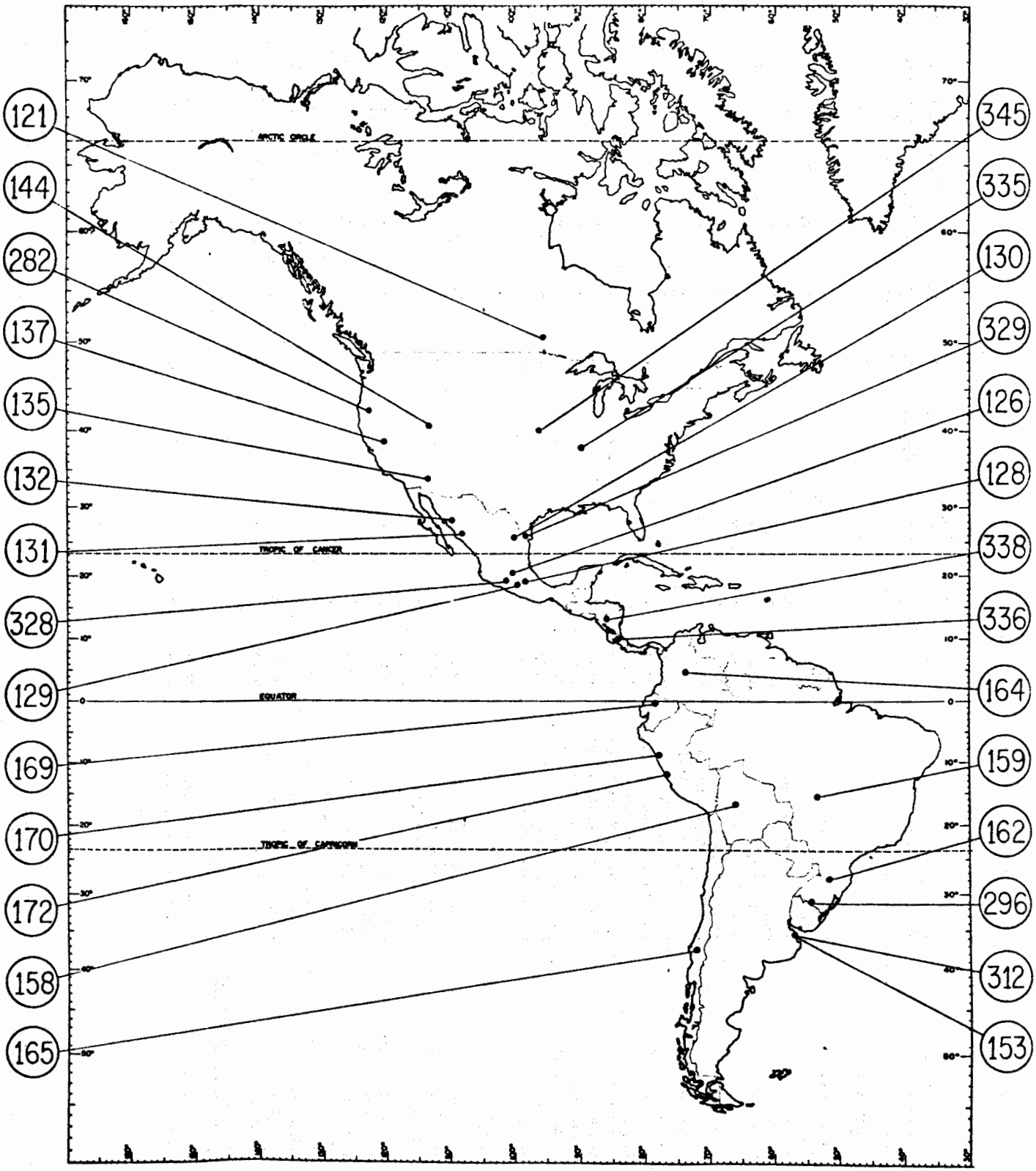

Table 1. VARIABLES RECORDED AT ALL SITES AND INCLUDED IN SUMMARY TABLE.

Location No.	Location or Institution	COUNTRY	Elev. m	Days to Heading	Days to Maturity	Septoria tritici	Septoria nodorum	Plant Ht	Yield (kg/ha)	Stem rust	Leaf rust	Stripe rust	Powdery mildew
				1	2	3	4	5	6	7	8	9	10
	AFRICA												
6	El Gemmeiza	Bahteem, Egypt	0021	+	-	-	-	+	+	-	+	-	-
7	Giza	Cairo, Egypt	0021	+	-	-	-	+	+	+	+	-	-
8	Sakha	Kafr el Sheikh, Egypt	0000	+	+	-	-	+	+	+	+	+	-
344	Matana	Kena, Egypt	0021	+	+	-	-	+	+	-	-	-	-
10	Kulumsa	Arusi, Ethiopia	2150	+	+	+	-	+	+	+	-	+	-
183	Holetta	Shoa, Ethiopia	2390	+	+	-	-	+	-	-	+	+	-
187	Ashanti	Kumasi, Ghana	0283	+	-	-	-	+	-	-	-	-	-
14	Njoro	Rift Valley Prov., Kenya	2165	+	-	-	-	-	-	+	-	+	-
16	Lilongwe	Southern Prov., Mallawi		-	-	-	+	+	+	-	-	-	-
305	Langgewens	Cape, South Africa	0091	-	-	+	+	+	-	-	-	-	-
198	Jygerhoek E.S.	Cape Prov., South Africa	0168	-	-	-	+	-	-	+	+	-	-
347	Makatini	Natal, South Africa	0074	+	-	-	-	-	-	+	+	-	-
27	Bethlehem	Orange Free, South Africa	1631	+	+	-	-	+	+	+	-	-	-
326	Sensako	Orange Free, South Africa	1631	+	+	-	-	-	+	+	+	-	-
29	Gezira R.S.	Blue Nile Prov., Sudan	0411	+	+	-	-	+	+	-	-	-	-
31	Khasm El Girba	Kassala, Sudan	0400	+	+	-	-	+	+	-	-	-	-
32	Shambat	Kartoum, Sudan	0375	-	-	-	-	+	+	-	-	-	-
33	Moshi	Kilmanjaro, Tanzania	1280	-	-	-	-	+	-	-	-	-	-
	ASIA												
41	Darul Aman	Kabul, Afghanistan	1803	-	-	-	-	+	-	-	-	-	-
42	Joydelpur	Dacca, Bangladesh	0009	+	+	-	-	+	+	-	+	-	-
43	Ishurdi	Ishwedi, Bangladesh	0007	+	+	-	-	+	+	-	+	-	-
318	Pusa, IARI	Bihar, India	0050	+	+	-	-	+	-	-	+	-	-
50	New Delhi- IARS	Delhi, India	0022	+	+	-	-	+	+	-	+	-	-
50	New Delhi- IARS	Delhi, India	0022	-	-	-	-	-	-	-	+	-	-
48	Powarkheda	Madhya Pradesh, India	0303	+	+	-	-	+	+	+	+	-	-
53	Pantnagar	Uttar Pradesh, India	0243	+	+	-	-	+	+	-	+	+	-
51	Ludhiana	Punjab, India	0247	+	+	-	-	+	-	-	+	-	-
337	San Mateo	Isabela, Philippines		+	+	-	-	+	+	-	-	-	-
323	Los Baños up	Luzon, Philippines	0021	+	+	-	-	+	+	-	-	-	-
64	Mokpo	Chunnam, South Korea	0025	+	+	-	-	+	+	-	-	-	-
	CENTRAL AMERICA												
336	F.B. Moreno	Alanjuela, Costa Rica	0843	-	-	-	-	+	+	-	-	-	-
338	Cora	Matagalpa, Nicaragua	0200	+	+	-	-	+	+	-	-	-	-

Table 1. Continuation.

Location No.	Location or Institution	COUNTRY	Elev. m	Days to Heading	Days to Maturity	Septoria tritici	Septoria nodorum	Plant Ht	Yield (kg/ha)	Stem rust	Leaf rust	Stripe rust	Powdery mildew
				1	2	3	4	5	6	7	8	9	10
	EUROPE												
226	Stupice	Czechia, Czechoslovakia	0350	-	-	-	-	-	-	+	-	-	-
70	Anttila	Helsinki, Finland	0038	-	-	-	-	+	+	-	-	-	+
74	P. B. I.	Thessaloniki, Greece	0010	+	+	-	-	+	+	-	-	-	+
75	Agric.Res. Institute.	Martonvasar, Hungary	0150	+	+	-	-	+	+	-	-	-	-
308	Backweston	Kildare, Ireland	- -	-	-	-	-	+	+	-	-	-	+
311	Waageningen	Gelderland, Netherlands		-	-	-	-	-	-	-	-	+	-
316	CEBECO	Lelystad, Netherlands		+	-	-	-	+	-	-	-	+	-
242	University Norway	Oslo, Norway	0200	+	-	-	-	+	+	-	-	-	+
346	Staur	Oslo, Norway	0200	-	+	-	-	-	+	-	-	-	-
309	Stacja Hodowli Roslin	Henrykow, Poland	- -	+	+	-	+	+	+	-	-	-	+
84	Alentejo PBS	Alentejo, Portugal	- -	+	+	+	-	+	+	-	-	-	-
310	Jerez	Cadiz, Spain	0020	+	+	+	-	+	+	-	-	-	-
	MIDDLE EAST												
99	Arachi Mohalle	Georgan, Iran	0132	+	+	-	-	+	+	-	-	-	+
101	Abu' Ghraib	Baghdad, Iraq	0034	+	+	-	-	+	+	-	-	-	-
103	Mivhor Farm	R.D. Sde-Gat, Israel	0120	+	-	+	-	+	-	-	+	+	-
348	Wadi Yabis	Jordan	0200	+	+	-	-	+	-	-	+	-	-
334	Ege Rari	Izmir, Turkey	- -	-	-	-	-	-	-	+	+	+	-
112	Adapazari	Sakarya, Turkey	0033	-	-	+	-	-	-	-	-	+	+
317	Aussefera	Taiz, Yemen	1350	+	-	-	-	+	+	+	-	-	-
	NORTH AMERICA												
121	Winnipeg	Manitoba, Canada	0235	-	+	-	-	-	+	-	-	-	-
129	Atizapan, CIMMYT	Mexico, Mexico	2640	+	-	-	-	+	-	-	+	+	-
126	CIAB/INIA, Celaya	Guanajuato, Mexico	1765	-	-	-	-	-	-	+	+	-	-
128	El Batan, CIMMYT	Mexico, Mexico	2249	+	-	-	-	-	-	+	+	+	-
328	Patzcuaro, CIMMYT	Michoacan, Mexico	- -	-	-	+	-	-	-	-	-	-	-
130	Navidad, Nuevo Leon	Monterrey, Mexico	0537	+	-	-	-	+	+	-	-	-	-
131	Los Mochis	Sinaloa, Mexico	0015	-	-	-	-	-	-	-	+	-	-
132	Cd. Obregon, CIANO	Sonora, Mexico	0038	+	-	-	-	+	+	-	+	-	-
329	Rio Bravo, INIA	Tamaulipas, Mexico	- -	-	-	-	-	-	-	-	+	-	-
135	Meza	Arizona, U.S.A.	- -	+	+	-	-	+	+	-	-	-	-
137	Davis	California, U.S.A.	0018	+	+	-	-	+	+	-	-	-	-
144	Aberdeen	Idaho, U.S.A.	1341	-	-	-	-	-	+	-	-	-	-
335	University, Missouri	Missouri, U.S.A.	- -	-	-	-	+	+	+	-	-	-	-
345	Mead	Nebraska, U.S.A.	1170	+	-	-	-	+	+	-	+	-	-
282	Corvallis	Oregon, U.S.A.	0068	-	-	+	-	+	-	-	-	+	-

Table 1. Continuation.

Location No.	Location or Institution	COUNTRY	Elev. m	Days to Heading	Days to Maturity	Septoria tritici	Septoria nodorum	Plant Ht	Yield (kg/ha)	Stem rust	Leaf rust	Stripe rust	Powdery mildew
				1	2	3	4	5	6	7	8	9	10
	OCEANIA												
353	Tamworth Arc.	New South Wales, Australia	- -	+	+	-	-	+	-	+	+	-	-
313	Roseworth Coll	South Australia, Australia	0060	+	-	-	-	+	+	-	-	-	-
	SOUTH AMERICA												
312	Criadero Klein,	Buenos Aires, Argentina	0055	+	-	-	-	+	+	-	+	-	-
153	La Dulce	Buenos Aires, Argentina	0072	-	-	-	-	-	+	-	-	-	-
158	San Benito	Cochabamba, Bolivia	2800	+	+	-	-	+	+	-	-	-	-
159	Dos Cerrados	Distrito Federal, Brazil	- -	-	-	-	-	+	+	+	+	-	+
296	Est. Exp. De Bagé	Rio Grande do Sul, Brazil	0214	+	+	-	-	+	-	+	-	-	-
162	Passo Fundo	Rio Grande do Sul, Brazil	0700	+	-	-	-	+	-	-	+	+	-
164	Tibaitata	Cundinamarca, Colombia	2550	+	+	+	-	+	-	-	-	-	-
165	Carillanca	Cautin, Chile	0200	-	-	-	-	-	+	-	-	+	-
169	Sta. Catalina, INIAP	Quito, Ecuador	3058	+	-	-	-	-	-	-	-	+	-
170	Ancash	Ancash, Peru	2600	+	+	-	-	+	+	+	+	-	-
172	La Molina	Lima, Peru	0251	+	+	-	-	+	-	-	+	-	-

TABLE 2 - SUMMARY OF ALL VARIABLE MEANS IN ENTRY ORDER

	ENTRY	SEED COLOUR	ORIGIN	DAYS FLOWER	DAYS MATURE	SEPT TRIT	SEPT NODO	PLNT HT	YIELD KG/HA	STEM R ACI	LEAF R ACI	STRP R ACI	YLD% MEAN
1	YECORA F 70	B	MEX.	79.6	126.6	3.9	2.6	61.3	2188.0	12.5	22.8	24.0	77.6
2	NURI F 70	B	MEX.	80.4	127.3	5.2	2.9	74.2	2473.5	13.0	17.5	13.6	89.1
3	CAJEME F 71	R	MEX.	87.1	130.5	4.9	3.1	66.8	2368.3	17.1	19.9	25.3	85.8
4	JUPATECO F 73	R	MEX.	81.8	129.1	5.1	2.9	76.6	2742.8	13.9	12.3	35.4	97.4
5	COCORAQUE F 75	R	MEX.	80.5	128.2	5.0	3.3	69.9	2442.9	8.8	4.2	19.2	87.5
6	ANAHUAC F 75	R	MEX.	82.6	129.2	5.6	2.3	74.8	2879.9	14.8	5.8	23.3	101.9
7	POTAM 70	B	MEX.	75.8	124.9	5.1	3.0	69.7	2227.4	12.9	15.0	25.6	69.3
8	TORIM F 73	B	MEX.	78.4	126.7	5.3	3.4	61.7	2223.1	12.1	7.8	9.8	75.6
9	TANORI 71	R	MEX.	76.8	125.6	5.7	2.4	72.9	2580.6	10.8	17.5	20.1	89.6
10	TANORI 71 RESEL	R	MEX.	76.6	126.6	5.3	3.1	72.6	2786.2	16.6	20.4	12.5	96.1
11	ZARAGOZA S 75	R	MEX.	92.1	137.0	5.4	2.7	78.6	2835.6	7.5	14.8	22.6	103.8
12	7C	B	MEX.	84.8	131.5	5.2	2.6	77.7	2859.4	25.7	47.9	44.1	98.7
13	SALAMANCA 75	R	MEX.	79.2	127.2	5.3	2.4	73.1	2675.0	12.5	24.4	15.8	93.2
14	INIA 66	R	MEX.	81.2	129.3	6.1	2.6	76.1	2651.5	20.6	15.4	33.6	97.1
15	ANZA	R	U.S.A.	86.8	134.2	6.4	2.7	72.0	2817.5	30.2	37.4	9.4	105.4
16	TOLUCA 73	R	MEX.	77.2	125.6	4.6	3.0	72.9	2486.7	4.1	20.6	21.1	85.1
17	DOUGGA	R	TUNISIA	88.0	134.4	4.3	2.9	73.3	2547.6	4.6	4.4	22.7	93.3
18	SAPSUCKER"S" BR69-1Y-3M-0Y	RS	MEX.	82.4	130.1	4.1	3.1	85.0	2801.5	6.3	9.2	21.1	106.2
19	SAPSUCKER"S" BR69-1Y-3M-3Y-0M	RS	MEX.	83.7	130.0	5.6	3.3	85.5	2719.5	8.7	9.2	20.1	101.6
20	JUPATECO73	R	MEX.	82.2	131.6	5.4	2.7	78.2	2617.8	11.5	15.0	35.8	103.5
21	SAPSUCKER"S" BR69-1Y-3M-5Y-0M	RS	MEX.	82.7	129.4	5.0	3.0	85.3	2716.1	10.3	10.8	22.1	99.9
22	SAPSUCKER"S" BR69-1Y-3M-6Y-0M	RS	MEX.	82.9	129.4	4.4	2.4	85.9	2790.1	14.0	9.2	19.3	101.0
23	SAPSUCKER"S" BR69-1Y-3M-7Y-0M	RS	MEX.	83.2	129.9	4.2	2.4	85.0	3125.7	8.2	9.6	19.8	117.0
24	CANARIO"S" CM-2097-31M-1Y-1M-4Y-0M	RS	MEX.	85.0	131.1	6.3	2.6	66.2	1788.1	24.0	9.5	17.1	66.0
25	COMO"S" CM-4756-12Y-1M-1Y-0M	R	MEX.	86.0	131.8	5.0	2.6	76.9	3034.6	10.2	15.6	7.4	111.7
26	COMO"S" CM-4756-12Y-1M-1Y-1M-0Y	R	MEX.	85.8	131.6	4.6	2.6	77.1	2843.1	10.4	13.8	9.2	103.5
27	COMO"S" CM-4756-12Y-1M-3Y-0M	R	MEX.	86.2	132.5	5.7	2.6	77.8	2998.4	11.4	11.2	8.3	113.3
28	GTO-7C X BB-CNO CM-5278-B-4Y-1M-2Y-3M-1Y-0M	B	MEX.	86.3	133.2	4.3	2.3	80.0	2765.6	8.2	16.7	9.2	101.3
29	BLUE JAY"S" CM-5287-J-1Y-2M-1Y-1M-0Y	R	MEX.	81.4	128.3	4.3	2.4	76.1	3194.3	19.6	27.6	8.1	120.1

TABLE 2 - SUMMARY OF ALL VARIABLE MEANS IN ENTRY ORDER

ENTRY	SEED COLOUR	ORIGIN	DAYS FLOWER	DAYS MATURE	SEPT TRIT	SEPT NODO	PLNT HT	YIELD KG/HA	STEM R ACI	LEAF R ACI	STRP R ACI	YLD% MEAN
30 BLUE JAY"S" CM-5287-J-1Y-2M-2Y-3M-0Y	B	MEX.	81.3	128.5	4.6	2.6	74.9	3191.2	24.5	23.4	27.9	116.2
31 BLUE JAY"S" CM-5287-J-1Y-2M-1Y-4M-0Y	B	MEX.	80.6	127.8	4.8	2.7	74.2	3140.7	20.1	31.1	6.8	114.6
32 BLUE JAY"S" CM-5287-J-1Y-4M-1Y-4M-0Y	B	MEX.	79.2	127.8	5.2	2.3	74.8	2357.8	9.7	22.3	24.3	83.2
33 BLUE JAY"S" CM-5287-J-1Y-2M-1Y-4M-0Y-501Y-0B	R	MEX.	80.9	127.2	5.8	2.4	75.3	2989.7	19.4	27.3	4.4	103.8
34 BOBOLINK"S" CM-5349-A-6M-3Y-1M-2Y-0M	R	MEX.	86.5	132.1	5.4	1.9	84.5	2910.0	13.1	20.9	17.5	108.7
35 BOBOLINK"S" CM-5349-A-9Y-1M-2Y-0M	R	MEX.	81.8	129.6	5.2	2.4	79.3	3082.6	11.8	22.2	15.3	114.2
36 BOBOLINK"S" CM-5349-A-9Y-1M-2Y-500M-0Y	R	MEX.	81.9	129.4	5.5	2.4	78.5	3109.7	11.6	19.4	11.1	114.9
37 VANERN"S" CM-5375-F-1Y-1M-1Y-0M	B	MEX.	91.3	135.4	5.2	2.3	77.3	2983.5	20.4	4.9	24.9	111.2
38 RON-CHA X BB-NOR 67 CM-5484-F-5Y-4M-2Y-1M-0Y	B	MEX.	83.9	130.3	4.4	3.4	76.8	2736.8	14.6	17.8	14.8	97.3
39 MESARI"S" CM-5513-D-1Y-1M-5Y-1M-1Y-0M	B	MEX.	83.7	130.4	5.4	2.6	74.1	2725.5	18.3	21.3	21.4	98.3
40 7C	B	MEX.	85.0	130.2	6.3	2.9	77.8	2855.1	20.9	45.9	40.4	99.6
41 BLUETIT"S" CM-5541-C-5Y-1M-1Y-4M-0Y	RS	MEX.	81.1	128.2	5.7	3.3	73.6	2658.6	11.3	15.6	23.8	94.9
42 BB-CNO"S" X JAR/CNO-7C X CC-TOB CM-5546-A-5Y-3M-2Y-3M-0Y	R	MEX.	87.7	132.4	4.8	2.3	75.2	2633.8	11.6	9.8	7.2	98.2
43 GRAJO"S" CM-5816-A-6Y-2M-2Y-501M-0Y	R	MEX.	83.9	129.8	4.3	2.8	73.2	3097.3	10.3	11.8	7.8	115.2
44 BROCHIS"S" CM-5872-C-1Y-1M-1Y-1M-0Y	R	MEX.	85.0	131.6	4.9	2.4	74.6	2980.8	5.8	7.3	1.9	107.1
45 BROCHIS"S"(B) CM-5872-C-1Y-1M-1Y-1M-0Y	R	MEX.	85.6	131.8	5.0	2.9	75.8	2984.8	5.:	11.5	1.1	110.7
46 BROCHIS"S" CM-5872-C-1Y-1M-3Y-0M	B	MEX.	86.0	131.9	5.1	2.9	78.1	2879.7	5.3	16.0	3.3	104.0
47 BROCHIS"S" CM-5872-C-1Y-1M-1Y-3M-0Y	R	MEX.	87.1	132.5	4.6	2.0	77.1	3032.1	4.9	9.4	0.0	110.7
48 BROCHIS"S" CM-5872-C-1Y-1M-1Y-4M-0Y	R	MEX.	86.5	132.6	4.9	2.1	75.2	2966.3	5.0	10.0	1.0	108.1
49 BROCHIS"S" CM-5872-C-1Y-1M-3Y-3M-0Y	R	MEX.	87.0	132.4	4.7	2.3	77.4	3117.5	5.7	16.3	0.6	115.2
50 BROCHIS"S" CM-5872-C-1Y-1M-3Y-1M-0Y	B	MEX.	86.3	133.5	4.9	2.3	77.9	2816.4	4.5	10.3	0.9	105.4
51 BROCHIS"S" CM-5872-C-1Y-5M-1Y-0M	R	MEX.	87.3	132.7	4.7	2.1	77.0	3043.7	2.9	15.1	2.1	112.0
52 BROCHIS"S" CM-5872-C-1Y-5M-1Y-2M-0Y	B	MEX.	87.4	132.0	4.6	2.1	78.7	2947.5	2.7	27.1	2.6	110.7
53 BROCHIS"S" CM-5872-C-1Y-5M-2Y-1M-0Y	B	MEX.	86.2	133.1	4.8	2.6	74.7	2822.0	3.4	12.4	0.9	101.7
54 BROCHIS"S" CM-5872-C-1Y-5M-2Y-2M-0Y	B	MEX.	87.2	132.0	5.0	2.3	76.6	2987.4	3.5	10.6	1.5	107.1
55 BROCHIS"S" CM-5872-B-0Y-1M-2Y-1M-0Y	R	MEX.	85.0	133.2	4.7	2.0	80.2	3200.2	6.9	10.7	6.1	115.6
56 BROCHIS"S" CM-5872-B-0Y-1M-2Y-4M-0Y	R	MEX.	86.4	133.7	5.1	2.1	80.9	3094.0	8.2	12.3	5.4	112.4
57 RON-CHA CM-6552-16M-1Y-5M-3Y-0M	R	MEX.	84.3	133.6	4.8	2.7	76.1	2716.1	4.6	10.6	0.9	98.0
58 PICHIHUILA"S" CM-7652-35M-5Y-3M-0Y	B	MEX.	79.7	130.5	4.8	1.9	81.0	2559.4	11.9	0.1	12.9	90.0
59 NPO-TOB"S" X 8156/KAL-BB CM-7806-15M-2Y-2M-1Y-0M	B	MEX.	80.6	131.2	5.3	2.3	77.9	2933.6	0.7	4.4	4.7	103.6

TABLE 2 - SUMMARY OF ALL VARIABLE MEANS IN ENTRY ORDER

ENTRY	SEED COLOUR	ORIGIN	DAYS FLOWER	DAYS MATURE	SEPT TRIT	SEPT NODO	PLNT HT	YIELD KG/HA	STEM R ACI	LEAF R ACI	STRP R ACI	YLD% MEAN
60 TANORI71	R	MEX.	77.6	127.1	5.3	2.4	73.5	2784.2	15.5	20.9	22.6	98.7
61 WE X TOB-CNO"S"/CDL CM-8285-T-500M-503Y-0M-501M-0Y	R	MEX.	93.2	139.9	5.8	3.6	72.6	2938.8	21.7	3.6	20.1	104.3
62 MONCHO"S" CM-8288-A-3M-1Y-5M-0Y		MEX.	86.8	134.8	5.8	2.9	78.7	2882.6	22.6	6.8	7.4	104.6
63 MONCHO"S" CM-8288-A-3M-1Y-500M-0Y	R	MEX.	89.1	136.1	4.4	2.6	83.5	3141.8	21.9	7.8	6.9	117.4
64 MONCHO"S" CM-8288-A-3M-5Y-4M-0Y	B	MEX.	89.6	136.6	4.6	2.6	80.3	2916.9	24.6	8.8	13.9	105.7
65 MONCHO"S" CM-8288-A-3M-6Y-5M-1Y-0M	B	MEX.	89.5	137.1	5.3	2.4	82.8	3083.4	24.6	6.4	4.1	108.3
66 MONCHO"S" CM-8288-A-3M-6Y-5M-2Y-0M	B	MEX.	88.7	136.3	5.5	2.4	80.7	3098.6	21.7	2.6	4.4	111.2
67 MONCHO"S" CM-8288-A-3M-7Y-0M	B	MEX.	88.3	135.2	4.6	2.4	82.6	2951.3	24.8	8.8	17.9	107.9
68 MONCHO"S" CM-8288-A-3M-7Y-0M-0BK	R	MEX.	88.3	135.4	5.8	2.6	80.5	2908.6	30.1	9.5	15.4	106.3
69 EMU"S" CM-8327-C-9M-1Y-0M	R	MEX.	84.5	132.3	5.8	3.8	72.8	2694.3	4.4	12.7	12.8	87.7
70 EMU"S" CM-8327-C-9M-1Y-1M-1Y-0M	R	MEX.	85.8	131.9	4.9	2.6	76.2	3053.1	8.6	8.5	3.3	109.8
71 EMU"S" CM-8327-C-9M-1Y-2M-2Y-1M-0Y	R	MEX.	85.4	132.2	5.3	2.3	76.9	2942.8	11.4	9.4	3.3	107.8
72 EMU"S" CM-8327-C-9M-1Y-5M-1Y-0M	R	MEX.	85.6	130.9	5.1	2.3	75.7	2829.1	9.3	5.5	1.6	100.8
73 EMU"S" CM-8327-C-9M-4Y-3M-0Y	R	MEX.	84.8	131.5	5.6	2.1	74.7	2903.9	7.4	8.4	8.7	104.4
74 EMU"S" CM-8327-C-9M-4Y-8M-0Y	R	MEX.	85.1	131.5	5.6	2.1	75.5	3098.2	6.4	8.9	2.3	115.5
75 PAVON"S" CM-8399-D-4M-3Y-0M	B	MEX.	86.3	133.8	4.2	2.3	78.4	3301.4	8.2	6.8	3.1	115.3
76 PAVON"S" CM-8399-D-4M-3Y-0M-0BK	B	MEX.	86.8	134.3	4.4	2.8	78.3	3172.8	7.9	7.5	6.7	111.8
77 PAVON"S" CM-8399-D-4M-3Y-1M-0Y	B	MEX.	87.1	134.7	4.8	2.1	78.6	3212.8	11.6	7.8	6.2	114.9
78 PAVON"S" CM-8399-D-4M-3Y-1M-1Y-0M	B	MEX.	86.2	133.5	4.6	2.4	78.9	3212.4	7.3	7.3	9.5	113.8
79 PAVON"S" CM-8399-D-4M-3Y-3M-1Y-0M	B	MEX.	91.8	136.2	4.8	2.1	79.8	3093.4	12.8	8.4	14.8	112.7
80 JUPATECO73	R	MEX.	82.4	131.2	5.1	2.7	77.5	3015.2	15.9	13.1	41.7	108.5
81 PAVON"S" CM-8399-D-4M-3Y-1M-1Y-1M-0Y	B	MEX.	86.2	132.8	5.6	2.3	78.8	3233.8	6.1	9.8	4.7	114.7
82 PAVON"S" CM-8399-D-4M-2Y-2M-3Y-1M-0Y	B	MEX.	91.4	136.3	4.8	2.8	81.2	3191.8	14.8	8.8	6.8	113.9
83 BOLSENA"S" CM-8625-G-1M-4Y-1M-0Y	B	MEX.	87.2	134.5	6.1	3.8	77.7	2696.8	8.1	16.1	18.3	92.7
84 BOLSENA"S" CM-8625-G-1M-4Y-1M-1Y-1M-0Y	B	MEX.	86.8	132.3	5.6	3.8	77.5	2719.9	8.3	16.3	13.8	95.7
85 BOLSENA"S" CM-8625-G-1M-4Y-1M-1Y-2M-0Y	B	MEX.	86.2	132.5	5.2	3.8	79.5	2815.5	7.5	21.8	9.7	99.6
86 BOLSENA"S" CM-8625-G-1M-4Y-1M-1Y-3M-0Y	B	MEX.	86.3	132.9	5.1	2.7	77.9	2788.6	9.9	15.3	18.3	100.2
87 BOLSENA"S" CM-8625-G-1M-4Y-1M-1Y-4M-0Y	B	MEX.	86.8	132.8	5.3	2.9	75.3	2662.3	8.4	28.1	11.1	92.9
88 OSPREY"S" CM-8701-A-1M-2Y-1M-0Y	R	MEX.	83.4	131.5	5.1	2.7	76.8	2864.3	9.6	22.7	21.8	101.8
89 OSPREY"S" CM-8701-A-1M-2Y-3M-0Y	B	MEX.	84.1	131.9	5.6	2.4	74.6	2716.1	18.8	22.8	28.7	94.8
90 OSPREY"S" CM-8701-A-1M-2Y-1M-3Y-0M	B	MEX.	84.1	133.2	5.1	2.6	75.1	2871.6	13.8	24.8	16.3	99.8

TABLE 2 - SUMMARY OF ALL VARIABLE MEANS IN ENTRY ORDER

	ENTRY	SEED COLOUR	ORIGIN	DAYS FLOWER	DAYS MATURE	SEPT TRIT	SEPT NODO	PLNT HT	YIELD KG/HA	STEM R ACI	LEAF R ACI	STRP R ACI	YLD% MEAN
91	HORK"S" CM-8874-K-1M-1Y-0M	R	MEX.	86.7	133.6	5.3	2.1	79.3	3197.1	24.2	3.8	13.8	116.4
92	HORK"S" CM-8874-K-1M-1Y-0M(1-113Y)	R	MEX.	86.8	133.3	4.9	3.8	77.8	2992.1	15.7	4.2	15.9	104.1
93	HORK"S" CM-8874-K-1M-1Y-0M(1-356Y)	R	MEX.	86.7	132.9	4.9	2.4	79.6	3035.6	18.8	4.1	21.3	108.8
94	HORK"S" CM-8874-K-1M-1Y-0M(1-356Y)-(1-200B)	R	MEX.	87.1	134.2	5.4	2.3	79.7	2943.1	19.4	4.1	18.6	108.8
95	HORK"S" CM-8874-K-1M-1Y-0M-(1-105Y)	R	MEX.	85.9	133.9	4.8	2.1	78.8	3180.6	28.6	4.7	14.9	112.9
96	HORK"S" CM-8874-K-1M-1Y-1M-2Y-0M	R	MEX.	88.1	133.8	4.7	2.4	75.5	2938.8	25.7	4.8	14.3	101.3
97	HORK"S" CM-8874-K-1M-1Y-1M-1Y-0M	R	MEX.	87.4	134.2	4.9	2.7	76.8	2909.8	25.9	9.4	14.8	101.9
98	(CNO(2) X SON-KL.REND/RON)SX CM-8922-H-1M-1Y-3M-2Y-0M	R	MEX.	90.5	136.5	5.4	2.6	72.7	2463.8	15.1	18.6	2.1	98.8
99	FLICKER"S" CM-8954-B-7M-1Y-1M-0Y	B	MEX.	88.6	135.8	5.3	2.6	75.1	2917.8	8.7	21.6	26.8	104.4
100	7C	B		86.8	132.2	5.8	2.6	77.4	2879.2	18.8	46.1	48.8	102.7
101	FLICKER"S" CM-8954-B-7M-1Y-1M-1Y-0M	B	MEX.	88.4	134.2	5.2	2.7	75.9	3060.9	9.9	17.8	18.4	112.8
102	CHIROCA"S" CM-8963-A-1M-1Y-1M-1Y-0M	B	MEX.	84.6	133.3	5.1	2.3	84.9	3180.8	11.2	5.5	11.8	114.1
103	CHIROCA"S" CM-8963-A-1M-1Y-1M-3Y-0M	B	MEX.	83.6	131.9	5.8	2.1	85.2	3102.6	20.9	3.8	9.5	112.7
104	CHIROCA"S" CM-8963-A-1M-1Y-1M-4Y-0M	B	MEX.	83.7	132.5	5.2	2.3	84.6	3158.3	12.4	5.8	8.4	114.8
105	CHIROCA"S" CM-8963-A-1M-1Y-1M-5Y-6M-0Y	B	MEX.	83.3	132.1	4.9	2.1	82.8	2956.8	14.9	5.2	5.6	106.8
106	CHIROCA"S" CM-8963-A-1M-1Y-1M-5Y-9M-0Y	B	MEX.	84.8	132.7	5.1	2.1	84.3	3304.5	15.7	4.9	3.9	119.2
107	BB-KAL CM-9160-11M-5Y-5M-2Y-0M	B	MEX.	93.6	138.1	4.4	2.1	80.1	3040.4	17.3	6.5	4.9	110.9
108	SOLSORT"S" CM-10712-1Y-1M-6Y-1M-1Y-0M	B	MEX.	89.1	134.4	4.3	1.9	79.6	2915.8	20.9	7.5	7.2	109.2
109	SOLSORT"S" CM-10712-1Y-1M-7Y-1M-0Y	B	MEX.	88.8	133.6	4.3	1.9	83.9	2981.1	30.1	7.2	12.1	110.7
110	(TOB"S"-INIA"S"/S64 X SK(E)(6)-AN)BB#4A CM-11177-21Y-2M-1Y-1M-0Y	B	MEX.	82.9	129.1	4.8	2.1	76.7	2923.4	15.6	5.9	6.9	112.9
111	((21931/CH53-AN X GB56)AN64)CDL CM-11243-28Y-4M-3Y-0M	R	MEX.	85.9	132.1	5.2	3.1	71.5	2401.1	1.3	7.3	2.8	86.7
112	(CNO-7C X CC-TOB/CNO"S"-NO66)KAL CM-11377-A-1Y-8M-3Y-0M	R	MEX.	86.5	133.1	4.7	2.9	73.3	2768.3	9.6	13.3	9.5	103.7
113	(CNO"S"-GALLO/SON64-KL.REND X BB)UP301 CM-11559-K-5Y-8M-1Y-1M-1Y-0Y	B	MEX.	85.6	132.9	4.4	14.8	77.5	2812.5	1.8	6.6	5.9	99.8
114	CNO"S"-GALLO/KAL-BB X 7C-NAD63 CM-11771-G-3Y-8M-1Y-1M-0Y	B	MEX.	84.8	132.4	4.8	3.8	79.5	2693.9	11.5	17.4	8.2	96.7
115	PV18A-CNO67 X KAL-BB CM-14979-35Y-1M-3Y-0Y	B	MEX.	81.3	131.1	4.9	2.7	79.4	2751.4	11.6	6.1	18.1	100.4
116	TOB-CFN X BB/TI71 CM-15097-4M-1Y-2M-1Y-0Y		MEX.	88.9	134.8	4.6	2.7	69.8	2637.7	12.5	5.8	6.6	100.3
117	CGN X KAL-BB CM-15133-1M-2Y-2M-1Y-0Y	B	MEX.	83.7	132.3	4.6	2.4	80.8	2783.3	8.4	4.3	4.1	99.8
118	CGN X KAL-BB CM-15133-1M-3Y-4M-2Y-0Y	B	MEX.	83.5	132.8	5.8	2.3	82.1	2692.8	8.1	3.8	1.8	99.8
119	CGN X KAL-BB CM-15133-1M-3Y-6M-0Y	B	MEX.	83.6	132.6	5.1	2.1	80.9	2911.7	6.7	5.3	2.8	106.6
120	TANORI71	R		78.8	126.8	5.4	2.6	74.9	2702.5	16.8	22.8	17.9	102.1

TABLE 2 - SUMMARY OF ALL VARIABLE MEANS IN ENTRY ORDER

ENTRY	SEED COLOUR	ORIGIN	DAYS FLOWER	DAYS MATURE	SEPT TRIT	SEPT NODO	PLNT HT	YIELD KG/HA	STEM R ACI	LEAF R, ACI	STRP R ACI	YLD% MEAN
121 CGN X KAL-BB CM-15133-15Y-1M-1Y-0Y	BS	MEX.	87.2	134.1	5.6	2.1	89.1	2874.2	17.2	8.4	18.9	102.6
122 BB-PATO X PV18A-CNO67 CM-15152-21Y-1M-1Y-0Y	R	MEX.	86.4	132.8	5.4	2.4	76.4	2825.2	16.0	10.1	11.3	102.3
123 AN(E)-MY54 X TI71 CM-15928-3M-1Y-7M-0Y	BS	MEX.	93.3	138.4	4.6	2.3	76.2	2387.5	22.3	7.4	20.7	86.6
124 COWBIRD"S" CM-16716-M-3M-2Y-3M-0Y	R	MEX.	87.5	134.9	5.3	2.3	79.7	2814.3	8.5	8.0	8.6	105.6
125 C26-CDL(CGN/TOB-CNO X CNO-INIA) CM-16722-K-6M-4Y-2M-0Y	R	MEX.	85.2	133.1	4.8	2.4	80.8	3076.0	10.3	6.4	14.7	111.7
126 HERMOSILLO77 CM-20668-D-4Y-4M-1Y-0Y	R	MEX.	81.8	129.6	5.2	2.9	73.1	2649.7	12.7	9.6	18.6	96.6
127 CGN X BB-CHA CM-21880-4M-1Y-0M	B	MEX.	86.3	134.5	5.0	2.6	83.4	2922.4	14.6	13.7	20.1	104.3
128 TL(LA X PR X KAD/GB X PR-KAD/GB) CM-23091-1M-1Y-0Y	B	MEX.	85.6	134.6	4.1	2.6	78.8	2713.3	17.1	9.5	3.3	94.8
129 TL(LA X PR X KAD/GB X PR-KAD/GB) CM-23091-1M-2Y-0Y	B	MEX.	82.4	133.2	4.4	3.0	73.9	2697.0	14.8	7.2	9.1	92.3
130 CNO"S"-PJ62 X GALLO/CHA#2 CM-26007-13Y-0Y	BS	MEX.	83.6	134.3	4.6	2.1	76.7	2701.1	15.7	13.9	20.0	98.3
131 Y50(E)-KAL(3) X RQ"S"-SOTY/SX-WE CM-26604-I-2Y-0M	R	MEX.	82.8	133.8	5.6	2.7	77.3	2714.7	14.8	24.4	7.9	99.1
132 CHOLI II 21515-1P-1P-3P	BS	MEX.	84.3	130.8	5.1	2.9	73.1	2530.6	20.9	16.3	8.3	93.2
133 KAL-BB II 26992-30M-1Y-1M-3Y-0M	R	MEX.	81.8	130.1	5.6	2.7	59.4	2129.8	8.1	11.6	15.0	75.2
134 PV18A-CNO67 II 27893-20Y-8M-1Y-0M	R	MEX.	83.1	132.7	5.1	2.7	73.7	2878.3	12.1	14.0	23.3	104.8
135 PICHON"S"=CARTHAGE"S" II 28071-7M-3Y-1M-0Y	B	MEX.	83.2	131.4	5.2	3.0	73.7	2700.1	9.2	14.3	16.3	100.5
136 CUCKOO"S" II 28424-8Y-1M-1Y-0M	B	MEX.	80.2	129.5	5.2	2.7	74.7	2803.1	13.2	19.0	18.4	105.1
137 Y50(E)-7C X KAL II 28875-300Y-14M-1Y-1B-0Y	R	MEX.	81.2	130.1	6.1	2.7	79.4	2495.3	11.3	24.5	2.9	87.2
138 NOR67-7C II 30367-1M-1Y-0Y	B	MEX.	85.3	133.8	5.7	2.7	82.9	3073.5	9.4	11.5	24.6	106.1
139 NAD63-LR64A X BB"S" II 30756-3S-1M-1T-0R	R	MEX.	84.3	130.0	5.7	2.4	67.8	2431.9	14.2	4.1	31.0	88.4
140 JUPATECO F 73	R	MEX.	82.5	131.5	4.8	2.6	74.2	2759.3	13.6	16.5	46.4	102.9
141 TARANTULA II 30839-10M-3R-1M-1R-1R-0M	B	MEX.	80.4	128.8	5.4	2.9	70.7	2331.6	11.7	11.5	23.0	84.2
142 BB(SON64-AN64 X SAD/JAR"S") II 34795-5Y-1M-3Y-0M	R	MEX.	82.2	129.6	5.4	2.4	72.0	2612.6	11.4	8.6	7.1	94.1
143 POLLO II 35129-26Y-2M-1Y-1M-1Y-0M	B	MEX.	82.3	129.5	5.1	2.3	72.5	2289.0	8.5	6.7	10.3	76.2
144 MOCHIS73-RA(2) F2 II 41593-7R-1R-1R-0M	BS	MEX.	76.0	125.9	5.1	2.4	69.7	2170.4	3.5	13.0	25.6	77.1
145 H.RA(2) F2 II 41593-0R-5R-2R-5M-0S	BS	MEX.	78.5	127.0	5.0	2.3	72.9	2611.4	5.9	23.5	26.0	88.3
146 HD-2167	B	INDIA	83.0	130.2	5.7	2.6	70.0	2352.5	12.7	10.0	3.3	83.3
147 HD-2169	B	INDIA	83.0	131.4	5.2	2.7	71.1	2813.4	16.5	11.0	4.6	99.4
148 HD-2172	B	INDIA	87.9	133.9	4.9	2.3	75.2	2959.7	11.7	11.4	11.6	109.6
149 S221-SS(2)=IWP85 72 L 178	B	INDIA	85.6	133.0	5.3	2.9	76.5	2597.7	18.5	5.3	12.0	95.5
150 HD 1220-KAL(2) 72 L 222	B	INDIA	85.3	132.7	5.3	2.9	74.5	2597.0	16.0	6.5	6.4	86.9

TABLE 2 - SUMMARY OF ALL VARIABLE MEANS IN ENTRY ORDER

ENTRY	SEED COLOUR	ORIGIN	DAYS FLOWER	DAYS MATURE	SEPT TRIT	SEPT NODO	PLNT HT	YIELD KG/HA	STEM R ACI	LEAF R ACI	STRP R ACI	YLD% MEAN
151 PAK 3418	B	PAKISTAN	82.3	130.3	5.0	3.0	75.4	2696.7	10.5	10.1	20.1	95.9
152 S311-NOR67 JIT 43-22	BS	INDIA	88.8	349.6	4.9	2.9	80.6	2602.4	12.1	5.9	12.1	94.7
153 INIA X TOB"S"-NPO CM-746-5L-11L-0L	R	LEBANON	79.8	128.9	5.7	2.6	75.1	2526.8	16.8	21.3	23.6	99.8
154 INIA-SKA PK-5993-4K-8K-0L	R	PAKISTAN	77.9	128.2	5.9	3.3	74.6	2208.4	14.5	24.2	24.8	82.7
155 MXP65 X SAL SEA.P186-19 L.112-5L-1L-0L	R	LEBANON	83.4	131.1	4.9	2.7	77.1	2964.6	30.7	43.3	39.1	112.8
156 S1582-69-N66/FL.AURORA//ODEI	R	RHODESIA	84.1	129.7	4.9	2.6	65.7	2517.8	17.9	35.3	43.9	94.1
157 OLDAFO41A	B	RHODESIA	82.5	128.4	5.4	3.0	74.2	2944.5	12.9	42.7	42.6	112.5
158 LIKAY	RS	CHILE	81.8	130.7	5.7	2.7	72.3	2770.1	22.9	33.6	30.5	107.4
159 ITAPUA	R	PARAGUAY	85.5	130.5	5.7	2.3	72.6	2684.0	29.3	22.0	51.0	107.1
160 7C	B	MEX.	85.2	131.9	5.6	2.4	76.4	2715.0	25.1	50.0	38.4	93.4
161 AURIFEN	R	CHILE	84.1	133.0	4.8	2.6	72.1	2796.4	22.1	6.8	10.6	109.2
162 T.AESTIVUM X CNO"S"-GALLO SWM 450-3Y-0Y	R	MEX.	80.8	128.8	4.9	2.1	69.6	2654.6	25.7	12.1	14.3	98.3
163 VG881(FN-TH(3) X II 44-29/TH(2)) N818-3P-6P-2P-1D-0Y	R	MEX.	88.1	133.1	4.3	2.7	75.0	2704.4	28.3	6.7	12.1	106.6
164 VG881(FN-TH(3) X II 44-29/TH(2)) N818-3P-6P-4P	R	MEX.	89.8	135.3	4.6	2.9	77.8	2615.7	35.3	8.9	7.8	99.7
165 GLEA-GAINES 54Y-0Y	R	CAN.-MEX.	88.8	132.6	5.3	2.9	80.1	2975.5	39.1	8.5	13.9	114.8
166 TOB-GAINES 2Y-0Y	RS	CAN.-MEX.	92.6	135.6	4.4	2.0	76.4	2730.1	17.6	7.3	5.1	105.9
167 S948.A1-S(E)(5) H567.71-6Y-1B-0Y	RS	MEX.	83.6	129.2	5.1	2.4	71.5	2589.6	19.9	12.9	23.2	95.9
168 S948.A1-S(E)(7) CMH-72A.390-1B-1Y-0B	RS	MEX.	84.5	130.3	4.9	2.3	70.7	2810.2	14.6	10.4	21.2	105.0
169 S948.A1-S(E)(5) H567.71-2Y-2B-2Y-1B-0Y	RS	MEX.	84.2	128.3	5.1	2.6	70.0	2798.1	13.8	15.1	23.9	110.0
170 CIANO67	R	MEX.	77.0	124.5	6.0	2.9	69.8	1977.0	17.1	16.6	22.9	72.2
171 S948.A1-CNO"S"(2) X CNO67(3) H569.71-3Y-3B-0Y-1B-0Y	R	MEX.	78.0	125.5	5.0	3.0	56.1	2295.3	11.7	17.3	14.8	86.5
172 S948.A1-CNO"S"(2) X CNO 676 CMH72A-429-4B-1Y-4B-0Y		MEX.	78.7	126.8	5.6	3.0	54.2	2341.4	12.3	12.1	18.9	85.9
173 S948.A1-CNO"S"(4) H471.71A-12B-3Y-1B-0Y		MEX.	78.6	126.4	4.6	3.0	52.9	2254.2	11.0	8.3	21.4	76.9
174 S948.A1-CNO"S"(2) X CNO673 H570.71-3Y-3B-0Y-2B-0Y		MEX.	78.8	127.1	5.0	2.0	58.6	2253.4	15.3	15.1	23.8	88.2
175 STA.ELENA		MEX.	81.7	128.1	4.5	2.6	87.7	2645.5	17.5	18.3	26.5	105.0
176 S948A1-STA.ELENA(7) CMH72A.390-1B-1Y-0B		MEX.	85.9	130.6	4.5	2.6	73.9	2748.5	16.9	17.5	28.3	109.3
177 S948A1-STA.ELENA(7) CMH72A.390-5B-1Y-0B		MEX.	85.0	130.3	4.5	2.4	71.2	2834.6	16.8	17.4	30.8	113.5
178 S948A1-STA.ELENA(7) CMH72A.390-2B-2Y-1B-0Y		MEX.	84.3	128.8	4.4	2.7	70.7	2735.7	15.4	13.2	30.7	104.4
179 S948A1-STA.ELENA(7) CMH72A.390-2B-2Y-0B		MEX.	83.6	128.2	4.8	2.3	70.0	2904.4	18.6	16.0	28.9	111.8
180 S948A1-STA.ELENA(5) H567.71-6Y-1B-0Y		MEX.	82.5	127.8	4.6	2.9	70.2	2754.1	23.7	13.1	28.7	105.0

TABLE 2 - SUMMARY OF ALL VARIABLE MEANS IN ENTRY ORDER

	ENTRY	SEED COLOUR	ORIGIN	DAYS FLOWER	DAYS MATURE	SEPT TRIT	SEPT NODO	PLNT HT	YIELD KG/HA	STEM R ACI	LEAF R ACI	STRP R ACI	YLD% MEAN
181	S948A1-STA.ELENA(5) H567.71-6Y-1B-1Y-1B-0Y		MEX.	83.9	128.6	4.8	2.6	78.7	2888.2	15.8	13.1	32.6	118.8
182	S948A1-STA.ELENA(6) CMH72A.303-1B-1Y-1B-0Y		MEX.	83.6	129.4	4.6	2.1	72.7	2791.8	16.8	18.2	28.6	118.8
183	S948A1-STA.ELENA(7) CMH72A.398-2B-1Y-0B		MEX.	83.4	129.3	4.5	2.4	68.5	2828.5	16.1	24.3	27.3	112.8
184	S948A1-STA.ELENA(7) CMH72A.398-4B-3Y-4B-0Y		MEX.	86.4	138.2	5.3	2.7	52.1	1868.3	13.9	16.6	25.4	74.4
185	BONZA55		MEX.	87.7	132.7	4.7	2.7	98.1	2266.3	8.8	28.9	18.3	87.3
186	S948A1-BZA(4) H472.71A-1B-2Y-1B-2Y-1B-0Y		MEX.	81.8	129.2	4.8	2.7	73.8	2351.4	9.5	11.8	11.4	87.4
187	S948A1-BZA(4) H472.71A-1B-2Y-1B-2Y-0B		MEX.	81.5	129.2	5.1	2.4	68.7	2459.9	11.3	9.7	18.1	93.6
188	S948A1-BZA(4) H472.71A-1B-2Y-1B-1Y-1B-0Y		MEX.	83.3	129.6	5.6	3.3	54.6	1775.6	18.6	18.2	18.9	68.8
189	S948A1-BZA(4) H472.71A-1B-2Y-1B-2Y-2B-0Y		MEX.	82.3	129.1	5.3	2.7	71.5	2372.1	9.2	8.6	11.2	93.8
190	NAD.63		MEX.	98.1	141.8	5.3	2.8	77.6	2492.7	18.9	8.5	26.8	83.8
191	NAD.63 X T.TH-SON64/NAD.63(3) H270.70A-3B-1Y-2B-3Y-2B-0Y		MEX.	92.4	137.5	4.9	2.4	59.8	2388.9	17.6	12.9	28.3	89.3
192	NAD.63 X T.TH-SON64/NAD.63(4) H553.71-1Y-7B-1Y-1B-0Y		MEX.	92.5	137.3	5.3	2.4	56.1	2152.5	17.8	6.8	19.6	76.1
193	NAD.63 X T.TH-SON64/NAD.63(4) H553.71-2Y-3B-1Y-1B-0Y		MEX.	92.8	136.4	5.3	2.1	55.8	1815.1	17.3	7.1	21.7	69.3
194	CHRIS		U.S.A.	89.3	135.5	4.8	2.7	93.7	2541.2	7.9	4.1	14.3	97.3
195	CHRIS-S948A1 X CHRIS(4) CMH72A.333-1B-2Y-0B		MEX.	91.8	135.3	4.3	3.7	59.7	1786.5	9.8	4.8	19.3	78.4
196	CHRIS-S948A1 X CHRIS(5) CMH73.489-2Y-0B		MEX.	89.6	135.8	4.1	3.8	77.9	2774.8	18.3	4.6	28.8	118.3
197	CHRIS-S948A1 X CHRIS(4) CMH72A.333-1B-2Y-1B-0Y		MEX.	98.6	136.8	4.4	2.8	59.7	1928.4	9.3	2.7	19.8	68.7
198	CHRIS-S948A1 X CHRIS(4)/II-8156(B) CMH72A.307-3B-1Y-8B-0Y		MEX.	87.6	134.1	4.8	2.3	77.8	2777.8	8.3	6.8	12.8	109.1
199	CHRIS-S948A1 X CHRIS(4)/II-8156(B) CMH72A.307-3B-1Y-4B-0Y		MEX.	88.1	134.3	4.1	2.1	78.3	2366.1	6.8	4.5	15.8	91.3
200	CRIM		U.S.A.	94.1	137.7	4.5	2.4	95.2	2547.5	7.8	22.2	45.5	98.5
201	S948A1-CRIM(4) H474.71A-3B-1Y-1B-1Y-2B-0Y		MEX.	92.3	136.3	4.8	2.7	78.8	2508.2	12.8	22.9	41.9	88.7
202	S948A1-CRIM(6) CMH72A.404-4B-2Y-0B		MEX.	93.4	136.7	4.4	2.7	78.4	2389.8	13.1	29.7	46.8	85.8
203	S948A1-CRIM(5) CMH72.336-2Y-2B-2Y-0B		MEX.	92.7	136.2	5.8	3.1	74.6	2329.3	18.4	33.7	44.9	85.5
204	S948A1-CRIM(6) CMH72A.404-4B-1Y-3B-0Y		MEX.	93.8	137.8	4.4	3.1	78.1	2619.5	9.9	35.3	44.4	93.3
205	S948A1-CRIM(4) H474.71A-3B-1Y-1B-2Y-0B		MEX.	95.3	137.2	4.8	3.6	53.2	1734.1	8.1	25.3	46.1	64.1

TABLE 3 - Top 10 percent of lines with respect to yield.

Entry	Variety or Cross and Pedigree	Yield Kg/Ha
106	Chiroca "S" CM8963-A-1M-1Y-1M-5Y-9M-0Y	3304.5
75	Pavón "S" CM8399-D-4M-3Y-0M	3301.4
81	Pavón "S" CM8399-D-4M-3Y-1M-1Y-1M-0Y	3233.8
78	Pavón "S" CM8399-D-4M-3Y-1M-1Y-0M	3212.4
77	Pavón "S" CM8399-D-4M-3Y-1M-0Y	3212.0
55	Brochis "S" CM-5872-B-8Y-1M-2Y-1M-0Y	3200.2
91	Hork "S" CM8874-K-1M-1Y-0M	3197.1
29	Blue Jay "S" CM5287-J-1Y-2M-1Y-1M-0Y	3194.3
30	Blue Jay "S" CM5287-J-1Y-2M-2Y-3M-0Y	3191.2
82	Pavón "S" CM8399-D-4M-2Y-2M-3Y-1M-0Y	3191.0
102	Chiroca "S" CM8963-A-1M-1Y-1M-1Y-0M	3180.8
76	Pavón "S" CM8399-D-4M-3Y-0M-0BK	3172.8
104	Chiroca "S" CM8963-A-1M-1Y-1M-4Y-0M	3158.3
63	Moncho "S" CM8288-A-3M-1Y-500M-0Y	3141.0
31	Blue Jay "S" CM5287-J-1Y-2M-1Y-4M-0Y	3140.7
23	Sapsucker "S" Br69-1Y-3M-7Y-0M	3125.7
49	Brochis "S" CM-5872-C-1Y-1M-3Y-3M-0Y	3117.5
36	(7C/LR64-Inia x Inia-Bb)Tob-8156 CM-5349-A-9Y-1M-2Y-500M-0Y	3109.7
103	Chiroca "S" CM8963-A-1M-1Y-1M-3Y-0M	3102.6
95	Hork "S" CM8874-K-1M-1Y-0M-(1-105Y)	3100.6

TABLE 4. Lines or cultivars most frequently in top 10% of highest yielders at 48 locations where yield data were recorded.

Entry	Cultivar or cross and pedigree	Number of times present in top 10%	Individual sites where lines were in top 10%
75	Pavon"S" CM-8399-D-4M-3Y-0M	12	South Africa (27), Hungary (75), Mexico (132), USA (135), Chile (165), Norway (242), Argentina (312), Australia (313), South Africa (326), India (48), Portugal (84), Canada (121).
81	Pavon"S" CM-8399-D-4M-3Y-1M-1Y-1M-0Y	12	South Africa (27), India (50), India (53), Iran (99), Canada (121), USA (135), Chile (165), Spain (310), Australia (313), Yemen (317), Egypt (344), Malawi (16).
165	Glea-Gaines 54Y-0Y	12	Sudan (32), Finland (70), Iraq (101), Mexico (130), USA(144), Brazil (159), NOrway (242), Ireland (308), Poland (309), Australia (313), USA (335), Nicaragua (338).
52	Brochis"S" CM-5872-C-1Y-5M-1Y-2M-0Y	12	Sudan (29), Sudan (31), India (50), S. Korea (64), Finland (70), Iran (99), Mexico (132), USA (137), Yemen (317), Costa Rica (336), Ethiopia (10), Malawi (16).
47	Brochis"S" CM-5872-C-1Y-1M-1Y-3M-0Y	11	Egypt (7), Sudan (29), Sudan (32), Greece (74), Portugal (84), Canada (121), Mexico (132), Brazil (159), Costa Rica (336), Nicaragua (338), Ethiopia (10).
80	Jupateco 73	11	Egypt (6), Bangladesh (42), India (50), India (53), USA (137), Australia (313), Philippines (337), Nicaragua (338), USA (345), Peru (170), Ireland (308).
74	Emu"S" CM-8327-C-9M-4Y-8M-0Y	11	South Africa (27), Hungary (75), Portugal (74), Mexico (130), USA (135), Chile (165), Ireland (308), Yemen (317), Philippines (323), Egypt (344), USA (345).
29	Bluejay"S" CM-5287-J-1Y-2M-1Y-1M-0Y	11	Bangladesh (43), India (53), Greece (74), Portugal (84), Iran (99), USA (144), Chile (165), Spain (310), Philippines (337), Ethiopia (10), Peru (170).
104	Chiroca"S" CM-8963-A-1M-1Y-1M-4Y-0M	10	Egypt (7), S. Korea (64), Finland (70), Hungary (75), Iran (99), Bolivia (158), Ireland (308), Argentina (312), Philippines (337), Malawi (16),
155	Mexp 65 x Sal. Sea. P 106-19 L. 112-5L-1L-0L	10	Bangladesh (42), Bangladesh (43), Finland (70), Iran (99), Iraq (101), USA (135), Brazil (159), Ireland (308), Poland (309), Nicaragua (338).
103	Chiroca"S" CM-8963-A-1M-1Y-1M-3Y-0M	10	Egypt (7), Finland (70), Hungary (75), Iraq (101), Mexico (130), Mexico (132), USA (144), Poland (309), Argentina (312), Malawi (16).
82	Pavon"S" CM-8399-D-4M-2Y-2M-3Y-1M-0Y	10	Bangladesh (42), India (50), India (53), Chile (165), Spain (310), Argentina (312), Australia (313), S. Africa (326), Norway (346), Malawi (16).
63	Moncho"S" CM-8288-A-3M-1Y-500M-0Y	10	Egypt (7), Egypt (8), Sudan (32), Bangladesh (42), India (53), Portugal (84), Bolivia (158), Chile (165), Peru (170), S. Africa (326)
157	Oldafo 41A	10	Bangladesh (43), Iran (99), Iraq (101), Norway (242), Ireland (308), Spain (310), Australia (313), Philippines (323), Egypt (344), USA (345).

[1] Numbers in parentheses are standard site locations which correspond to permanent locations in Table 1.

TABLE 5 - PATTERN OF ADAPTATION OF ENTRIES IN TABLE 4 AT THE VARIOUS SITES WHERE YIELD WAS REPORTED

Entry	Line or Cross	Site where entry was in top 10%
75	Pavon "S"	27 75 132 135 165 242 312 313 326 48 84 121
81	Pavon "S"	27 135 165 313 121 50 53 99 310 317 344 18
165	Glea-Gaines	242 313 32 70 101 130 144 159 308 309 335 338
52	Brochis "S"	132 50 99 310 18 70 29 31 64 137 336 10 7 74
47	Brochis "S"	132 84 121 32 159 29 31 64 137 336 10 7 74
80	Jupateco 73	313 50 53 308 137 6 42 337 345 170
74	Emu "S"	27 75 135 165 84 310 317 344 18 130 308 345 323 43
29	Bluejay "S"	165 84 53 99 310 18 144 10 74 337 170 43
104	Chiroca "S"	75 312 99 32 70 308 64 10 74 337 158
155	Mexp. 65 x Sal. Sea. P106-19	135 310 70 101 159 308 309 42 43
103	Chiroca "S"	75 132 312 32 70 101 130 144 309 10 74
82	Pavon "S"	165 312 313 326 53 99 310 32 42
63	Moncho "S"	165 326 84 99 32 10 74 42 170 158 346 8
157	Oldafo 41A	242 313 99 310 317 70 308 345 323 43

Site number refers to permanent location number indicated in Table 1

Table 6. Entries which yielded, on the average, 10% or more above the mean yield of the lines at each site.

Entry	Variety or cross and pedigree	Mean % Yield
29	Blue Jay "S" CM5287-J-1Y-2M-1Y-1M-0Y	120.1
106	Chiroca "S" CM8963-A-1M-1Y-1M-5Y-9M-0Y	119.2
47	Brochis "S" CM5872-C-1Y-1M-1Y-3M-0Y	118.7
63	Moncho "S" CM8288-A-3M-1Y-500M-0Y	117.4
23	Sapsucker "S" Br69-1Y-3M-7Y-0M	117.0
91	Hork "S" CM8874-K-1M-1Y-0M	116.4
30	Blue Jay "S" CM5287-J-1Y-2M-2Y-3M-0Y	116.2
55	Brochis "S" CM-5872-B-8Y-1M-2Y-1M-0Y	115.6
74	Emu "S" CM8327-C-9M-4Y-8M-0Y	115.5
75	Pavón "S" CM8399-D-4M-3Y-0M	115.3
49	Brochis "S" CM-5872-C-1Y-1M-3Y-3M-0Y	115.2
43	Tob-Cno"S" x Tob-8156/Cal x Bb-Cno CM5816-A-6Y-2M-2Y-501M-0Y	115.2
36	(7C/LR64-Inia x Inia-Bb)Tob-8156 CM-5349-A-9Y-1M-2Y-500M-0Y	114.9
77	Pavón "S" CM8399-D-4M-3Y-1M-0Y	114.9
165	Glea-Gaines 54Y-0Y	114.8
81	Pavón "S" CM8399-D-4M-3Y-1M-1Y-1M-0Y	114.7
31	Blue Jay "S" CM5287-J-1Y-2M-1Y-4M-0Y	114.6

Table 6 . continued

Entry	Variety or cross and pedigree	Mean % Yield
35	(7C/LR64-Inia x Inia-Bb)Tob-8136 CM-5349-A-9Y-1M-2Y-0M	114.2
102	Chiroca"S" CM-8963-A-1M-1Y-1M-1Y-0M	114.1
104	Chiroca"S" CM-8963-A-1M-1Y-1M-4Y-0M	114.0
82	Pavon"S" CM-8399-D-4M-2Y-2M-3Y-1M-0Y	113.9
78	Pavon"S" CM-8399-D-4M-3Y-1M-1Y-0M	113.8
177	S948.A1-Sta.Elena^{7} CMH-72A-390-5B-1Y-0B	113.5
27	Cno-7C x CC-Tob/SD 648.5-81569(R) CM-4756-12Y-1M-3Y-0M	113.3
95	Hork"S" CM-8874-K-1M-1Y-0M-(1-105Y)	112.9
110	(Tob"S"-Inia"S"/S64 x Sk_E^{6}-An)Bb#4A CM-11177-21Y-2M-1Y-1M-0Y	112.9
51	Brochis"S" CM-5872-C-1Y-5M-1Y-0M	112.8
155	MxP65 x Sal Sea. P106-19 L.112-5L-1L-0L	112.8
79	Pavon"S" CM-8399-D-4M-3Y-3M-1Y-0M	112.7
103	Chiroca"S" CM-8963-A-1M-1Y-1M-3Y-0M	112.7
157	Oldafo 41A	112.5
56	Brochis"S" CM-5872-B-8Y-1M-2Y-4M-0Y	112.4
101	Flicker"S" CM-8954-B-7M-1Y-1M-1Y-0M	112.0
183	S948.A1-Sta. Elena^{7} CMH-72A. 390-2B-1Y-0B	112.0
179	S948.A1-Sta. Elena^{7} CMH-72A. 390-2B-2Y-0B	111.8
25	Cno-7C x CC-Tob/SD 648.5-8156(R) CM-4756-12Y-1M-1Y-0M	111.7
125	C26-Cdl(Cgñ/Tob-Cno x Cno-Inia) CM-16722-K-6M-4Y-2M-0Y	111.7
66	Moncho"S" CM-8288-A-3M-6Y-5M-2Y-0M	111.2
37	(No66-Bb/Cno x Nad-Chr"S")7C CM-5375-F-1Y-1M-1Y-0M	111.2

Table 6. continued

Entry	Variety or cross and pedigree	Mean % Yield
76	Pavon"S" CM-8399-D-4M-3Y-0M-0BK	111.0
107	Bb-Kal CM-9160-11M-5Y-5M-2Y-0M	110.9
181	S948.A1-Sta Elena[5] H567.71-6Y-1B-1Y-1B-0Y	110.8
45	Brochis"S" (B) CM-5872-C-1Y-1M-1Y-1M-0Y	110.7
52	Brochis"S" CM-5872-C-1Y-5M-1Y-2M-0Y	110.7
109	Cgñ/Pato x Bb-Cno CM-10712-1Y-1M-7Y-1M-0Y	110.7
196	Chris-S948.A1 x Chris[5] CMH73.489-2Y-0B	110.3
182	S948.A1-Sta. Elena[6] CMH72A-303-1B-1Y-1B-0Y	110.0
169	S948.A1-SE5 H567.71-2Y-2B-2Y-1B-0Y	110.0

TABLE 7. Cultivars released from entries in 10th IBWSN.

Entry	CIMMYT Name	Country of release	New name
19	Sapsucker"S" BR-69-1Y-3M-3Y-0M	Mexico	Tezopaco 76
30	Bluejay"S" CM-5287-J-1Y-2M-2Y-3M-0Y	Mexico	Nacozari 76
29	Bluejay"S" CM-5287-J-1Y-2M-1Y-1M-0Y	Mexico	Jauhara 77
75	Pavon"S" CM-8399-D-4M-3Y-0M	Algeria	Cirta 78
81	Pavon"S" CM-8399-D-4M-3Y-1M-1Y-1M-0Y	Mexico	Pavon 76
126	Magpie"S" CM-20668-D-4Y-4M-1Y-0Y	Mexico	Hermosillo 77
132	Choli"S" II-21515-1P-1P-3P-5M-0Y	Mexico	Pima 77
136	Cuckoo"S" II-28424-8Y-1Y-1Y-0M	Lebanon	Haramoun

TABLE 8. Lines which headed in 81 days or less.

Entry	Variety or cross and pedigree	Days to Heading
7	Potam 79	76
10	Tanori 71 Resel	77
9	Tanori 71	77
144	Mochi73-RA^{2}F$_2$ II-41593-7R-1R-1R-0M	77
170	Ciano 67	77
16	Toluca 73	77
154	Inia-Ska PK-5993-4K-8K-0L	78
171	S948A1-Cno"S"^{2} x Cno 67^3 H569.71-3Y-3B-0Y-1B-0Y	78
8	Torim F 73	78
145	H.RA^2 F2 II-41593-8R-5R-2R-5M-0S	79
173	S948A1-Cno"S"^{4} H471.71A-12B-3Y-1B-0Y	79
172	S948A1-Cno"S"^{2} x Cno 67^6 CMH-72A-429-4B-1Y-4B-0Y	79
174	S948A1-Cno"S"^{2} x Cno 67^3 H570.71-3Y-3B-0Y-2B-0Y	79
32	Bluejay"S" CM-5287-J-1Y-4M-1Y-4M-0Y	79
13	Salamanca 75	79
1	Yecora F 70	80
58	Pichihuila "S" CM-7652-35M-5Y-3M-0Y	80
153	Inia x Tob"S"-Npo CM-746-5L-11L-0L	80
136	Cuckoo"S" II-28424-8Y-1M-1Y-0M	80
141	Tarantula II-30839-10M-3R-1M-1R-1R-0M	80
2	Nuri F 70	80

TABLE 8. continued

Entry	Variety or cross and pedigree	Days to heading
5	Cocoraque F75	81
31	Bluejay"S" CM-5287-J-1Y-2M-1Y-4M-0Y	81
59	Npo-Tob"S" x 8156/Kal-Bb CM-7806-15M-2Y-2M-1Y-0M	81
162	T. aestivum x Cno"S"-Gallo SWM-450-3Y-0Y	81
33	Bluejay"S" CM-5287-J-1Y-2M-1Y-4M-0Y-501Y-0B	81
133	Kal-Bb II-26992-30M-1Y-1M-3Y-0M	81

TABLE 9. Entries with highest levels of stem rust resistance as determined by coefficient of infection[1]

Entre	Variety or Cross and Pedigree	Stem Rust (ACI)
111	/(21931/Ch53-An x Gb56) An54/Cdl CM-11243-28Y-4M-3Y-0M	1.3
113	(Cno"S"-Gallo/Son64-Kl.Rend x Bb)Up301 CM-11559-K-5Y-8M-1Y-1M-1Y-0Y	2.7
52	Brochis"S" CM-5872-C-1Y-5M-1Y-2M-0Y	2.7
51	Brochis"S" CM-5872-C-1Y-5M-1Y-0M	2.9
53	Brochis"S" CM-5872-C-1Y-5M-2Y-1M-0Y	3.4
54	Brochis"S" CM-5872-C-1Y-5M-2Y-2M-0Y	3.5
144	Mochis 73-RA[2] F2 II-41593-7R-1R-1R-0M	3.5
69	Emu"S" CM-8327-C-9M-1Y-0M	4.4

TABLE 9. Continued

Entry	Variety or cross and pedigree	Stem Rust (ACI)
50	Brochis"S" CM-5872-C-1Y-1M-3Y-1M-0Y	4.5
57	Ron-Cha CM-6552-16M-1Y-5M-3Y-0M	4.6
17	Dougga	4.6
47	Brochis"S" CM-5872-C-1Y-1M-1Y-3M-0Y	4.9
16	Toluca 73	4.1
48	Brochis"S" CM-5872-C-1Y-1M-1Y-4M-0Y	5.0
46	Brochis"S" CM-5872-C-1Y-1M-3Y-0M	5.3
49	Brochis"S" CM-5872-C-1Y-1M-3Y-3M-0Y	5.7
44	Brochis"S" CM-5872-C-1Y-1M-1Y-1M-0Y	5.8
145	H.RA[2] F2 II 41593-8R-5R-2R-5M-0S	5.9
45	Brochis"S"(B) CM-5872-C-1Y-1M-1Y-1M-0Y	5.1
81	Pavon"S" CM-8399-D-4M-3Y-1M-1Y-1M-0Y	6.1
18	Sapsucker"S" Br-69-1Y-3M-0Y	6.3
74	Emu"S" CM-8327-C-9M-4Y-8M-0Y	6.4
119	Cgñ x Kal-Bb CM-15133-1M-3Y-6M-0Y	6.7
199	Chr-S948A1 x Chr[4]/II 8156(B) CMH-72A.307-3B-1Y-4B-0Y	6.8
55	Brochis"S" CM-5872-B-8Y-1M-2Y-1M-0Y	6.9

[1]Average coefficient of infection (ACI). See Text for explanation.

TABLE 10. Entries with highest levels of leaf rust resistance as determined by coefficient of infection[1]

Entry	Variety or Cross and Pedigree	Leaf Rust (ACI)
66	Moncho "S" CM8288-A-3M-6Y-5M-2Y-0M	2.6
197	Chris-S948A1 x Chris[4] CMH72A.333-1B-2Y-1B-0Y	2.7
61	We x Tob-Cno"S"/Cdl CM8285-T-500M-503Y-0M-501M-0Y	3.6
91	Hork "S" CM8874-K-1M-1Y-0M	3.8
103	Chiroca "S" CM8963-A-1M-1Y-1M-3Y-0M	3.8
118	Cgñ x Kal-Bb CM15133-1M-3Y-4M-2Y-0Y	3.8
94	Hork "S" CM8874-K-1M-1Y-0M(1-356Y)-(1-200B)	4.1
139	Nad63-LR64A xBb"S" II 30756-3S-1M-1T-0R	4.1
194	Chris	4.1
93	Hork "S" CM8874-K-1M-1Y-0M (1-356Y)	4.1
92	Hork "S" CM8874-K-1M-1Y-0M (1-113Y)	4.2
5	Cocoraque F 75	4.2
117	Cgñ x Kal-Bb CM15133-1M-2Y-2M-1Y-0Y	4.3
17	Dougga	4.4
59	Nop-Tob "S" x 8156 / Kal-Bb CM7806-15M-2Y-2M-1Y-0M	4.4
199	Chris-S948A1 x Chris[4]/II-8156 (B) CMH72A.307-3B-1Y-4B-0Y	4.5
196	Chris-S948A1 x Chris[5] CMH73.489-2Y-0B	4.6
95	Hork "S" CM8874-K-1M-1Y-0M-(1-105Y)	4.7
96	Hork "S" CM8874-K-1M-1Y-1M-2Y-0M	4.8

TABLE 10. continued

Entry	Variety or Cross and Pedigree	Leaf Rust (ACI)
195	Chris - S948A1 x Chris[4] CMH72A.333-1B-2Y-0B	4.8
106	Chiroca "S" CM8963-A-1M-1Y-1M-5Y-9M-0Y	4.9
37	(No66-Bb/Cno x Nad-Chr"S")7C CM5375-F-1Y-1M-1Y-0M	4.9
105	Chiroca "S" CM8963-A-1M-1Y-1M-5Y-6M-0Y	5.2
149	S221-SS[2] = 1WP 85 72 L 178	5.3
119	Cgñ x Kal-Bb CM15133-1M-3Y-6M-0Y	5.3
72	Emu "S" CM8327-C-9M-1Y-5M-1Y-0M	5.5
102	Chiroca "S" CM8963-A-1M-1Y-1M-1Y-0M	5.5
6	Anahuac F 75	5.8
116	Tob-Cfn x Bb/Ti71 CM15097-4M-1Y-2M-1Y-0Y	5.8
104	Chiroca "S" CM8963-A-1M-1Y-1M-4Y-0M	5.8
152	S311 - Nor 67 Jit 43-22	5.9
110	(Tob"S"-Inia"S"/S64 x Sk_E[6]-An)Bb #4A CM11177-21Y-2M-1Y-1M-0Y	5.9
198	Chris-S948A1 x Chris[4]/II-8156 (B) CMH72A.307-3B-1Y-8B-0Y	6.0

[1] Average coefficient of infection (ACI). See text for explanation

TABLE 11. Entries with highest levels of stripe rust resistance as determined by coefficient of infection[1]

Entry	Variety or Cross and Pedigree	Stripe Rust (ACI)
49	Brochis"S" CM-5872-C-1Y-1M-3Y-3M-0Y	0.6
73	Emu"S" CM-8327-C-9M-4Y-3M-0Y	0.7
47	Brochis"S" CM-5872-C-1Y-1M-1Y-3M-0Y	0.8
50	Brochis"S" CM-5872-C-1Y-1M-3Y-1M-0Y	0.9
53	Brochis"S" CM-5872-C-1Y-5M-2Y-1M-0Y	0.9
118	Cgñ x Kal-Bb CM-15133-1M-3Y-4M-2Y-0Y	1.0
45	Brochis"S" CM-5872-C-1Y-1M-1Y-1M-0Y	1.1
54	Brochis"S" CM-5872-C-1Y-5M-2Y-2M-0Y	1.5
72	Emu"S" CM-8327-C-9M-1Y-5M-1Y-0M	1.6
48	Brochis"S" CM-5872-C-1Y-1M-1Y-4M-0Y	1.8
44	Brochis"S" CM-5872-C-1Y-1M-1Y-1M-0Y	1.9
119	Cgñ x Kal-Bb CM-15133-1M-3Y-6M-0Y	2.0
51	Brochis"S" CM-5872-C-1Y-5M-1Y-0M	2.1
98	(Cno[2] x Son-Kl.Rend/Ron)SX CM-8922-H-1M-1Y-3M-2Y-0M	2.1
74	Emu"S" CM-8327-C-9M-4Y-8M-0Y	2.3
52	Brochis"S" CM-5872-C-1Y-5M-1Y-2M-0Y	2.6
111	/(21931/Ch53-An x Gb56)An64/Cdl CM-11243-28Y-4M-3Y-0M	2.8
137	$Y50_E$-7C x Kal II-28875-300Y-14M-1Y-1B-0Y	2.9
75	Pavon"S" CM-8399-D-4M-3Y-0M	3.1
71	Emu"S" CM-8327-C-9M-1Y-2M-2Y-1M-0Y	3.3

TABLE 11.continued

Entry	Variety or Cross and Pedigree	Stripe Rust (ACI)
128	Tl(La x Fr x KAD/Gb x Fr-KAD/Gb) CM-23091-1M-1Y-0Y	3.3
70	Emu"S" CM-8327-C-9M-1Y-1M-1Y-0M	3.3
146	HD-2167	3.3
46	Brochis"S" CM-5872-C-1Y-1M-3Y-0M	3.3
106	Chiroca"S" CM-8963-A-1M-1Y-1M-5Y-9M-0Y	3.9
117	Cgñ x Kal-Bb CM-15133-1M-2Y-2M-1Y-0Y	4.1
65	Moncho"S" CM-8288-A-3M-6Y-5M-1Y-0M	4.1
66	Moncho"S" CM-8288-A-3M-6Y-5M-2Y-0M	4.4
33	Bluejay"S" CM-5287-J-1Y-2M-1Y-4M-0Y-501Y-0B	4.4
147	HD-2169	4.6
59	Npo-Tob"S" x 8156/Kal-Bb CM-7806-15M-2Y-2M-1Y-0M	4.7
81	Pavon"S" CM-8399-D-4M-3Y-1M-1Y-1M-0Y	4.7
107	Bb-Kal CM-9160-11M-5Y-5M-2Y-0M	4.9
166	Tob-Gaines 2Y-0Y	5.1
56	Brochis"S" CM-5872-B-8Y-1M-2Y-4M-0Y	5.4
105	Chiroca"S" CM-8963-A-1M-1Y-1M-5Y-6M-0Y	5.6
113	(Cno"S"-Gallo/Son64-K1.Rend x Bb)Up301 CM-11559-K-5Y-8M-1Y-1M-1Y-0Y	5.9

[1] Average coefficient of infection (ACI). See text for explanation

TABLE 12. Entries with the highest level of powdery mildew resistance as determined by coefficient of infection

Entry	Variety or cross and pedigree	ACI
127	Cgñ x Bb-Cha CM-21880-4M-1Y-0M	2.5
149	IWP 85 72 L 178	2.5
199	Chris-S948.A1 x Chris^{4}/II-8156(B) CMH72A-307-3B-1Y-4B-0Y	2.7
58	Pichihuila"S" CM-7652-35M-5Y-3M-0Y	2.8
85	Bolsena"S" CM-8625-G-1M-4Y-1M-1Y-2M-0Y	2.8
131	Y50$_{E}$-Kal^{3} x Rq"S"-Soty/Sx-We CM-26604-I-2Y-0M	2.8
150	HD 1220-Kal^{2} 72L 222	2.8
17	Dougga	3.0
105	Chiroca"S" CM-8963-A-1M-1Y-1M-5Y-6M-0Y	3.0
106	Chiroca"S" CM-8963-A-1M-1Y-1M-5Y -9M-0Y	3.0
147	HD-2169	3.0
198	Chris-S948 A1 x Chris^{4}/II-8156(B) CMH-72A.307-3B-1Y-8B-0Y	3.0
28	Gto-7C x Bb-Cno CM-5278-B-4Y-1M-2Y-3M-1Y-0M	3.2
39	Mesabi"S" CM-5513-D-1Y-1M-5Y-1M-1Y-0M	3.2
57	Ron-Cha CM-6552-16M-1Y-5M-3Y-0M	3.2
84	Bolsena"S" CM-8625-G-1M-4Y-1M-1Y-1M-0Y	3.2
87	Bolsena"S" CM-8625-G-1M-4Y-1M-1Y-4M-0Y	3.2
100	Siete Cerros 66	3.2
107	Bb-Kal CM-9160-11M-5Y-5M-2Y-0M	3.2
111	/(21931/Ch53-An x Gb56)An64/Cdl CM-11243-28Y-4M-3Y-0M	3.2
134	PV18A-Cno67 II-27893-20Y-8M-1Y-0M	3.2
152	S311-Nor67 Jit 43-22	3.2
29	Bluejay"S" CM-5287-J-1Y-2M-1Y-1M-0Y	3.3
74	Emu"S" CM-8327-C-9M-4Y-8M-0Y	3.3