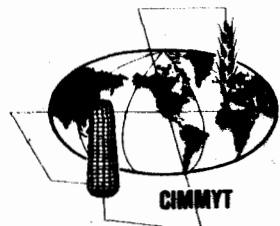




Results of the Fourteenth International Septoria Observation Nursery (ISEPTON) 1983-84



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**GLOSSARY OF ABBREVIATIONS AND UNITS OF MEASURE
GLOSARIO DE ABBREVIATURAS Y UNIDADES DE MEDICION
GLOSSAIRE DES ABRÉVIATIONS ET UNITÉS DE MESURE**

Abbreviation	Scientific name	Variable name(scale)	Nombre de la variable (escala)	Nom de la variable (échelle)
AL TOL		Aluminum tolerance (0-9 scale)	Tolerancia al aluminio (escala 0-9)	Tolérance à l'aluminium (échelle 0-9)
ALT B	<i>Alternaria triticina</i>	Alternaria leaf blight (0-9 scale)	Tizón por alternaria (escala 0-9)	Alternaria (échelle 0-9)
ANT DMGE		Ant damage (percentage)	Porcentaje de daño por hormigas	Dégat du aux fourmis en pourcentage
APHD DMGE		Aphid damage (percentage)	Porcentaje de daño por áfidos	Dégat du aux pucerons en pourcentage
ARMY WORM		Army worm damage (percentage)	Porcentaje de daño por gusano cogollero	Dégat du aux noctuelles en pourcentage
BAC S	<i>Xanthomonas campestris</i>	Bacterial stripe (0-9 scale)	Rayado bacteriano y pajilla negra (escala 0-9)	Rayure bactérienne (échelle 0-9)
BAC B	<i>Pseudomonas syringae</i>	Bacterial blight (0-9 scale)	Tizón bacteriano de la hoja (escala 0-9)	Brulure bactérienne des feuilles (échelle 0-9)
BAR S	<i>Pyrenophora graminea</i> (syn. <i>Drechslera gramineum</i> , syn. <i>Helminthosporium gramineum</i>)	Barley stripe (0-9 scale)	Mancha estriada de la cebada	Taches brunes de l'orge (<i>Helminthosporium gramineum</i>) (échelle 0-9)
BIRD DMGE		Bird damage (percentage)	Porcentaje de daño por pájaros	Dégat du aux oiseaux en pourcentage
BW		Bread wheat	Trigo	Blé
BYDV	--	Barley yellow dwarf virus (0-9 scale)	Virus del enanismo amarillo de la cebada (escala 0-9)	Jaunisse nanisante de l'orge (échelle 0-9)
CHECK MARK	--	Selected for further investigation	Seleccionada para investigación adicional	Selectionnée pour recherche additionnelle
COVD SMUT	<i>Ustilago hordei</i> (<i>U. kolleri</i>)	Covered smut (percentage)	Porcentaje de carbón cubierto	Charbon couvert en pourcentage
EARS/M2	--	Ears per square meter	Espigas por metro cuadrado	Epis par mètre carré
FALL NO	--	Falling number (seconds)	Actividad alfa amilasa (segundos)	Activité de l'alpha amylase (en secondes)
FERT %	--	Fertility (percentage)	Porcentaje de fertilidad	Fertilité en pourcentage
FRST DMGE	--	Frost damage (percentage)	Porcentaje de daño por heladas	Dégat du au gel en pourcentage
FUS N	<i>Fusarium nivale</i> (syn. <i>Monographella nivalis</i>)	Fusarium leaf blotch (0-9 scale)	Mancha de la hoja y moho niveo (moho blanco) (escala 0-9)	Tache de la feuille (<i>Fusarium nivale</i>) (échelle 0-9)
GERM %	--	Germination (percentage)	Porcentaje de germinación	Germination en pourcentage
HAIL DMGE	--	Hail damage (percentage)	Porcentaje de daño por granizo	Dégat du à la grêle en pourcentage
HEAD DAYS	--	Number of days to heading	Número de días al espigamiento	Nombre de jours à l'épiaison
HEL SP	<i>Helminthosporium</i> spp.	Helminthosporium (0-9 scale)	Helminthosporium (escala 0-9)	Helminthosporium (échelle 0-9)
L FIRE	--	Leaf fire (0-9 scale)	Tizón foliar (escala 0-9)	Sécheresse des feuilles (échelle 0-9)
LEAF RUST	<i>Puccinia recondita</i>	Wheat leaf rust (Cobb scale)	Roya de la hoja-trigo (escala de Cobb)	Rouille brune du blé (échelle de Cobb)
LEAF RUST	<i>Puccinia hordei</i>	Barley leaf rust (Cobb scale)	Roya de la hoja-cebada (escala de Cobb)	Rouille brune de l'orge (échelle de Cobb)
LODG %		Lodging (percentage)	Porcentaje de acame (vuelco)	Verse en pourcentage
LSE SMUT	<i>Ustilago nuda</i> (<i>U. tritici</i>)	Loose smut (percentage)	Porcentaje de carbón volador	Charbon nu en pourcentage
MAT DAYS	--	Number of days to maturity	Número de días a la madurez	Nombre de jours à la maturation
MOIST %	--	Moisture (percentage)	Porcentaje de humedad	Humidité en pourcentage
NECK BRK		Neck breakage (percentage)	Porcentaje de rotura de cuello	Cassure du pédoncule en pourcentage
NET B	<i>Pyrenophora teres</i> (syn. <i>Drechslera teres</i> , syn. <i>Helminthosporium teres</i>)	Net blotch (0-9 scale)	Mancha reticulada (escala 0-9)	Helminthosporium de l'orge (échelle 0-9)
NOBS		Number of observations	Número de observaciones	Nombre d'observations
OFS		Free State Streak	Estriado del estado libre	Rayure Free State
PC		Percentage	Porcentaje	Pourcentage
PLNT DENS		Plant density (stems/m2)	Densidad de plantas (tallos/m2)	Population de plantes (tiges m2)
PL'JT HT		Plant height (cm)	Altura de planta (cm)	Hauteur (cm)
POW M	<i>Erysiphe graminis</i>	Powdery mildew (0-9 scale)	Oídio o cenicienta polvorienta (escala 0-9)	Oidium (échelle 0-9)
PROT %		Protein (percentage)	Porcentaje de proteína	Protéine en pourcentage
SCAB %	<i>Fusarium</i> spp.	Head scab (percentage)	Porcentaje de roña	Fusarium de l'épi en pourcentage
SCLD	<i>Rhynchosporium secalis</i>	Scald (0-9 scale)	Escaldadura (escala 0-9)	Rhynchosporium (échelle 0-9)
SDMT INDX	--	Sedimentation index (cc)	Índice de sedimentación (cc)	Indice de sédimentation (cc)
SEP N	<i>Leptosphaeria nodorum</i> (syn. <i>Septoria nodorum</i>)	Septoria glume blotch (0-9 scale)	Tizón de la gluma (escala 0-9)	Septoria nodorum (échelle 0-9)
SEP S	<i>Septoria</i> spp.	Septoria glume/leaf blotch (0-9 scale)	Septoria (escala 0-9)	Septoria (échelle 0-9)
SEF T	<i>Mycosphaerella graminicola</i> (syn. <i>Septoria tritici</i>)	Septoria leaf blotch (0-9 scale)	Mancha foliar o tizón foliar (escala 0-9)	Septoria tritici (échelle 0-9)
SHTR %		Shattering, head (percentage)	Porcentaje de desgrane (espiga)	Egrenage en pourcentage
SL		Sea level	Nivel del mar	Niveau de la mer
SPT B	<i>Cochliobolus sativus</i> (syn. <i>Bipolaria sorokiniana</i> , syn. <i>Helminthosporium sativum</i>)	Spot blotch (0-9 scale)	Tizón foliar (escala 0-9)	Tache de la feuille (<i>Helminthosporium sativum</i>) (échelle 0-9)
STEM RUST	<i>Puccinia graminis</i>	Stem rust (Cobb scale)	Roya del tallo (escala de Cobb)	Rouille noire (échelle de Cobb)
STRP RT.H	<i>Puccinia striiformis</i>	Stripe rust, head (percentage)	Porcentaje de roya amarilla (espiga)	Rouille jaune sur épi en pourcentage
STRP RT.L	<i>Puccinia striiformis</i>	Stripe rust, leaf (Cobb scale)	Roya amarilla-hoja (escala de Cobb)	Rouille jaune sur feuilles (échelle de Cobb)
STRP V		Barley stripe mosaic virus (scale 0-9)	Virus del mosaico lineal de la cebada (escala 0-9)	Mosaïque striée de l'orge (échelle 0-9)
TAN S	<i>Pyrenophora tritici-repentis</i> (syn. <i>Helminthosporium tritici-repentis</i>)	Tan spot (0-9 scale)	Mancha foliar amarilla (escala 0-9)	Helminthosporium tritici (échelle 0-9)
Tcl		Triticale	Triticale	Triticale
TEST WT		Test weight (kg/hl)	Peso hectolitrico (kg/hl)	Poids spécifique (kg/hl)
1000 G.W.		1000-grain weight (g)	Peso de 1000 granos (g)	Poids de 1000 grains (g)
VAR		Variety	Variedad	Variété
VTY		Variety	Variedad	Variété
YELL BERR		Yellow berry (percentage)	Porcentaje de panza blanca	Mitadinage en pourcentage
YIELD KG/HA		Yield (kg/ha)	Rendimiento (kg/ha)	Rendement (kg/ha)

The Fourteenth International Septoria Observation Nursery

Introduction

Septoria tritici blotch became one of the most devastating wheat diseases in the 1960s and early 1970s especially on semidwarf materials. It was very severe in CIMMYT's early semidwarfs that were being grown in the higher rainfall regions of North Africa and the Southern Cone of South America and it continues to be a problem in early maturing lines.

Faced this situation, CIMMYT's Bread Wheat Program began an effort to combine semidwarf plant type with the septoria tritici blotch resistance found in some wheats from South America, especially Brazil, and in some winter wheats (e.g., Kavkaz and Aurora) from the USSR. Since the early 1970s, various lines of bread wheat have been developed and tested in multilocation trials to gather information on resistance to this disease. Compared with those of the early 1970s, semidwarfs originating at CIMMYT in the 1980s have displayed an acceptable degree of resistance to this disease. Semidwarfs still do not compare to tall varieties with respect to septoria resistance, but they are no longer completely vulnerable genetically.

Breeding septoria tritici blotch resistance is an uphill task, but progress can be and has been made. Because of the epidemiological nature of the disease and problems with recombination, it has not been possible to combine both the Rht-1 and the Rht-2 genes for semidwarfing with an acceptable degree of septoria tritici blotch resistance. The nature of the segregation of septoria leaf blotch resistance is complex and undesirable genetic linkages are involved which further impede success.

This effort has been assisted greatly by the existence in Mexico of two locations where septoria leaf blotch is endemic, with a good supply of inoculum and severe epidemics every year. These are Toluca in the State of Mexico, and Patzcuaro in the State of Michoacan. Most of the breeding and selecting is done at Toluca, with final selection and evaluation being done at Patzcuaro.

While the primary criterion in selecting germplasm for the 14th ISEPTON was septoria tritici blotch resistance, an attempt was made to take into account agronomic type, yield potential and, of course, resistance to other diseases. It is our hope that some of this material has proved to be useful to our cooperators in the septoria

region. This report is a summary of results obtained from the 14th ISEPTON with respect to yield, disease resistance and agronomic characteristics. It is hoped that the information contained herein will be of service to wheat breeders in their attempts to improve resistance to this disease.

Methodology

The Fourteenth International Septoria Observation Nursery (ISEPTON) was sent in September 1983, to be grown by cooperators in their spring season of 1984. Sixty-seven nurseries went to cooperators in 40 countries. The 112 advanced lines and checks in the nursery had been chosen from among CIMMYT's best materials. All had been grown and observed by CIMMYT scientists under a high yield environment with pressure from major diseases on the CIANO Experiment Station in the Yaqui Valley in northwest Mexico. Here, too, seed for this international nursery was multiplied, cleaned and treated with insecticide and organic fungicide before shipment.

Instructions on nursery management accompanied the mailing of seeds to each cooperator. Enough seed from each line was provided for a double row, unreplicated, of at least 2 m in length. A field book was included with each nursery set, providing a standard format for recording data desired by CIMMYT. In receiving and processing the data returned by cooperators, CIMMYT assumes that the nursery was properly handled and that accurate results were reported. We cannot, however, attest to the rigor with which the trials were grown and results were obtained.

Thirty-two of the cooperators receiving the nursery returned field books with performance data at their locations (Table 1) in time to be included in this report. The choice of variables measured and the data returned rests with the individual cooperator. We have included in this summary selected variables reported to us. The number of observations differs from variable to variable. The reader is urged to note the number of observations at the head of each variable column in the summary table (Table 2); this may be an important indicator of the level of credibility that should be inferred. The reader should also bear in mind that the yield reported is from a single plot, essentially grown for observation rather than as a rigorous, replicated yield trial.

Presentation of results—So that data in this report will be of optimal use to the reader, we present the results in three forms:

1. One *international summary*, listing the sites from which data were returned, with notations of all variables recorded and reported.
2. A table reporting the *means of all observations* from sites with uniform and discrete data for each variable measured for each line in the nursery.
3. Selected tables reporting the *best performance by individual lines* on major variables, usually the top 5 to 10 percent. The table of contents lists all variables reported in this way.

Cooperators were asked to use agronomic and disease reporting methodology as described in the "Instructions for the Management and Reporting of Results for the CIMMYT Wheat Program International Nurseries". Data reported are simple means computed from those supplied by the cooperators. Data on rusts recorded by the modified Cobb scale were converted to average coefficients of infection (ACI) as explained below.

Cooperator participation—Feedback information of two kinds from cooperators is vital to the quality of this and other CIMMYT international nursery reports: first, the prompt return of carefully recorded data from each and every trial site; second, identification of environmental and management factors (e.g. moisture problems, birds, etc.) that become part of our cooperator's station file. We ask for feedback of both kinds.

Rust scoring—Disease scores for stem, leaf and stripe rust infections recorded in the manner recommended by Dr. W.Q. Loegering (USDA International Spring Wheat Rust Nursery, 1959) are converted to a numeric coefficient of infection (CI) prior to being used in any calculations. Each original reading recorded in this manner consists of severity (percentage of rust infection on the plants) and response (kind of infection) scores. Severity is recorded as percent of infection according to the modified Cobb scale. If only a trace is visible, T or TR may be reported and is given the value of 1 percent.

Responses may be recorded by using one of the following codes. The numeric values assigned to these codes are shown at the right.

Response	Equivalent numeric value
VR	0.2
R	0.2
MR	0.4
M or X	0.6
MS	0.8
S	1.0
VS	1.0

Severity and response are recorded together, with severity first (for example, 5MR). The equivalent coefficient of infection is calculated by multiplying the numeric equivalents of each part. For example:

Disease score	Coefficient of infection
5MR	5(0.4) = 2.0
TR	1(0.2) = 0.2
TRR	1(0.2) = 0.2
60S	60(1.0) = 60.0
O*	0(0) = 0.0

* If there is no visible infection on the plant, only a zero is reported.

Reactions may be more variable than can be represented by a single severity and response reading. This variability may be recorded in two ways: 1) A comma or slash indicates plants have segregated into clear-cut classes. The first rating reported is included in the computations. 2) If a range of reactions is recorded, it is denoted by a dash. In this cases the coefficient of infection is the average of the two scores. Examples of these situations are given below:

Disease score	Coefficient of infection
5R,40S	The first rating 5R = 5(0.2) = 1.0 is used in all computations
40M/60S	The first rating 40M = 40(0.6) = 24.0 is used in all computations
15R-5S	$[15(0.2) + 15(1.0)]/2 = 4.0$

A range may be reported for severity only or response only. In each of these cases the average severity or average response is calculated before multiplying the two together. For example:

Disease score	Coefficient of infection
10-20MS	$[(10 + 20)/2] (0.8) = 12.0$
40MR-MS	$40[(0.4 + 0.8)/2] = 24.0$
5-10MR-R	$[(5 + 10)/2][(0.4 + 0.2)/2] = 2.25$

In most tables only average coefficients of infection (ACI) are reported. However, in some tables the highest rust reading (HR) may be reported as severity/response scores.

Discussion of Results

Of the 67 nurseries distributed, data were received for 32 (Table 1). Averages for yield, agronomic and disease reaction characteristics for all 112 entries are given in Table 2.

Yield—Many cooperators returned data on yield although this was not specifically requested. Table 3 lists the entries that produced the highest yields on the basis of 11 locations. The mean yield for these entries varied from 4498 kg/ha for Bobwhite "S" to 3529 kg/ha for Pat10-Ald x Pat72300/Pvn "S". For the whole nursery, yield varied from 4498 kg/ha for entry 28, Bobwhite "S", to 1829 kg/ha for entry 90, Nyu Bay-Mex (Table 2). It should be recognized that yield evaluations based on unreplicated trials can be misleading, but in this case some degree of validity can be claimed because of the high number of locations represented.

Based on these data, further investigation of the breadth of adaptability of the entries in Table 3 by distributing them in a replicated trial appears to be warranted.

Selection for further investigation—Table 4 lists the entries most frequently selected (check marked) by cooperators as being worthy of further investigation in their programs. Since this indicates at least some degree of local adaptation, selection at many locations indicates wide adaptability. Fink "S", the entry with the highest frequency, was selected at 40% of the 20 locations providing this information.

It is of special interest that eight of the high-yielding entries in Table 3 are also included in Table 4, because this suggests that in addition to their high yield potential, these eight are also widely adapted. The eight entries are: 45 (Fink "S"), 5 (Kvz-7C), 28 (Bobwhite "S"), 58 (Pat10-Ald x Pat72300/Pvn), 25, 26, 27 (all Bobwhite "S") and 76 (Cjo "S"-Trm x Bda-Huac "S").

Septoria tritici blotch resistance—A total of 19 lines of bread wheat showed average or better resistance to septoria leaf blotch; these are given in Table 5. The locations included are: Welgevallen, Cape Province, South Africa; Beja, Tunis, Tunisia; Elvas, Portugal; Bet Dagan, Israel; Cadiz, Spain; and Cruz Alta, Rio Grande de Sul, Brazil. The disease is endemic in all these locations, and has a high degree of pathogenicity due to its virulence genes. The average reaction scores of the 19 entries varied from 3.0 for entry 96, IAS20-H567.71 x IAS20(5), to 4.0 for entry 106, Thornbird "S". The resistant check IAS 20 gave a mean reaction of 3.5. Eight entries out of a total of 19 are derivatives of IAS 20, but with better yield potential. Entries 23, 16, 71,

27, 32, 58, 79 and 106 carry the 1B/1R translocation, which has been found to be associated with septoria tritici blotch resistance.

The above results certainly show that this resistance can be combined with semidwarfing genes and an economically viable agronomic type. It is highly recommended that these lines be used in breeding programs for further genetic improvement.

Powdery mildew resistance—In Table 6 are presented the 35 entries of the 14th ISEPTON that were found to be highly resistant to powdery mildew. The average scores varied from 1.5 to 2.5 on a scale of 0-9. The locations where these lines were tested are: Cambridge, England; Warsaw, Poland; Ilfov, Romania; and Svalov, Sweden. All of these are in Europe, where powdery mildew is one of the major wheat diseases.

Siete Cerros is an early semidwarf that has remained resistant to powdery mildew. This line scored 2.3, and is included among the entries most resistant to leaf rust (Table 7). The other advanced lines resistant to powdery mildew are diverse in origin; hence no general conclusions can be drawn on the sources of resistance.

Rust resistance—The entries most resistant to leaf, stem, and stripe rusts, along with their reactions at each location and their average coefficients of infection (ACI) are presented in Tables 7, 8 and 9, respectively.

Twenty-five entries were reported to be resistant or moderately resistant to leaf rust at seven locations. These are: Welgevallen, Cape Province, South Africa; Quetzaltenango, Guatemala; Ilfov, Romania; C. Klein and Pergamino, Buenos Aires, and Cordoba, Argentina; and Cruz Alta, Rio Grande de Sul, Brazil. The ACI varied from 0.4 to 5.0 indicating a high degree of resistance in all entries listed.

Stem rust data were gathered from Elsenburg, Cape Province, South Africa; Pergamino, Argentina; and Taray, Cuzco, Peru. All of these locations are in the Southern Hemisphere, where the endemic stem rusts are known to be especially virulent. All entries in Table 8 except 99 and 109 carry the 1B/1R translocation. Resistance may be in part due to the Sr31 gene. This gene is very effective against the South American stem rust flora; the Sr2 gene, in certain instances, has been less effective.

The stripe rust data were provided by the cooperators at Njoro, Molo and Eldoret, Rift Valley, Kenya; Quetzaltenango, Guatemala; Cambridge, England; Elvas, Portugal; Breda, Aleppo, Syria; Quito, Ecuador; and Taray, Cuzco, Peru. The ACI varied from 1.9 to 5.7. The 1B/1R translocation is probably present in most lines except entries 110 and 90.

Specific adaptation—The cooperators of 14th ISEPTON were requested to select (check mark) lines of this nursery which showed adaptation with respect to both agronomic characteristics and disease resistance in their regions. Nineteen cooperators returned this information, indicating those entries which they considered merited further investigation. These data are given in Tables 10-28. The 19 locations included are: Njoro and Molo, Rift Valley, Kenya; Elsenburg and Welgevallen, Cape Province, South Africa; U.A.C., Mbeya, Tanzania; Chaing Mai University, Chaing Mai, Thailand; Beja, Tunis, Tunisia; AAS, Norway; Elvas, Portugal; Ilfov, Romania; Svalov, Sweden; Breda, Aleppo, Syria; P.E.I.,

Canada; C. Klein and Pergamino, Buenos Aires, and Cordoba, Argentina; Palotina, Parana, Brazil; Quito, Ecuador; and Taray, Cuzco, Peru.

In addition to these 18 locations, material was selected from this nursery at 14 more, indicating the wide acceptance of the germplasm included in 14th ISEPTON. Many of these lines could be eliminated in future testing, but some could be found to be adapted to these different agroclimatic regions and could eventually play an agro-economic role by being released in the area. Others, no doubt, will play a role in genetic improvement by entering into the local crossing program.

Table 1. Locations returning reports and the variables included

LOCATIONS	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
1)	AFRICA	CAMEROON	NGAOUNDERE	4 64 67
2	AFRICA	KENYA	RIFT VALLEY-NJORD	5 50
3	AFRICA	KENYA	RIFT VALLEY-ELDORET	5 75
4	AFRICA	KENYA	RIFT VALLEY-MOLO	5 50
5	AFRICA	SOUTH AFRICA	CAPE PROVINCE-ELBENBURG	3 8 50 64
6	AFRICA	SOUTH AFRICA	CAPE PROVINCE-MELGEVALLEN	3 7 50 62 63
7	AFRICA	TANZANIA	MBEYA-U. A. C.	3 4 50 64
8	AFRICA	TUNISIA	TUNIS-BEJA	1 50 62
9	ASIA	BANGLADESH	JESSORE	1 3 4 70
10	ASIA	THAILAND	CHIANG MAI-CHIANG MAI UNIV.	1 3 4 9 50
11	CENTRAL AMERICA	GUATEMALA	QUEZALTENANGO	3 5 7 9 64 71
12	EUROPE	CZECHOSLOVAKIA	BOHEMIA-KLATOVY	61 64
13	EUROPE	ENGLAND	CAMBRIDGE	3 5 9 61
14	EUROPE	NORWAY	AAS	1 3 9 50
15	EUROPE	POLAND	WARSAW	1 10 61 64
16	EUROPE	PORTUGAL	ELVAS	3 5 6 50 62
17	EUROPE	ROMANIA	ILFOV	1 7 9 50 61
18	EUROPE	SPAIN	CADIZ	3 9 62
19	EUROPE	SWEDEN	SVALOV	50 61 63
20	MIDDLE EAST	ISRAEL	BET DAGAN	62
21	MIDDLE EAST	SYRIA	ALEPPO-BREDA	1 3 4 5 9 50
22	NORTH AMERICA	CANADA	P. E. I.	50
23	OCEANIA	AUSTRALIA	VICTORIA-VICTORIA	64 77
24	SOUTH AMERICA	ARGENTINA	BUENOS AIRES-C. KLEIN	1 3 7 9 12 50 64
25	SOUTH AMERICA	ARGENTINA	BUENOS AIRES-PERGAMINO	7 8 36 50 64
26	SOUTH AMERICA	ARGENTINA	CORDOBA	7 9 50
27	SOUTH AMERICA	BRAZIL	PARANA-PALOTINA	1 3 4 50
28	SOUTH AMERICA	BRAZIL	RIO GRANDE DO SUL-CRUZ ALTA	7 64
29	SOUTH AMERICA	BRAZIL	RIO GRANDE DO SUL-EMBRAPA	62
30	SOUTH AMERICA	CHILE	HIDANGO	3 9 64
31	SOUTH AMERICA	ECUADOR	QUITO, PICHINCHA	1 3 5 6 50 64
32	SOUTH AMERICA	PERU	CUSCO-TARAY	1 3 5 6 8 9 50 64

*VARIABLE IDENTIFICATIONS

1	YIELD	KG/HA	3	HEAD	DAYS	4	MAT	DAYS	5	STRP	RT. L	6	STRP	RT. H
7	LEAF	RUST	8	STEM	RUST	9	PLNT	HT	10	LODG	X	12	SHTR	HEAD
36	SCAB	%	50	CHECK	MARK	61	POW M	0-9	62	SEP T	0-9	63	SEP N	0-9
64	SEP S	0-9	67	BAR S	0-9	70	HEL SP	0-9	71	FUS N	0-9	75	AL TOL	0-9
77	BYDV	0-9												

Table 2. Means of all variables across all locations for each line

VTY NO.	VARIETY OR CROSS AND PEDIGREE		YIELD K0/HA	HEAD DAYS	MAT DAYS	STRP RT. L	STRP RT. H	LEAF RUST	STEM RUST
		NUMBER OF OBSERVATIONS:	(11)	(16)	(6)	(9)	(3)	(7)	(3)
1	CARAZINHO -OPTZ	BRAZIL	2379.3	102.6	134.2	47.8	43.3	34.5	80.0
2	GLENNSON CM33027-F-8M-1Y-8M-1Y-2M-0Y-4PTZ	MEXICO	3353.9	97.8	127.4	24.5	0.0	31.7	17.0
3	GLENNSON CM33027-F-8M-1Y-8M-1Y-2M-0Y-5PTZ	MEXICO	3482.3	97.7	127.4	23.7	0.0	35.6	20.0
4	URES 81 CM33027-F-12M-1Y-4M-2Y-2M-0Y- OPTZ	MEXICO	3186.3	96.1	128.2	23.1	26.7	26.8	13.3
5	KVZ-7C 8M-4064-6Y-4M-3Y-1M-1Y-3M-0Y- OPTZ-0Y-0PTZ-1PTZ	MEXICO	4117.3	93.6	126.4	1.9	0.0	1.2	13.3
6	KVZ-K4500L-6-A-4 8M-176-3M-1Y-10Y-1Y-8M-0Y-0PTZ- 0Y-1PTZ	MEXICO	3171.3	97.3	128.0	14.7	0.0	3.4	0.0
7	TP X CND67-ND/BB-CND67 CM5526-A-3Y-1M-2Y-2M-0Y-1PTZ	MEXICO	3022.6	93.7	125.2	35.1	27.0	33.9	36.7
8	TP X CND67-ND/BB-CND67 CM5526-A-3Y-1M-2Y-2M-0Y-2PTZ	MEXICO	2830.4	93.9	125.2	33.6	23.3	34.3	10.0
9	TITO CM8212-D-4M-5Y-2M-0Y-1PTZ	MEXICO	2922.3	98.6	132.2	37.8	31.7	37.1	40.0
10	TITO CM8212-D-4M-5Y-4M-500Y-500M-0Y- 1PTZ	MEXICO	3022.9	102.0	134.6	44.7	43.3	34.6	20.7
11	ALD-2 CM11683A-1Y-1M-2AR-0Y-0PTZ	MEXICO	3168.0	102.1	130.8	24.1	0.3	29.1	20.3
12	ALD-2 CM11683A-1Y-1M-2AR-0Y-2B-0Y-0PTZ	MEXICO	3477.9	98.9	129.0	18.8	0.0	34.1	30.0
13	CND67-7C X NOR/CAL-CND67 CM11552-C-3Y-2M-0Y-1PTZ	MEXICO	2852.3	92.8	127.0	25.3	16.7	12.4	40.0
14	RR-MW15/JI"S" X CND67-ND CM12272-N-1Y-1M-0Y-1PTZ	MEXICO	2887.0	92.6	126.8	32.9	26.7	19.0	43.3
15	TOB-8156(R)(F1CND67-PJ) CM23439-9M-1Y-0Y-67Y-0PTZ	MEXICO	3015.6	87.8	124.2	40.0	30.0	5.2	13.7
16	VEE"S" CM33027-F-1M-9Y-0M-97Y-0B-0PTZ	MEXICO	2977.9	99.1	136.4	17.0	0.0	37.3	29.0
17	VEE"S" CM33027-F-12M-1Y-1M-1Y-1M-0Y- 1PTZ	MEXICO	3012.5	95.9	129.2	15.0	0.3	25.5	26.7
18	VEE"S" CM33027-F-12M-1Y-1M-1Y-2M-0Y- 0PTZ	MEXICO	3442.9	97.0	129.3	15.5	0.0	37.8	21.3
19	VEE"S" CM33027-F-12M-1Y-1M-1Y-2M-0Y- 1PTZ	MEXICO	3020.4	96.9	129.8	7.6	0.0	32.8	20.7
20	SIETE CERROS		3702.6	95.2	124.4	67.6	73.3	47.7	31.8
21	VEE"S" CM33027-F-12M-1Y-3M-1Y-1M-1Y-0M- 0PTZ	MEXICO	3420.8	99.1	129.3	13.0	0.0	24.9	5.0
22	BOW"S" CM33203-K-9M-2Y-1M-1Y-1M-0Y-0PTZ	MEXICO	3284.0	97.2	128.0	7.3	0.0	12.0	0.3
23	BOW"S" CM33203-K-9M-2Y-1M-1Y-2M-0Y-1PTZ	MEXICO	3413.8	93.8	127.2	10.0	0.3	6.3	0.7
24	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-0PTZ	MEXICO	3641.3	93.6	128.6	9.9	0.0	11.8	1.3
25	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-1PTZ	MEXICO	3594.3	93.9	128.6	6.7	0.0	10.8	0.0

VTY	PLNT HT	LDDG %	SHTR HEAD	SCAB %	CHECK MARK	POW H 0-9	SEP T 0-9	SEP N 0-9	SEP S 0-9	BAR S 0-9	HEL BP 0-9	FUS N 0-9	AL TOL 0-9	BYDV 0-9
	(11)	(1)	(1)	(1)	(19)	(5)	(6)	(2)	(13)	(1)	(1)	(1)	(1)	(1)
1	112.7	50.0	74.0	1.0	5.0	4.8	4.6	5.0	3.8	----	6.0	3.0	8.0	7.0
2	85.6	0.0	72.0	10.0	15.0	3.5	5.5	5.0	4.3	----	6.0	5.0	6.0	8.0
3	83.5	15.0	72.0	1.0	10.0	3.3	5.7	4.0	4.4	----	6.0	4.0	6.0	7.0
4	79.4	10.0	70.0	1.0	25.0	2.8	5.8	4.0	4.2	----	6.0	5.0	6.0	----
5	97.7	5.0	74.0	1.0	35.0	2.8	4.2	5.0	3.5	2.0	5.0	6.0	8.0	8.0
6	87.1	0.0	69.0	10.0	25.0	2.8	5.0	4.0	4.3	3.0	6.0	1.0	8.0	7.0
7	70.5	20.0	69.0	20.0	0.0	3.5	5.4	6.0	5.4	3.0	4.0	4.0	8.0	8.0
8	71.7	5.0	68.0	20.0	5.0	5.0	5.8	4.0	4.8	2.0	4.0	3.0	6.0	----
9	86.5	15.0	71.0	30.0	10.0	2.8	6.0	3.5	5.5	----	6.0	4.0	4.0	----
10	86.3	20.0	73.0	20.0	0.0	2.5	5.6	4.0	5.5	----	6.0	6.0	4.0	8.0
11	82.7	5.0	70.0	30.0	20.0	3.8	4.8	2.0	5.0	----	5.0	3.0	2.0	8.0
12	82.2	10.0	69.0	20.0	20.0	3.5	5.0	4.0	4.8	2.0	6.0	3.0	2.0	7.0
13	79.7	15.0	73.0	40.0	10.0	4.5	5.0	6.0	4.8	2.0	5.0	6.0	6.0	----
14	83.6	30.0	76.0	20.0	5.0	2.3	5.8	4.0	4.9	3.0	6.0	4.0	6.0	7.0
15	81.4	20.0	71.0	1.0	20.0	4.5	5.2	6.0	4.9	3.0	6.0	5.0	2.0	----
16	76.4	5.0	63.0	30.0	15.0	3.3	3.8	6.0	5.3	----	6.0	6.0	8.0	8.0
17	78.3	10.0	70.0	20.0	20.0	3.8	5.0	5.5	5.5	----	6.0	6.0	4.0	6.0
18	79.3	15.0	73.0	20.0	10.0	4.5	4.7	4.0	4.5	----	6.0	3.0	6.0	8.0
19	81.6	25.0	72.0	1.0	15.0	4.5	5.5	5.5	4.7	----	5.0	3.0	6.0	8.0
20	80.7	0.0	70.0	20.0	0.0	2.5	7.0	7.5	5.0	2.0	8.0	4.0	4.0	7.0
21	75.4	0.0	72.0	20.0	10.0	3.3	5.7	3.0	4.9	----	5.0	7.0	6.0	8.0
22	73.0	0.0	77.0	1.0	20.0	2.8	5.0	3.0	4.5	----	6.0	5.0	2.0	6.0
23	76.5	0.0	78.0	1.0	30.0	2.5	3.7	1.5	4.5	3.0	6.0	3.0	2.0	7.0
24	87.5	15.0	78.0	10.0	10.0	2.8	5.3	5.0	4.2	3.0	6.0	3.0	2.0	8.0
25	84.1	25.0	77.0	1.0	25.0	2.3	5.0	2.0	4.0	3.0	6.0	4.0	4.0	8.0

Table 2 (continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE		YIELD KG/HA	HEAD DAYS	MAT DAYS	STRP RT. L	STRP RT. H	LEAF RUST	STEM RUST
NUMBER OF OBSERVATIONS:			(11)	(16)	(6)	(9)	(3)	(7)	(3)
26	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-2PTZ	MEXICO	4282.6	92.2	126.8	8.3	0.0	10.6	0.1
27	BOW"S" CM33203-K-9M-15Y-1M-4Y-3M-0Y-0PTZ	MEXICO	4290.7	91.5	126.2	8.5	0.0	16.5	0.1
28	BOW"S" CM33203-K-9M-33Y-1M-500Y-0M-1J-0J-0PTZ	MEXICO	4498.2	96.5	129.8	8.1	0.0	4.4	0.1
29	HAHN"S" CM33682-L-1Y-9Y-1M-1Y-1B-0Y-0PTZ	MEXICO	3677.4	101.8	134.4	11.9	0.0	32.0	0.0
30	SNB"S" CM34630-D-5M-2Y-1M-1Y-0M-0PTZ	MEXICO	3426.9	98.9	131.6	9.0	0.3	0.8	13.3
31	SNB"S" CM34630-D-5M-2Y-1M-1Y-2M-2Y-0M-0PTZ	MEXICO	2792.5	94.4	130.7	18.3	0.0	0.8	10.3
32	SNB"S" CM34630-D-5M-2Y-3M-3Y-0M-0PTZ	MEXICO	3032.6	96.9	133.8	11.8	0.0	4.3	13.6
33	SNB"S" CM34630-D-5M-5Y-5M-1Y-1M-0Y-0PTZ	MEXICO	3289.3	99.2	135.4	12.0	0.0	0.4	13.3
34	TOW"S" CM34709-Q-2M-2Y-10M-3Y-1M-0Y-0PTZ	MEXICO	2922.3	98.1	133.3	9.8	0.3	35.8	60.0
35	YR-TRF"S" CM36749-10Y-3M-5Y-2M-1Y-0M-0PTZ	MEXICO	2609.7	96.5	132.2	2.8	0.0	17.0	73.3
36	[JUP(7C-PATO(B)/LR64-INIA X INIA-BB) JANA CM37760-C-21Y-2M-1Y-3M-0Y-1PTZ	MEXICO	3270.4	91.8	127.2	13.1	8.3	0.6	38.3
37	PFAU"S" CM38212-I-7Y-2M-1Y-3M-2Y-0M-0PTZ	MEXICO	3225.4	93.4	128.8	37.0	2.5	20.8	53.3
38	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-91B-0Y-1PTZ	MEXICO	2679.8	90.0	126.0	33.1	8.3	18.8	59.3
39	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-34B-0Y-1PTZ	MEXICO	2674.1	91.0	128.2	25.1	3.3	16.8	47.3
40	IAB-20		2255.1	98.5	133.2	39.8	16.7	31.6	71.7
41	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-80B-0Y-1PTZ	MEXICO	2386.6	90.2	127.0	30.7	21.7	6.4	47.0
42	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-80B-0Y-2PTZ	MEXICO	2635.4	91.7	126.4	33.4	30.0	5.0	70.0
43	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-82B-0Y-0PTZ	MEXICO	2879.5	88.6	124.3	22.6	8.3	3.7	43.3
44	GOV-AZ X MUS"S" CM41257-I-8M-3Y-0M-2PTZ	MEXICO	2837.0	94.1	127.2	4.7	0.0	12.2	30.1
45	FINK"S" CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B-0PTZ	MEXICO	3796.7	95.8	136.8	3.0	0.0	5.0	3.3
46	JUP-MUS"S" (CNO67"S"-7C X CNO67-INIA/ TOB) CM43601-K-3Y-3M-6Y-2M-1Y-0B-1PTZ	MEXICO	2560.4	98.8	139.2	17.8	0.0	32.6	0.1
47	TES-MUS"S" CM45986-5M-2Y-2M-1Y-0Y-1PTZ	MEXICO	2774.7	91.2	129.7	26.4	0.0	34.8	16.7
48	YR-PAM"S" CM46091-16M-1Y-6M-2Y-1Y-2M-0Y-1PTZ	MEXICO	3837.0	97.7	133.2	15.3	0.0	33.7	16.7
49	YR-PAM"S" CM46091-16M-1Y-6M-3Y-1Y-1M-0Y-1PTZ	MEXICO	3230.4	100.4	131.4	10.5	0.0	29.5	5.0
50	YR-PAM"S" CM46091-16M-1Y-6M-3Y-1Y-1M-0Y-2PTZ	MEXICO	3299.9	97.9	130.2	12.3	0.0	31.2	5.3
51	MAYA"S" X ND-P101/PAM"S" CM47775-J-1M-1Y-2M-2Y-0Y-0PTZ	MEXICO	3442.4	95.2	125.8	2.4	0.0	29.7	1.9

VTY	PLNT HT	LOAD %	SHTR HEAD	SCAB %	CHECK MARK	POW M 0-9	SEP T 0-9	SEP N 0-9	SEP S 0-9	BAR S 0-9	HEL SP 0-9	FUS N 0-9	AL TOL 0-9	BYDV 0-9
(11)	(1)	(1)	(1)	(1)	(19)	(5)	(6)	(2)	(13)	(1)	(1)	(1)	(1)	(1)
26	86.4	30.0	75.0	10.0	25.0	2.5	4.3	1.5	5.2	----	6.0	4.0	2.0	8.0
27	91.0	15.0	77.0	10.0	25.0	3.3	4.0	4.0	4.7	----	6.0	5.0	2.0	7.0
28	90.8	5.0	78.0	10.0	35.0	2.5	4.8	2.5	4.2	----	5.0	3.0	2.0	8.0
29	77.1	20.0	69.0	40.0	15.0	2.8	5.5	2.5	5.3	----	5.0	3.0	8.0	8.0
30	78.9	20.0	72.0	1.0	35.0	2.8	4.7	4.0	5.0	2.0	4.0	5.0	4.0	8.0
31	76.9	0.0	72.0	1.0	30.0	2.5	5.2	4.0	4.8	3.0	6.0	2.0	4.0	7.0
32	78.9	0.0	74.0	20.0	10.0	2.5	4.0	5.0	4.2	----	5.0	2.0	4.0	7.0
33	79.5	10.0	74.0	1.0	30.0	2.0	5.0	4.0	4.5	----	6.0	2.0	4.0	8.0
34	80.0	5.0	74.0	1.0	10.0	3.3	5.2	3.0	5.2	----	6.0	5.0	8.0	7.0
35	82.9	40.0	63.0	20.0	25.0	3.0	4.7	2.5	4.7	----	5.0	4.0	8.0	6.0
36	87.9	30.0	71.0	10.0	20.0	3.6	4.8	4.0	4.8	2.0	6.0	3.0	6.0	7.0
37	80.5	5.0	69.0	20.0	5.0	3.2	4.3	6.5	5.3	3.0	6.0	4.0	6.0	7.0
38	76.1	0.0	74.0	40.0	15.0	6.2	4.5	7.0	5.5	----	6.0	4.0	4.0	6.0
39	81.3	10.0	71.0	30.0	10.0	6.4	5.3	6.0	5.7	----	6.0	4.0	4.0	7.0
40	114.2	60.0	70.0	10.0	5.0	5.0	4.2	5.0	4.1	----	6.0	4.0	9.0	5.0
41	73.6	0.0	71.0	1.0	15.0	7.4	7.0	5.0	4.8	----	6.0	4.0	4.0	----
42	74.2	0.0	70.0	1.0	10.0	7.0	7.7	5.0	5.3	----	6.0	4.0	6.0	7.0
43	74.7	15.0	69.0	40.0	10.0	5.6	6.2	6.0	5.1	----	6.0	4.0	6.0	----
44	80.0	20.0	74.0	10.0	20.0	3.6	4.8	4.0	4.4	2.0	6.0	5.0	9.0	7.0
45	81.9	5.0	72.0	10.0	40.0	2.8	4.7	4.0	3.4	1.0	5.0	3.0	9.0	----
46	86.2	40.0	70.0	20.0	20.0	3.2	5.0	3.0	4.9	----	6.0	4.0	2.0	8.0
47	83.5	0.0	73.0	20.0	10.0	3.8	5.7	3.0	5.0	1.0	6.0	5.0	4.0	8.0
48	84.8	15.0	75.0	50.0	15.0	3.2	5.3	4.0	4.4	----	6.0	5.0	9.0	8.0
49	89.2	15.0	75.0	30.0	15.0	3.2	5.7	4.0	4.0	2.0	6.0	5.0	8.0	8.0
50	86.7	10.0	75.0	20.0	10.0	1.8	5.0	3.0	4.2	----	5.0	4.0	8.0	----
51	80.9	10.0	72.0	30.0	20.0	1.8	6.0	3.0	4.5	----	6.0	4.0	9.0	8.0

Table 2 (continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	YIELD KG/HA	HEAD DAYS	MAT DAYS	STRP RT. L	STRP RT. H	LEAF RUST	STEM RUST	NUMBER OF OBSERVATIONS:				
									(11)	(16)	(6)	(9)	(3)
52	AZ X CHR-DD.05P/F12.71-BLO"S" CH48326-A-3M-1Y-1M-2Y-1Y-OM-2PTZ	MEXICO	2563.6	88.0	125.0	21.8	0.3	50.7	19.3				
53	AZ X CHR-DD.05P/F12.71-BLO"S" CH48326-A-3M-1Y-1M-2Y-1Y-OM-3PTZ	MEXICO	2860.9	88.5	124.8	22.5	0.0	43.3	13.7				
54	ALD"S"-PVN"S" CM49901-14Y-2Y-1M-1Y-OM-OPTZ	MEXICO	3243.8	94.1	126.0	20.3	0.0	31.5	27.3				
55	ALD"S"-PVN"S" CM49901-14Y-2Y-6M-4Y-OM-OPTZ	MEXICO	3553.9	96.4	127.2	20.3	0.0	24.2	13.6				
56	4777(2) X FKN-GB/PVN"S" CM49912-37M-4Y-4Y-1M-1Y-OM-1PTZ	MEXICO	3459.2	99.5	129.4	16.3	0.0	28.4	28.0				
57	CNO67"S"-BM X CNO67"S" X INIA"S"/ PVN"S" CM49918-3M-7Y-1Y-3M-1Y-2M-0Y- 1PTZ	MEXICO	2458.1	98.6	128.4	13.3	0.3	24.1	16.0				
58	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-1M-0Y-OPTZ	MEXICO	3529.6	99.8	128.8	12.6	0.3	10.5	13.3				
59	ALD"S"-CDC CM50351-9M-2Y-1M-3M-1Y-1M-0Y- 2PTZ	MEXICO	2740.6	89.7	122.2	19.4	0.0	4.5	16.0				
60	SIETE CERROS		3111.7	93.9	124.6	62.2	66.7	65.0	13.3				
61	ALD"S"-CDC CM50351-9M-2Y-1Y-4M-1Y-1M-0Y- 1PTZ	MEXICO	2882.0	89.9	122.2	16.3	0.0	4.0	1.3				
62	IAS58(KAL-BB X CJ"S"/ALD"S") CM50464-12Y-6F-1Y-1Y-8M-1Y-0Z- 0Y-1PTZ	MEXICO	3092.4	96.8	137.8	21.8	0.0	5.2	18.0				
63	IAS58(KAL-BB X CJ"S"/ALD"S") CM50464-12Y-6F-1Y-1Y-8M-8Y-0Z- 0Y-1PTZ	MEXICO	2423.6	96.5	137.8	24.3	0.0	9.9	19.3				
64	IAS58(KAL-BB X CJ"S"/ALD"S") CM50464-12Y-6F-1Y-2Y-1M-3Y-0Z- 0Y-3PTZ	MEXICO	2830.8	94.9	136.0	19.1	0.0	6.8	16.7				
65	HUAC"S"-TI RESEL/ATR(2)-7C X NAC CM50925-L-1Y-1M-1Y-1Y-2M-1Y-OM- OPTZ	MEXICO	2847.9	99.5	129.6	11.8	0.7	19.0	13.3				
66	ALD"S"-AZ CM51821-3Y-1Y-3M-4Y-OM-OPTZ	MEXICO	2997.6	93.7	130.2	11.9	0.3	11.2	11.3				
67	HD2206-SIS"S" X PVN"S" CM52360-3Y-1Y-1M-1Y-2M-0Y-1PTZ	MEXICO	2654.6	95.1	129.8	6.4	0.0	16.2	23.3				
68	BUC"S"-CHRC"S" CM52421-2M-7Y-5Y-1M-1Y-2M-0Y- 1PTZ	MEXICO	3092.6	96.5	129.0	13.3	6.7	6.3	23.3				
69	BUC"S"-CHRC"S" CM52421-2M-7Y-5Y-1M-2Y-1M-0Y- OPTZ	MEXICO	2750.6	98.6	129.0	13.4	2.0	6.2	23.3				
70	BUC"S"-CHRC"S" CM52421-11M-4Y-2Y-1M-4Y-1M-0Y- 1PTZ	MEXICO	3029.3	93.5	128.2	7.1	6.7	4.0	30.0				
71	RPB14.68-NAC X DOVE"S" CM53829-N-7M-4Y-2Y-1M-3Y-1M-0Y- OPTZ	MEXICO	3050.0	99.1	133.7	5.6	0.3	16.6	46.7				
72	TOW"S"-II58.57 CM56511-1Y-1Y-1M-2Y-1M-0Y-1PTZ	MEXICO	2138.1	99.3	131.8	18.5	0.3	5.6	32.0				
73	(INIA"S"-ON X INIA-BB/JUP)BUC"S" CM58806-10Y-1M-1Y-2M-0Y-1PTZ	MEXICO	2569.4	92.8	133.2	28.1	13.3	7.8	43.3				
74	F6.74-BUN"S" X SIS"S" CM60042-M-1Y-2M-2Y-1M-0Y-1PTZ	MEXICO	3179.8	95.1	131.0	17.3	18.3	2.4	28.0				
75	NAC-EMU"S"/TOB(2)-7C X MN72131 CM60402-C-2Y-1M-1Y-1M-0Y-OPTZ	MEXICO	3078.8	94.1	131.3	18.8	6.7	15.5	27.0				
76	9JD"S"-TRM X BDA-HUAC"S" CM60767-C-1Y-1M-1Y-1M-0Y-1PTZ	MEXICO	3575.1	95.1	129.2	8.5	0.0	5.3	26.0				

VTY	PLNT HT	LOAD %	SHTR HEAD	SCAB %	CHECK MARK	POW H 0-9	SEP T 0-9	SEP N 0-9	SEP S 0-9	BAR S 0-9	HEL SP 0-9	FUS N 0-9	AL TOL 0-9	BYDV 0-9
	(11)	(1)	(1)	(1)	(19)	(5)	(6)	(2)	(13)	(1)	(1)	(1)	(1)	(1)
52	83.5	0.0	75.0	30.0	5.0	1.8	5.7	4.0	4.8	3.0	6.0	5.0	4.0	8.0
53	86.7	10.0	75.0	5.0	5.0	1.8	5.2	3.0	4.8	----	5.0	6.0	6.0	8.0
54	86.3	3.0	74.0	20.0	10.0	2.8	5.8	2.0	4.4	----	5.0	4.0	6.0	7.0
55	92.2	15.0	73.0	5.0	5.0	2.0	5.8	1.5	4.6	----	4.0	4.0	6.0	8.0
56	88.8	20.0	74.0	20.0	20.0	3.0	4.8	4.0	4.8	----	6.0	4.0	9.0	8.0
57	85.9	5.0	77.0	30.0	10.0	3.3	4.3	4.0	5.3	----	5.0	6.0	4.0	7.0
58	81.0	0.0	70.0	40.0	30.0	3.3	4.0	2.5	5.2	----	6.0	6.0	8.0	7.0
59	83.3	5.0	75.0	40.0	30.0	2.5	4.8	3.5	5.5	1.0	6.0	5.0	4.0	8.0
60	82.4	20.0	71.0	30.0	0.0	2.3	5.8	5.0	5.5	----	5.0	6.0	4.0	7.0
61	85.2	10.0	75.0	30.0	30.0	2.0	4.7	5.0	5.3	----	6.0	3.0	2.0	8.0
62	90.2	15.0	74.0	10.0	20.0	2.8	4.8	3.0	4.1	2.0	6.0	3.0	4.0	5.0
63	89.3	5.0	74.0	20.0	20.0	2.5	4.7	3.0	4.5	2.0	6.0	2.0	6.0	7.0
64	90.5	5.0	74.0	10.0	30.0	2.8	4.5	3.0	4.0	2.0	6.0	2.0	6.0	6.0
65	85.9	20.0	73.0	50.0	10.0	2.8	4.8	4.0	5.0	----	6.0	6.0	2.0	7.0
66	79.4	20.0	73.0	10.0	5.0	2.3	4.7	3.0	4.5	----	6.0	3.0	6.0	----
67	79.6	15.0	77.0	10.0	5.0	3.0	6.0	3.0	5.5	----	6.0	5.0	8.0	6.0
68	79.6	10.0	73.0	1.0	30.0	1.8	5.8	4.0	5.2	----	6.0	4.0	4.0	7.0
69	87.8	5.0	73.0	10.0	20.0	2.3	5.5	3.0	5.3	----	6.0	3.0	4.0	8.0
70	86.5	5.0	74.0	1.0	20.0	2.0	5.0	3.0	5.2	----	5.0	4.0	9.0	5.0
71	84.6	5.0	70.0	40.0	30.0	2.5	3.8	5.0	4.3	----	6.0	4.0	4.0	7.0
72	75.9	0.0	75.0	20.0	5.0	4.0	6.0	4.0	5.3	----	6.0	5.0	2.0	6.0
73	77.2	20.0	69.0	20.0	15.0	4.3	6.7	4.0	5.3	----	6.0	3.0	6.0	6.0
74	89.8	10.0	75.0	20.0	10.0	3.5	5.3	3.0	4.2	----	6.0	3.0	8.0	6.0
75	81.5	20.0	72.0	20.0	10.0	2.3	5.0	1.0	5.7	----	5.0	3.0	6.0	5.0
76	86.3	15.0	78.0	20.0	25.0	2.5	4.8	1.5	4.4	----	6.0	4.0	4.0	----

Table 2 (continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	YIELD KG/HA	HEAD DAYS	MAT DAYS	STRP RT. L	STRP RT. H	LEAF RUST	STEM RUST	NUMBER OF OBSERVATIONS:										
									(11)	(16)	(6)	(9)	(3)	(7)	(3)				
77	GJD"S"-TRM X BDA-HUAC"S" CM60767-C-1Y-1M-1Y-2M-0Y-OPTZ	MEXICO	2970.6	94.0	129.3	14.8	0.0	17.3	24.0										
78	(COG"S"-F61.70 X CNDR"S"/DLN)PHD"S" CM60907-K-1Y-2M-1Y-2M-0Y-1PTZ	MEXICO	3661.6	93.2	127.8	9.3	0.0	4.3	13.6										
79	BDW"S"-NAC CM61755-10Y-3M-1Y-1M-0Y-OPTZ	MEXICO	2916.7	102.6	134.6	9.9	3.3	21.7	36.7										
80	IAS-20		1886.1	101.4	133.2	46.9	36.7	36.2	66.7										
81	BIB"S"-CAN"S" X IMV CM61944-13Y-3M-1Y-2M-0Y-1PTZ	MEXICO	2451.4	95.3	130.4	46.9	13.3	42.2	23.5										
82	MIRLO"S"-BUC"S" CM61949-12Y-1M-1Y-1M-0Y-1PTZ	MEXICO	2497.1	93.4	125.8	11.3	6.7	5.1	10.0										
83	MIRLO"S"-BUC"S" CM61494-12Y-3M-2Y-1M-0Y-1PTZ	MEXICO	2767.3	96.3	128.4	7.1	6.7	5.2	10.1										
84	VEE"S"-BNB"S" CM61981-4Y-1M-6Y-3M-0Y-OPTZ	MEXICO	2492.3	104.2	137.0	7.8	6.7	35.2	13.3										
85	VEE"S"-BNB"S" CM61981-13Y-1M-2Y-1M-0Y-1PTZ	MEXICO	2317.7	101.9	136.6	5.9	0.3	39.0	13.3										
86	IAS20-H567.71 CMH76.480-13Y-5B-1Y-1B-1Y-1B-0Y- OPTZ	MEXICO	3030.4	93.4	127.3	6.6	0.3	0.4	53.3										
87	IAS20-H567.71 X IAS20(2) CMH77.205-1Y-1B-7Y-1B-1Y-1B-0Y- OPTZ	MEXICO	3556.6	91.1	125.0	16.8	3.3	1.0	53.3										
88	IAS20-H567.71 X IAS20(2) CMH77.205-1Y-1B-8Y-5B-1Y-0B-OPTZ	MEXICO	3146.3	91.6	124.8	17.4	6.7	1.5	53.3										
89	H567.71-PEL-ATR(2) CMH77.308-1Y-4B-1Y-10B-2Y-1B-0Y- OPTZ	MEXICO	2761.1	90.6	124.0	16.5	6.7	17.0	12.0										
90	NYU BAY-MEX CMH77A.952-1B-6Y-3B-1Y-2B-1Y-1B- 0Y-1PTZ	MEXICO	1829.8	90.3	128.2	5.7	0.0	24.7	16.7										
91	IAS-20-H567.71 X IAS-20/IAS-5B CMH78.390-2Y-2B-1Y-3B-1Y-0B-OPTZ	MEXICO	2320.1	96.4	133.8	23.1	3.3	4.2	30.0										
92	IAS-20-H567.71 X IAS-20(4) CMH78.409-3Y-10B-1Y-1B-1Y-0B- OPTZ	MEXICO	3085.6	102.2	133.4	38.9	40.0	12.2	100.0										
93	IAS-20-H567.71 X IAS-20(3) CMH78A-404-7B-5Y-1B-1Y-1B-0Y- 1PTZ	MEXICO	2693.8	100.0	132.4	25.6	28.3	20.3	66.7										
94	IAS-20-H567.71 X IAS-20(3) CMH78A.404-7B-5Y-3B-1Y-0B-OPTZ	MEXICO	3250.0	96.4	131.7	33.8	26.7	12.4	66.7										
95	IAS-20-H567.71 X IAS-20/MRNG(2) CMH78A.415-3B-2Y-4B-1Y-1B-0Y- OPTZ	MEXICO	3307.0	92.9	131.8	15.7	25.0	10.2	53.3										
96	IAS-20-H567.71 X IAS-20(5) CMH78A.544-7B-1Y-1B-1Y-1B-0Y- 1PTZ	MEXICO	3010.9	102.5	134.4	18.4	11.7	12.2	60.0										
97	IAS-20-H567.71 X IAS-20(5) CMH78A-544-7B-1Y-1B-3Y-0B-OPTZ	MEXICO	3257.1	103.3	134.6	12.6	8.3	8.2	56.7										
98	IAS-20-H567.71 X IAS-20(5) CMH78A.544-7B-1Y-1B-3Y-1B-0Y- OPTZ	MEXICO	2784.0	103.4	134.8	13.0	8.3	8.2	56.7										
99	CMH74A.754-PEL-ATR(2) CMH79.236-2Y-5B-2Y-1B-0Y-1PTZ	MEXICO	2359.0	91.9	128.2	46.8	25.0	1.7	0.0										
100	SIETE CERROS		2838.4	94.5	126.6	62.8	53.3	52.4	18.7										
101	IAS-20-H567.71 X IAS-20(4) CMH79.243-1Y-5B-4Y-1B-0Y-OPTZ	MEXICO	3084.1	101.0	131.4	24.7	18.3	6.2	73.3										
102	BH1146-H567.71 X BH1146 CMH79.251-4Y-8B-2Y-3B-0Y-1PTZ	MEXICO	3825.3	94.6	126.0	10.3	3.3	0.7	40.0										

VTY	PLNT HT	LOAD %	ENTR HEAD	SCAB %	CHECK MARK	POW H 0-9	SEP T 0-9	SEP N 0-9	SEP S 0-9	BAR S 0-9	MEL SP 0-9	FUS N 0-9	AL TOL 0-9	BYDV 0-9
	(11)	(1)	(1)	(1)	(19)	(5)	(6)	(2)	(13)	(1)	(1)	(1)	(1)	(1)
77	90.8	10.0	74.0	20.0	20.0	2.3	5.0	4.0	4.8	----	6.0	6.0	2.0	8.0
78	93.9	15.0	75.0	30.0	20.0	2.3	4.5	4.0	4.6	----	6.0	3.0	2.0	7.0
79	89.0	5.0	75.0	20.0	5.0	2.8	4.0	2.5	4.6	----	3.0	2.0	2.0	6.0
80	125.8	60.0	67.0	1.0	0.0	4.3	4.3	3.0	3.9	----	6.0	1.0	9.0	6.0
81	93.1	0.0	71.0	10.0	5.0	3.3	5.2	5.0	5.2	----	6.0	5.0	4.0	5.0
82	98.0	10.0	72.0	30.0	5.0	2.3	4.0	3.0	4.7	----	6.0	4.0	6.0	6.0
83	94.5	20.0	73.0	30.0	5.0	2.3	5.7	1.5	4.6	----	6.0	5.0	4.0	----
84	76.3	15.0	71.0	20.0	5.0	3.0	4.7	5.0	4.5	----	6.0	3.0	2.0	8.0
85	72.9	5.0	71.0	10.0	5.0	2.8	4.8	1.0	4.4	----	6.0	3.0	2.0	8.0
86	85.0	15.0	68.0	30.0	15.0	2.5	3.5	4.0	4.5	----	6.0	6.0	6.0	----
87	87.9	15.0	74.0	40.0	15.0	3.3	5.0	3.0	4.8	----	6.0	7.0	4.0	6.0
88	83.4	3.0	73.0	30.0	10.0	3.3	4.2	6.0	5.1	----	6.0	7.0	6.0	6.0
89	82.2	3.0	73.0	30.0	5.0	3.3	4.2	5.0	5.4	----	6.0	5.0	8.0	8.0
90	96.2	80.0	77.0	5.0	10.0	2.5	5.3	7.0	5.3	1.0	6.0	3.0	2.0	7.0
91	60.2	5.0	70.0	40.0	10.0	5.0	4.0	5.0	4.8	----	5.0	5.0	9.0	6.0
92	94.0	30.0	63.0	40.0	5.0	4.3	3.3	3.0	3.8	----	6.0	4.0	9.0	7.0
93	94.3	45.0	----	40.0	5.0	3.0	4.5	3.0	4.1	----	6.0	4.0	9.0	6.0
94	92.3	20.0	72.0	30.0	5.0	4.3	4.2	5.0	3.9	----	6.0	3.0	8.0	7.0
95	86.4	15.0	67.0	40.0	10.0	3.0	4.8	5.0	4.3	----	6.0	5.0	6.0	----
96	97.8	50.0	72.0	5.0	0.0	2.5	3.0	4.0	4.0	----	6.0	3.0	9.0	----
97	97.9	40.0	72.0	5.0	15.0	3.0	3.0	1.5	3.7	----	6.0	5.0	9.0	----
98	97.9	20.0	72.0	5.0	0.0	2.8	3.8	2.5	4.0	----	6.0	5.0	9.0	----
99	80.6	10.0	75.0	40.0	10.0	1.5	4.2	5.0	5.3	----	6.0	3.0	9.0	8.0
100	80.2	30.0	67.0	30.0	0.0	3.4	7.7	5.0	6.2	----	6.0	----	2.0	7.0
101	94.7	45.0	74.0	20.0	5.0	4.0	3.8	3.0	4.2	----	4.0	2.0	9.0	7.0
102	87.1	20.0	----	----	20.0	3.6	4.7	4.0	3.6	----	6.0	3.0	4.0	8.0

Table 2 (continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	NUMBER OF OBSERVATIONS:	YIELD KG/HA	HEAD DAYS	MAT DAYS	STRP RT. L	STRP RT. H	LEAF RUST	STEM RUST
		(11)	(16)	(6)	(9)	(3)	(7)	(3)	
103	BH1146-H567.71 X BH1146 CMH79.251-4Y-8B-6Y-1B-0Y-1PTZ	MEXICO	3203.5	89.5	128.5	14.2	10.0	1.7	46.7
104	GIRUA-H567.71 X GIRUA CMH79.336-2Y-4B-1Y-4B-0Y-0PTZ	MEXICO	2748.6	92.6	130.3	31.5	6.7	5.0	28.7
105	IAB-20-H567.71 X IAB-20(4) CMH79A.209-5B-4Y-1B-0Y-0PTZ	MEXICO	3040.0	89.4	125.3	18.0	10.0	1.5	53.3
106	THORNBIRD"B" F11915-A-502H-1Y-1F-701Y-3F-0Y-1PTZ	BRAZIL/MEX	3088.3	96.2	128.6	19.0	0.0	1.8	8.7
107	ALD"B"	CHILE/MEX.	2848.3	96.6	129.2	20.8	0.0	23.2	18.7
108	PF7619-VEE"B" X DESC. B25816-D-1M-1Y-0Z-0Y-1PTZ	BRAZIL/MEX	2521.4	98.2	130.4	42.5	25.0	17.1	36.7
109	(BTY/6754. II. 1. T-K(2) X BZA)6754 K6B 7 -PTZ	KENYA	3114.8	93.3	129.8	12.3	0.0	11.0	0.0
110	RAF-MAQ X TZPP(2)-ANE(3) L-795-1AP-1AP-0AP-3K-0AP-1PTZ	BYRIA	2550.1	103.0	136.7	5.1	0.0	28.8	17.3
111	KVZ-K4300. L. A. 4 -OPTZ	MEXICO	3263.8	95.4	128.7	26.0	0.3	12.1	0.0
112	IAB-20		2642.3	99.5	132.8	43.1	23.3	50.0	73.3

VTY	PLNT HT	LOAD %	SHTR HEAD	SCAB %	CHECK MARK	POW N 0-9	SEP T 0-9	SEP N 0-9	SEP S 0-9	BAR S 0-9	MEL SP 0-9	FUS N 0-9	AL TOL 0-9	BYDV 0-9
	(11)	(1)	(1)	(1)	(10)	(5)	(6)	(2)	(13)	(1)	(1)	(1)	(1)	(1)
103	82.0	15.0	71.0	30.0	10.0	3.6	5.0	3.0	4.9	----	6.0	4.0	4.0	----
104	88.4	20.0	67.0	30.0	15.0	3.8	4.2	5.0	5.0	----	6.0	6.0	4.0	8.0
105	91.2	50.0	69.0	30.0	10.0	2.3	3.8	4.0	4.5	----	6.0	4.0	9.0	5.0
106	97.6	5.0	76.0	10.0	15.0	2.5	4.0	2.5	4.5	3.0	6.0	3.0	6.0	7.0
107	91.8	5.0	71.0	20.0	5.0	2.8	5.2	4.0	4.9	----	6.0	3.0	2.0	8.0
108	97.6	35.0	71.0	20.0	0.0	3.0	5.2	1.0	4.3	----	6.0	4.0	9.0	7.0
109	101.5	30.0	76.0	5.0	15.0	3.0	3.5	3.0	5.1	----	6.0	4.0	8.0	8.0
110	91.8	20.0	72.0	40.0	15.0	2.5	5.3	5.0	4.7	----	6.0	4.0	4.0	6.0
111	89.8	30.0	79.0	20.0	15.0	1.8	4.8	6.0	4.2	3.0	6.0	6.0	4.0	8.0
112	119.2	50.0	73.0	40.0	9.0	3.5	3.5	6.0	3.6	----	6.0	4.0	9.0	6.0

Table 3. Entries with the highest mean yields, based on 11 locations

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS											MEAN
		8	9	10	14	15	17	21	24	27	31	32	
28	BOW"S" CM33203-K-9M-33Y-1M-500Y-OM-1J- OJ-OPTZ	5400	2499	3666	6373	1850	---	4755	2522	2962	---	10457	4498.2
27	BOW"S" CM33203-K-9M-15Y-1M-4Y-3M-OY- OPTZ	4744	2499	3600	5919	1650	---	4932	2311	2962	---	9999	4290.7
26	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-OY-2PTZ	4080	2916	866	6146	2200	6444	4132	2206	2962	---	10674	4282.6
5	KVZ-7C BM-4064-6Y-4M-3Y-1M-1Y-3M-OY- OPTZ-OY-OPTZ-1PTZ	5104	1666	4333	5853	1450	7422	5199	1911	---	---	---	4117.3
48	VR-PAM"S" CM46091-16M-1Y-6M-2Y-1Y-2M-OY- 1PTZ	3576	2499	533	4079	1350	---	4177	2483	---	---	11999	3837.0
102	BH1146-H367.71 X BH1146 CM479.251-4Y-8B-2Y-3B-OY-1PTZ	3328	2916	3866	6693	1350	---	4799	---	---	---	---	3825.3
45	FINK"S" CM41860-A-3M-2Y-3M-1Y-1M-1Y-OB- OPTZ	4232	2083	733	3013	1100	---	4488	2728	3333	4925	11332	3796.7
20	BIETE CERROS	4736	4166	4600	6573	950	---	2799	2094	---	---	---	3702.6
29	HANN"S" CM33682-L-1Y-9Y-1M-1Y-1B-OY-OPTZ	4264	1666	600	4266	1250	---	4755	2494	---	---	10124	3677.4
78	(COG"S"-F61.70 X CNDR"S"/OLN)PHO"S" CM60907-K-1Y-2M-1Y-2M-OY-1PTZ	3168	4166	3866	4306	1450	5999	3999	2339	---	---	---	3661.6
24	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-OY-OPTZ	3752	2499	---	6653	1900	---	4666	2378	---	---	---	3641.3
25	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-OY-1PTZ	4136	1666	4333	6826	1400	---	4355	2444	---	---	---	3594.3
76	OJO"S"-TRM X BDA-MUAC"S" CM60767-C-1Y-1M-1Y-1M-OY-1PTZ	4192	2916	1866	5106	1450	6888	3777	2278	3703	---	---	3575.1
87	IAS20-H367.71 X IAS20(2) CM477.205-1Y-1B-7Y-1B-1Y-1B-OY- OPTZ	3152	3333	3933	3853	1000	6044	4444	2917	3333	---	---	3556.6
55	ALD"S"-PVN"S" CM49901-14Y-2Y-6M-4Y-OM-OPTZ	4016	2916	2266	6013	1650	---	3955	2989	---	4626	---	3553.9
98	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-1M-OY-OPTZ	3552	2499	---	5373	1350	5822	3644	2467	---	---	---	3529.6

Table 4. Entries most frequently selected (check marked) for further investigation at 20 locations

VTY NO.	VARIETY OR CROSS AND PEDIGREE	% OF LOCATIONS SELECTED
45	FINK"S" CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B- OPTZ	40.0
5	KVZ-7C SM1-4064-6Y-4M-3Y-1M-1Y-3M-0Y- OPTZ-0Y-OPTZ-1PTZ	35.0
28	BOW"S" CM33203-K-9M-33Y-1M-300Y-0M-1J- 0J-OPTZ	35.0
30	SNB"S" CM34630-D-5M-2Y-1M-1Y-0M-OPTZ	35.0
23	BOW"S" CM33203-K-9M-2Y-1M-1Y-2M-0Y-1PTZ	30.0
31	SNB"S" CM34630-D-5M-2Y-1M-1Y-2M-2Y-0M- OPTZ	30.0
33	SNB"S" CM34630-D-5M-5Y-5M-1Y-1M-0Y-OPTZ	30.0
58	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-1M-0Y-OPTZ	30.0
59	ALD"S"-CDC CM30351-9M-2Y-1M-3M-1Y-1M-0Y- 2PTZ	30.0
61	ALD"S"-CDC CM30351-9M-2Y-1Y-4M-1Y-1M-0Y- 1PTZ	30.0
64	IAB58(KAL-BB X CJ"S"/ALD"S") CM50464-12Y-6F-1Y-2Y-1M-3Y-0Z- 0Y-3PTZ	30.0
68	BUC"S"-CHRC"S" CM52421-2M-7Y-5Y-1M-1Y-2M-0Y- 1PTZ	30.0
71	RPB14. 68-NAC X DOVE"S" CM3829-N-7M-4Y-2Y-1M-3Y-1M-0Y- OPTZ	30.0
4	URES B1 CM33027-F-12M-1Y-4M-2Y-2M-0Y- OPTZ	25.0
6	KVZ-K4900L-6-A-4 SMO-176-3M-1Y-10Y-1Y-8M-0Y-OPTZ- 0Y-1PTZ	25.0
25	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-1PTZ	25.0
26	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-2PTZ	25.0
27	BOW"S" CM33203-K-9M-13Y-1M-4Y-3M-0Y- OPTZ	25.0
35	YR-TRF"S" CM36749-10Y-3M-5Y-2M-1Y-0M-OPTZ	25.0
76	GJD"S"-TRM X BDA-HUAC"S" CM60767-C-1Y-1M-1Y-1M-0Y-1PTZ	25.0

Table 5. The 19 entries most resistant to *Septoria tritici* at six locations (0-9 scale)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS						MEAN
		6	8	16	18	20	29	
96	IAS-20-H567.71 X IAS-20(3) CMH78A. 544-7B-1Y-1B-1Y-1B-OY-1PTZ	2	2	0	0	6	8	3.0
97	IAS-20-H567.71 X IAS-20(3) CMH78A-544-7B-1Y-1B-3Y-OB-OPTZ	3	0	2	0	5	8	3.0
92	IAS-20-H567.71 X IAS-20(4) CMH7B. 409-3Y-1OB-1Y-1B-1Y-OB-OPTZ	3	2	0	0	7	8	3.3
86	IAS20-H567.71 CMH76. 480-13Y-5B-1Y-1B-1Y-1B-OY-OPTZ	3	3	0	0	7	8	3.5
109	(BTY/6754. II. 1. T-K(2) X BZA)6754 K68 7 -PTZ	3	2	2	0	6	8	3.5
112	IAS-20	5	2	1	0	5	8	3.5
23	BOW"S" CM33203-K-9M-2Y-1M-1Y-2M-OY-1PTZ	1	3	4	0	6	8	3.7
16	VEE"S" CM33027-F-1M-9Y-OM-97Y-OB-OPTZ	2	4	2	0	7	8	3.8
71	RPB14. 6B-NAC X DOVE"S" CM33829-N-7M-4Y-2Y-1M-3Y-1M-OY-OPTZ	2	4	2	0	7	8	3.8
98	IAS-20-H567.71 X IAS-20(3) CMH78A. 544-7B-1Y-1B-3Y-1B-OY-OPTZ	4	2	2	0	7	8	3.8
101	IAS-20-H567.71 X IAS-20(4) CMH79. 243-1Y-5B-4Y-1B-OY-OPTZ	3	4	2	0	6	8	3.8
105	IAS-20-H567.71 X IAS-20(4) CMH79A. 209-5B-4Y-1B-OY-OPTZ	2	3	3	0	7	8	3.8
27	BOW"S" CM33203-K-9M-15Y-1M-4Y-3M-OY-OPTZ	2	2	5	0	7	8	4.0
32	SNB"S" CM34630-D-5M-2Y-3M-3Y-OM-OPTZ	5	3	4	0	---	8	4.0
58	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-1M-OY-OPTZ	2	3	4	0	7	8	4.0
79	BOW"S"-NAC CM61755-10Y-5M-1Y-1M-OY-OPTZ	4	2	3	0	7	8	4.0
82	MIRLO"S"-BUC"S" CM61949-12Y-1M-1Y-1M-OY-1PTZ	5	2	2	0	7	8	4.0
91	IAS-20-H567.71 X IAS-20/IAS-5B CMH7B. 390-2Y-2B-1Y-3B-1Y-OB-OPTZ	2	2	---	0	8	8	4.0
106	THORNBIRD"S" F11915-A-502M-1Y-1F-701Y-3F-OY-1PTZ	2	2	2	3	7	8	4.0

Table 6. The 35 entries most resistant to powdery mildew at four locations (0-9 scale)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS				MEAN
		13	15	17	19	
99	CMH74A. 794-PEL-ATR(2) CMH79. 236-2Y-9B-2Y-1B-0Y-1PTZ	2	1	3	0	1.8
90	YR-PAM"S" CH46091-16Y-1Y-6M-3Y-1Y-1M-0Y-2PTZ	1	1	5	0	1.8
91	MAYA"S" X ND-P101/PAM"S" CH47773-J-1M-1Y-2M-2Y-0Y-0PTZ	2	1	4	0	1.8
92	AZ X CHR-DD. 03P/F12. 71-BLO"S" CH48326-A-3M-1Y-1M-2Y-1Y-0M-2PTZ	1	2	4	0	1.8
93	AZ X CHR-DD. 03P/F12. 71-BLO"S" CH48326-A-3M-1Y-1M-2Y-1Y-0M-3PTZ	2	1	4	0	1.8
68	BUC"S"-CHRC"S" CH52421-2M-7Y-5Y-1M-1Y-2M-0Y-1PTZ	3	1	3	0	1.8
111	KVZ-K4500. L. A. 4 -OPTZ	4	0	3	0	1.8
33	SNB"S" CH34630-D-3M-5Y-3M-1Y-1M-0Y-0PTZ	1	1	5	1	2.0
55	ALD"S"-PVN"S" CH49901-14Y-2Y-6M-4Y-0M-0PTZ	2	2	4	0	2.0
61	ALD"S"-CDC CH50351-9M-2Y-1Y-4M-1Y-1M-0Y-1PTZ	2	1	5	0	2.0
70	BUC"S"-CHRC"S" CH52421-11M-4Y-2Y-1M-4Y-1M-0Y-1PTZ	2	2	4	0	2.0
14	RR-WM15/JI"S" X CND67-ND CH12272-N-1Y-1M-0Y-1PTZ	3	3	3	0	2.3
25	BOW"S" CH33203-K-9M-9Y-4M-4Y-1M-0Y-1PTZ	2	2	5	0	2.3
60	SIETE CERROS	2	2	5	0	2.3
66	ALD"S"-AZ CH51821-3Y-1Y-3M-4Y-0M-0PTZ	2	2	5	0	2.3
69	BUC"S"-CHRC"S" CH52421-2M-7Y-5Y-1M-2Y-1M-0Y-0PTZ	2	2	5	0	2.3
75	NAC-ERU"S"/TOB(2)-7C X MN72131 CH60402-C-2Y-1M-1Y-1M-0Y-0PTZ	3	1	5	0	2.3
77	OJD"S"-TRM X BDA-MUAC"S" CH60767-C-1Y-1M-1Y-2M-0Y-0PTZ	2	2	5	0	2.3
78	(CDG"S"-F61. 70 X CNDR"S"/DLN)PHO"S" CH60907-K-1Y-2M-1Y-2M-0Y-1PTZ	1	3	5	0	2.3
82	MIRLO"S"-BUC"S" CH61949-12Y-1M-1Y-1M-0Y-1PTZ	3	1	5	0	2.3
83	MIRLO"S"-BUC"S" CH61494-12Y-3M-2Y-1M-0Y-1PTZ	3	1	5	0	2.3
105	IAS-20-H567. 71 X IAS-20(4) CMH79A. 209-5B-4Y-1B-0Y-0PTZ	3	2	4	0	2.3
10	TITO CH8212-D-4M-5Y-4M-500Y-500M-0Y-1PTZ	2	3	5	0	2.5
23	BOW"S" CH33203-K-9M-2Y-1M-1Y-2M-0Y-1PTZ	3	2	5	0	2.5
26	BOW"S" CH33203-K-9M-9Y-4M-4Y-1M-0Y-2PTZ	3	2	5	0	2.5

Table 6 (continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	L O C A T I O N S				MEAN
		13	15	17	19	
28	BON"S" CM33203-K-9M-33Y-1M-500Y-OM-1J- OJ-OPTZ	2	3	5	0	2.5
31	SNB"S" CM34630-D-5M-2Y-1M-1Y-2M-2Y-OM- OPTZ	3	1	5	1	2.5
32	SNB"S" CM34630-D-3M-2Y-3M-3Y-OM-OPTZ	3	1	5	1	2.5
59	ALD"S"-CDC CM30351-9M-2Y-1M-3M-1Y-1M-OY- 2PTZ	3	3	4	0	2.5
63	IAB58(KAL-BB X CJ"S"/ALD"S") CM30464-12Y-6F-1Y-1Y-8M-8Y-OZ- OY-1PTZ	3	2	5	0	2.5
71	RPB14. 6S-NAC X DOVE"S" CM33829-N-7M-4Y-2Y-1M-3Y-1M-OY- OPTZ	6	1	3	0	2.5
76	GJD"S"-TRM X BDA-HUAC"S" CM60767-C-1Y-1M-1Y-1M-OY-1PTZ	3	2	5	0	2.5
86	IAB20-H567. 71 CM76. 480-13Y-5B-1Y-1B-1Y-1B-OY- OPTZ	3	1	5	1	2.5
90	NYU BAY-MEX CM77A. 952-1B-6Y-3B-1Y-2B-1Y-1B- OY-1PTZ	3	2	5	0	2.5
96	IAB-20-H567. 71 X IAB-20(5) CM78A. 544-7B-1Y-1B-1Y-1B-OY- 1PTZ	3	4	3	0	2.5

Table 7. The 25 entries most resistant to leaf rust at seven locations (modified Cobb scale) and their average coefficients of infection ("mean")

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS							MEAN
		6	11	17	24	25	26	28	
33	SNB"S" CM34630-D-5M-5Y-3M-1Y-1M-0Y-OPTZ	0	----	3R	0	TMS	----	0	0.4
86	IAS20-H567.71 CMH76.460-13Y-5B-1Y-1B-1Y-1B-0Y-OPTZ	0	3R	3R	0	TMR	----	0	0.4
36	[JUP(7C-PATO(B)/LR64-INIA X INIA-BB) JANA CM37760-C-21Y-2M-1Y-3M-0Y-1PTZ	0	----	3R	TMB	TS	----	0	0.6
102	BH1146-H567.71 X BH1146 CMH79.251-4Y-8B-2Y-3B-0Y-1PTZ	0	TR	10R	----	----	----	----	0.7
30	SNB"S" CM34630-D-5M-2Y-1M-1Y-0M-OPTZ	3MR	----	3R	0	TMS	----	0	0.8
31	SNB"S" CM34630-D-5M-2Y-1M-1Y-2M-2Y-0M-OPTZ	0	----	3R	0	0	3MS	0	0.8
87	IAS20-H567.71 X IAS20(2) CMH77.205-1Y-1B-7Y-1B-1Y-1B-0Y-OPTZ	0	TR	3R	3B	0	----	0	1.0
5	KVZ-7C SMH-4064-6Y-4M-3Y-1M-1Y-3M-0Y-OPTZ-0Y-OPTZ-1PTZ	0	10MR	20R	0	TMR	0	0	1.2
88	IAS20-H567.71 X IAS20(2) CMH77.205-1Y-1B-8Y-5B-1Y-0B-OPTZ	0	----	10R	3S	TMR	----	0	1.5
105	IAS-20-H567.71 X IAS-20(4) CMH79A.209-5B-4Y-1B-0Y-OPTZ	0	----	3R	----	3S	----	0	1.5
99	CMH74A.754-PEL-ATR(2) CMH79.236-2Y-5B-2Y-1B-0Y-1PTZ	0	----	10R	0	0	10MS	0	1.7
103	BH1146-H567.71 X BH1146 CMH79.251-4Y-8B-6Y-1B-0Y-1PTZ	0	TR	10R	0	10MS	----	0	1.7
106	THORNBIRD"S" F11915-A-502M-1Y-1F-701Y-3F-0Y-1PTZ	0	20MR	3R	0	3MR	----	0	1.8
74	F6.74-BUN"S" X SIS"S" CM60042-M-1Y-2M-2Y-1M-0Y-1PTZ	0	----	3R	TS	10B	----	0	2.4
6	KVZ-K4300L-6-A-4 SMD-176-3M-1Y-10Y-1Y-8M-0Y-OPTZ-0Y-1PTZ	0	----	3R	10S	TMS	10MS	TMS	3.4
43	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-82B-0Y-OPTZ	40R	----	10R	10MS	TMR	----	0	3.7
61	ALD"S"-CDC CM50351-9M-2Y-1Y-4M-1Y-1M-0Y-1PTZ	0	----	10R	TMS	20MS	3MS	TS	4.0
70	BUC"S"-CHRC"S" CM52421-11M-4Y-2Y-1M-4Y-1M-0Y-1PTZ	10R	TR	3R	3S	10MS	----	10MS	4.0
91	IAS-20-H567.71 X IAS-20/IAS-3B CMH78.390-2Y-2B-1Y-3B-1Y-0B-OPTZ	0	----	3R	0	20S	----	0	4.2
78	(COG"S"-F61.70 X CNDR"S"/DLN)PHO"S" CM60907-K-1Y-2M-1Y-2M-0Y-1PTZ	0	----	3R	TMS	10MS	20MS	0	4.3
28	BOW"S" CM33203-K-9M-33Y-1M-900Y-0M-1Y-0Y-OPTZ	0	----	3R	0	TR	30MS	TS	4.4
59	ALD"S"-CDC CM50351-9M-2Y-1M-3M-1Y-1M-0Y-2PTZ	0	----	10R	3MS	20MS	3MS	TS	4.5
42	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-80B-0Y-2PTZ	40R	10MR	10R	20MS	0	----	0	5.0
45	FINK"S" CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B-OPTZ	0	----	10R	0	10MS	20S	0	5.0
104	QIRUA-H567.71 X QIRUA CMH79.336-2Y-4B-1Y-4B-0Y-OPTZ	0	----	10R	3MS	10MS	20MS	0	5.0

Table 8. The 18 entries most resistant to stem rust at three locations (modified Cobb scale) and their average coefficients of infection ("mean")

VTV NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS			MEAN
		5	25	32	
6	KVZ-K4500L-6-A-4 BMD-176-3M-1Y-10Y-1Y-8M-0Y-OPTZ- 0Y-1PTZ	0	0	0	0.0
25	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-1PTZ	0	0	0	0.0
29	HANN"S" CM33682-L-1Y-9Y-1M-1Y-1B-0Y-OPTZ	0	0	0	0.0
99	CM74A. 754-PEL-ATR (2) CM79. 236-2Y-3B-2Y-1B-0Y-1PTZ	0	0	0	0.0
109	(BTY/6754. II. 1. T-K(2) X BZA)6754 K6B 7 -PTZ	0	0	0	0.0
111	KVZ-K4500. L. A. 4 -OPTZ	0	0	0	0.0
26	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-2PTZ	0	0	TR	0.1
27	BOW"S" CM33203-K-9M-15Y-1M-4Y-3M-0Y- OPTZ	0	0	TR	0.1
28	BOW"S" CM33203-K-9M-33Y-1M-500Y-0M-1J- 0J-OPTZ	0	0	TR	0.1
46	JUP-HUB"S" (CND67"S"-7C X CND67-INIA/ TOB) CM43601-K-3Y-3M-6Y-2M-1Y-0B-1PTZ	0	0	TR	0.1
22	BOW"S" CM33203-K-9M-2Y-1M-1Y-1M-0Y-OPTZ	0	0	5R	0.3
23	BOW"S" CM33203-K-9M-2Y-1M-1Y-2M-0Y-1PTZ	0	0	10R	0.7
24	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-OPTZ	0	0	20R	1.3
61	ALD"S"-CDC CM50351-9M-2Y-1Y-4M-1Y-1M-0Y- 1PTZ	0	0	20R	1.3
51	MAYA"S" X ND-P101/PAM"S" CM47775-J-1M-1Y-2M-2Y-0Y-OPTZ	0	TMS	5B	1.9
45	FINK"S" CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B- OPTZ	0	0	10B	3.3
21	VEE"S" CM33027-F-12M-1Y-3M-1Y-1M-1Y-0M- OPTZ	0	0	15B	5.0
49	YR-PAM"S" CM46091-16M-1Y-6M-3Y-1Y-1M-0Y- 1PTZ	0	0	15B	5.0

Table 9. The eight entries most resistant to stripe rust at nine locations (modified Cobb scale) and their average coefficients of infection ("mean")

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS									MEAN
		2	3	4	11	13	16	21	31	32	
5	KVZ-7C 8M-4064-6Y-4M-3Y-1M-1Y-3M-0Y- OPTZ-0Y-OPTZ-1PTZ	TR	9S	5MS	----	15MR	0	TR	0	0	1.9
31	MAYA"S" X ND-P101/PAH"S" CH47775-J-1M-1Y-2M-2Y-0Y-OPTZ	TR	THS	0	----	20MS	0	THR	5MR	0	2.4
33	YR-TRF"S" CH36749-10Y-3M-5Y-2M-1Y-0M-OPTZ	THS	TR	THS	----	20MS	0	0	5MS	TR	2.8
43	PINK"S" CH41860-A-5M-2Y-3M-1Y-1M-1Y-0B- OPTZ	0	TR	5MS	----	25MS	0	0	TR	0	3.1
44	GOV-AZ X MUS"S" CH41257-I-8M-3Y-0M-2PTZ	TR	TS	5MS	----	40MS	0	0	TR	TR	4.7
110	RAF-MAG X TZPP (2)-ANE (3) L-795-1AP-1AP-0AP-3K-0AP-1PTZ	0	TR	0	----	40MS	0	10MS	TR	0	5.1
71	RPB14. 6S-NAC X DOVE"S" CH33829-N-7M-4Y-2Y-1M-3Y-1M-0Y- OPTZ	0	TR	0	----	50MS	10MR	0	TR	0	5.6
90	NYU BAY-MEX CH477A. 952-1B-6Y-3B-1Y-2B-1Y-1B- 0Y-1PTZ	5MS	3S	5MS	10MR	40MS	THR	10R	TR	0	5.7

Table 10. Advanced lines selected for further investigation by the cooperator at Njoro, Rift Valley, Kenya

VTY NO.	VARIETY OR CROSS AND PEDIGREE
44	OOV-AZ X MUS"S" CM41257-I-8M-3Y-0M-2PTZ
45	FINK"S" CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B- OPTZ
51	MAYA"S" X ND-P101/PAM"S" CM47775-J-1M-1Y-2M-2Y-0Y-OPTZ
56	4777(2) X FKN-GB/PVN"S" CM49912-37M-4Y-4Y-1M-1Y-0M-1PTZ
57	CNO67"S"-SN X CNO67"S" X INIA"S"/ PVN"S" CM49918-3M-7Y-1Y-3M-1Y-2M-0Y- 1PTZ
65	HUAC"S"-TI REBEL/ATR(2)-7C X NAC CM50925-L-1Y-1M-1Y-1Y-2M-1Y-0M- OPTZ
79	BOW"S"-NAC CM61755-10Y-5M-1Y-1M-0Y-OPTZ

Table 11. Advanced lines selected for further investigation by the cooperator at Molo, Rift Valley, Kenya

VTY NO.	VARIETY OR CROSS AND PEDIGREE
5	KVZ-7C BMM-4064-6Y-4M-3Y-1M-1Y-3M-0Y- OPTZ-0Y-OPTZ-1PTZ
34	TOW"S" CM34709-0-2M-2Y-10M-3Y-1M-0Y- OPTZ
35	YR-TRF"S" CM36749-10Y-3M-5Y-2M-1Y-0M-OPTZ
45	FINK"S" CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B- OPTZ
50	YR-PAH"S" CM46091-16M-1Y-6M-3Y-1Y-1M-0Y- 2PTZ
56	4777(2) X FKN-GB/PVN"S" CM49912-37M-4Y-4Y-1M-1Y-0M-1PTZ
57	CNO67"S"-SN X CNO67"S" X INIA"S"/ PVN"S" CM49918-3M-7Y-1Y-3M-1Y-2M-0Y- 1PTZ
71	RPB14.6B-NAC X DOVE"S" CM53829-N-7M-4Y-2Y-1M-3Y-1M-0Y- OPTZ
72	TOW"S"-II58.57 CM56511-1Y-1Y-1M-2Y-1M-0Y-1PTZ
86	IAS20-H567.71 CMH76.480-13Y-5B-1Y-1B-1Y-1B-0Y- OPTZ
87	IAS20-H567.71 X IAS20(2) CMH77.205-1Y-1B-7Y-1B-1Y-1B-0Y- OPTZ
102	BH1146-H567.71 X BH1146 CMH79.251-4Y-8B-2Y-3B-0Y-1PTZ
110	RAF-MAG X TZPP(2)-ANE(3) L-795-1AP-1AP-OAP-3K-OAP-1PTZ

Table 12. Advanced lines selected for further investigation by the cooperator at Eisenburg, Cape Province, South Africa

VTY NO.	VARIETY OR CROSS AND PEDIGREE	VTY NO.	VARIETY OR CROSS AND PEDIGREE
4	URES B1 CM33027-F-12M-1Y-4M-2Y-2M-0Y- OPTZ	64	IAB58(KAL-BB X CJ"S"/ALD"S") CM30464-12Y-6F-1Y-2Y-1M-3Y-0Z- 0Y-3PTZ
9	TITO CM8212-D-4M-5Y-2M-0Y-1PTZ	65	HUAC"S"-TI REBEL/ATR(2)-7C X NAC CM30925-L-1Y-1M-1Y-1Y-2M-1Y-0M- OPTZ
13	CNO67-7C X NOR/CAL-CNO67 CM11952-C-3Y-2M-0Y-1PTZ	66	ALD"S"-AZ CM51821-3Y-1Y-3M-4Y-0M-OPTZ
19	T08-8156(R) (F1CNO67-PJ) CM23439-9M-1Y-0Y-67Y-OPTZ	68	BUC"S"-CHRC"S" CM52421-2M-7Y-5Y-1M-1Y-2M-0Y- 1PTZ
16	VEE"S" CM33027-F-1M-9Y-0M-97Y-0B-OPTZ	69	BUC"S"-CHRC"S" CM52421-2M-7Y-5Y-1M-2Y-1M-0Y- OPTZ
17	VEE"S" CM33027-F-12M-1Y-1M-1Y-1M-0Y- 1PTZ	71	RPB14. 68-NAC X DOVE"S" CM33829-N-7M-4Y-2Y-1M-3Y-1M-0Y- OPTZ
21	VEE"S" CM33027-F-12M-1Y-3M-1Y-1M-1Y-0M- OPTZ	74	F6. 74-BUN"S" X SIS"S" CM60042-M-1Y-2M-2Y-1M-0Y-1PTZ
25	BOM"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-1PTZ	76	GJD"S"-TRM X BDA-HUAC"S" CM60767-C-1Y-1M-1Y-1M-0Y-1PTZ
27	BOM"S" CM33203-K-9M-15Y-1M-4Y-3M-0Y- OPTZ	78	(C08"S"-F61. 70 X CNDR"S"/OLN)PHO"S" CM60907-K-1Y-2M-1Y-2M-0Y-1PTZ
30	SNB"S" CM34630-D-5M-2Y-1M-1Y-0M-OPTZ	81	SIS"S"-CAN"S" X IMV CM61944-13Y-5M-1Y-2M-0Y-1PTZ
36	(JUP(7C-PATO(B)/LR64-INIA X INIA-BB) JANA CM37760-C-21Y-2M-1Y-3M-0Y-1PTZ	88	IAB20-H567. 71 X IAB20(2) CM77. 205-1Y-1B-8Y-5B-1Y-0B-OPTZ
45	FINK"S" CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B- OPTZ	89	H567. 71-PEL-ATR(2) CM77. 308-1Y-4B-1Y-10B-2Y-1B-0Y- OPTZ
47	TES-HUB"S" CM49986-5M-2Y-2M-1Y-0Y-1PTZ	93	IAB-20-H567. 71 X IAB-20(3) CM77BA-404-7B-5Y-1B-1Y-1B-0Y- 1PTZ
52	AZ X CHR-DD. 05P/F12. 71-BLO"S" CM48326-A-3M-1Y-1M-2Y-1Y-0M-2PTZ	95	IAB-20-H567. 71 X IAB-20/HRNG(2) CM77BA. 413-3B-2Y-4B-1Y-1B-0Y- OPTZ
53	AZ X CHR-DD. 05P/F12. 71-BLO"S" CM48326-A-3M-1Y-1M-2Y-1Y-0M-3PTZ	97	IAB-20-H567. 71 X IAB-20(5) CM77BA-344-7B-1Y-1B-3Y-0B-OPTZ
54	ALD"S"-PVN"S" CM49901-14Y-2Y-1M-1Y-0M-OPTZ	106	THORNBIRD"S" F11913-A-502M-1Y-1F-701Y-3F-0Y- 1PTZ
56	4777(2) X FKN-08/PVN"S" CM49912-37M-4Y-4Y-1M-1Y-0M-1PTZ		
58	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-1M-0Y-OPTZ		

Table 13. Advanced lines selected for further investigation by the cooperator at Welgevallen, Cape Province, South Africa

VTY NO.	VARIETY OR CROSS AND PEDIGREE
23	BOW"S" CM33203-K-9M-2Y-1M-1Y-2M-0Y-1PTZ
25	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-1PTZ
26	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-2PTZ
33	SNB"S" CM34630-D-5M-5Y-5M-1Y-1M-0Y-0PTZ
35	YR-TRF"S" CM36749-10Y-3M-5Y-2M-1Y-0M-0PTZ
36	[JUP(7C-PATO(B)/LR64-INIA X INIA-BB) JANA CM37760-C-21Y-2M-1Y-3M-0Y-1PTZ
46	JUP-HUB"S"(CND67"S"-7C X CND67-INIA/ TOB) CM43601-K-3Y-3M-6Y-2M-1Y-0B-1PTZ
58	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-1M-0Y-0PTZ
59	ALD"S"-CDC CM50351-9M-2Y-1M-3M-1Y-1M-0Y- 2PTZ
76	GJD"S"-TRM X BDA-HUAC"S" CM60767-C-1Y-1M-1Y-1M-0Y-1PTZ
97	IAS-20-H567.71 X IAS-20(5) CMH78A-544-7B-1Y-1B-3Y-0B-0PTZ
109	(BTY/6754. II. 1. T-K(2) X BZA)6754 K6B 7 -PTZ

Table 14. Advanced lines selected for further investigation by the cooperator at U.A.C., Mbeya, Tanzania

VTY NO.	VARIETY OR CROSS AND PEDIGREE	VTY NO.	VARIETY OR CROSS AND PEDIGREE
1	CARAZINHO -OPTZ	49	YR-PAM"S" CM46091-16M-1Y-6M-3Y-1Y-1M-0Y-1PTZ
2	GLENNSON CM33027-F-8M-1Y-8M-1Y-2M-0Y-4PTZ	58	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-1M-0Y-0PTZ
4	URES B1 CM33027-F-12M-1Y-4M-2Y-2M-0Y-0PTZ	59	ALD"S"-COC CM50351-9M-2Y-1M-3M-1Y-1M-0Y-2PTZ
5	KVZ-7C SM-4064-6Y-4M-3Y-1M-1Y-3M-0Y-0PTZ-0Y-0PTZ-1PTZ	62	IAS58(KAL-BB X CJ"S"/ALD"S") CM50464-12Y-6F-1Y-1Y-8M-1Y-0Z-0Y-1PTZ
8	TP X CND67-NO/BB-CND67 CM5526-A-3Y-1M-2Y-2M-0Y-2PTZ	63	IAS58(KAL-BB X CJ"S"/ALD"S") CM50464-12Y-6F-1Y-1Y-8M-8Y-0Z-0Y-1PTZ
11	ALD-2 CM11683A-1Y-1M-2AR-0Y-0PTZ	64	IAS58(KAL-BB X CJ"S"/ALD"S") CM50464-12Y-6F-1Y-2Y-1M-3Y-0Z-0Y-3PTZ
12	ALD-2 CM11683A-1Y-1M-2AR-0Y-2B-0Y-0PTZ	71	RPB14.68-NAC X DOVE"S" CM53829-N-7M-4Y-2Y-1M-3Y-1M-0Y-0PTZ
17	VEE"S" CM33027-F-12M-1Y-1M-1Y-1M-0Y-1PTZ	73	(INIA"S"-ON X INIA-BB/JUP)BUC"S" CM58806-10Y-1M-1Y-2M-0Y-1PTZ
19	VEE"S" CM33027-F-12M-1Y-1M-1Y-2M-0Y-1PTZ	77	GJO"S"-TRM X BDA-HUAC"S" CM60767-C-1Y-1M-1Y-2M-0Y-0PTZ
22	BOW"S" CM33203-K-9M-2Y-1M-1Y-1M-0Y-0PTZ	84	VEE"S"-8NB"S" CM61981-4Y-1M-6Y-3M-0Y-0PTZ
28	BOW"S" CM33203-K-9M-3Y-1M-500Y-0M-1J-0J-0PTZ	91	IAB-20-H567.71 X IAB-20/IAB-58 CM478.390-2Y-2B-1Y-3B-1Y-0B-0PTZ
29	HAIN"S" CM33682-L-1Y-9Y-1M-1Y-1B-0Y-0PTZ	97	IAB-20-H567.71 X IAB-20(3) CM478A-544-7B-1Y-1B-3Y-0B-0PTZ
33	8NB"S" CM34630-D-5M-5Y-5M-1Y-1M-0Y-0PTZ	101	IAB-20-H567.71 X IAB-20(4) CM479.243-1Y-5B-4Y-1B-0Y-0PTZ
41	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-80B-0Y-1PTZ	103	IAB-20-H567.71 X IAB-20(4) CM479A.209-5B-4Y-1B-0Y-0PTZ
45	FINK"S" CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B-0PTZ	106	THORNBIRD"S" F11915-A-302M-1Y-1F-701Y-3F-0Y-1PTZ
46	JUP-MUB"S"(CND67"S"-7C X CND67-INIA/TOB) CM43601-K-3Y-3M-6Y-2M-1Y-0B-1PTZ	110	RAF-MAO X TZPP(2)-ANE(3) L-793-1AP-1AP-OAP-3K-OAP-1PTZ
48	YR-PAM"S" CM46091-16M-1Y-6M-2Y-1Y-2M-0Y-1PTZ	111	KVZ-K4300.L.A.4 -OPTZ

Table 15. Advanced lines selected for further investigation by the cooperator at Beja, Tunis, Tunisia

VIV NO	VARIETY OR CROSS AND PEDIGREE
4	URES 81 CM33027-F-12M-1Y-4M-2Y-2M-0Y- OPTZ
28	BOW"S" CM33203-K-9M-33Y-1M-500Y-0M-1J- 0J-OPTZ
32	SNB"S" CM34630-D-5M-2Y-3M-3Y-0M-OPTZ
38	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-91B-0Y-1PTZ
39	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-34B-0Y-1PTZ
42	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-80B-0Y-2PTZ
62	IAS58(KAL-BB X CJ"S"/ALD"S") CM50464-12Y-6F-1Y-1Y-8M-1Y-0Z- 0Y-1PTZ
63	IAS58(KAL-BB X CJ"S"/ALD"S") CM50464-12Y-6F-1Y-1Y-8M-8Y-0Z- 0Y-1PTZ
64	IAS58(KAL-BB X CJ"S"/ALD"S") CM50464-12Y-6F-1Y-2Y-1M-3Y-0Z- 0Y-3PTZ
73	(INIA"B"-ON X INIA-BB/JUP)BUC"S" CM58806-10Y-1M-1Y-2M-0Y-1PTZ
76	QJO"B"-TRM X BDA-HUAC"S" CM60767-C-1Y-1M-1Y-1M-0Y-1PTZ
103	BH1146-H567.71 X BH1146 CMH79.251-4Y-8B-6Y-1B-0Y-1PTZ

Table 16. Advanced lines selected for further investigation by the cooperator at Chaing, Mai University, Chaing Mai, Thailand

VIV NO.	VARIETY OR CROSS AND PEDIGREE
2	GLENNSON CM33027-F-8M-1Y-8M-1Y-2M-0Y-4PTZ
3	GLENNSON CM33027-F-8M-1Y-8M-1Y-2M-0Y-5PTZ
4	URES 81 CM33027-F-12M-1Y-4M-2Y-2M-0Y- OPTZ
11	ALD-2 CM11683A-1Y-1M-2AR-0Y-OPTZ
12	ALD-2 CM11683A-1Y-1M-2AR-0Y-2B-0Y-OPTZ
22	BOW"S" CM33203-K-9M-2Y-1M-1Y-1M-0Y-OPTZ
23	BOW"S" CM33203-K-9M-2Y-1M-1Y-2M-0Y-1PTZ
25	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-1PTZ
27	BOW"S" CM33203-K-9M-15Y-1M-4Y-3M-0Y- OPTZ
28	BOW"S" CM33203-K-9M-33Y-1M-500Y-0M-1J- 0J-OPTZ
30	SNB"S" CM34630-D-5M-2Y-1M-1Y-0M-OPTZ
31	SNB"S" CM34630-D-5M-2Y-1M-1Y-2M-2Y-0M- OPTZ
33	SNB"S" CM34630-D-5M-5Y-5M-1Y-1M-0Y-OPTZ
36	[JUP(7C-PATO(B)/LR64-INIA X INIA-BB) JANA CM37760-C-21Y-2M-1Y-3M-0Y-1PTZ
38	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-91B-0Y-1PTZ
39	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-34B-0Y-1PTZ
41	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-80B-0Y-1PTZ
42	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-80B-0Y-2PTZ
43	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-82B-0Y-OPTZ
61	ALD"S"-CDC CM50351-9M-2Y-1Y-4M-1Y-1M-0Y- 1PTZ
68	BUC"S"-CHRC"S" CM52421-2M-7Y-5Y-1M-1Y-2M-0Y- 1PTZ
69	BUC"S"-CHRC"S" CM52421-2M-7Y-5Y-1M-2Y-1M-0Y- OPTZ
70	BUC"S"-CHRC"S" CM52421-11M-4Y-2Y-1M-4Y-1M-0Y- 1PTZ
102	BH1146-H567.71 X BH1146 CMH79.251-4Y-8B-2Y-3B-0Y-1PTZ

Table 17. Advanced lines selected for further investigation by the cooperator at AAS, Norway

VTY NO.	VARIETY OR CROSS AND PEDIGREE
102	BH1146-H567.71 X BH1146 CMH79.251-4Y-8B-2Y-3B-0Y-1PTZ

Table 18. Advanced lines selected for further investigation by the cooperator at Elvas, Portugal

VTY NO.	VARIETY OR CROSS AND PEDIGREE
11	ALD-2 CM11683A-1Y-1M-2AR-0Y-0PTZ
12	ALD-2 CM11683A-1Y-1M-2AR-0Y-2B-0Y-0PTZ
22	BON"S" CM33203-K-9M-2Y-1M-1Y-1M-0Y-0PTZ
23	BON"S" CM33203-K-9M-2Y-1M-1Y-2M-0Y-1PTZ
30	SNB"S" CM34630-D-3M-2Y-1M-1Y-0M-0PTZ
31	SNB"S" CM34630-D-3M-2Y-1M-1Y-2M-2Y-0M-0PTZ
35	YR-TRF"S" CM36749-10Y-3M-5Y-2M-1Y-0M-0PTZ
44	GOV-AZ X MUS"S" CM41257-I-8M-3Y-0M-2PTZ
48	YR-PAM"S" CM46091-16M-1Y-6M-2Y-1Y-2M-0Y-1PTZ
51	MAYA"S" X ND-P101/PAM"S" CM47775-J-1M-1Y-2M-2Y-0Y-0PTZ
61	ALD"S"-CDC CM30351-9M-2Y-1Y-4M-1Y-1M-0Y-1PTZ
63	IAS58(KAL-BB X CJ"S"/ALD"S") CM50464-12Y-6F-1Y-1Y-8M-8Y-0Z-0Y-1PTZ
102	BH1146-H567.71 X BH1146 CMH79.251-4Y-8B-2Y-3B-0Y-1PTZ

Table 19. Advanced lines selected for further investigation by the cooperator at Ilfov, Romania

VTY NO.	VARIETY OR CROSS AND PEDIGREE
5	KVZ-7C 8M-4064-6Y-4M-3Y-1M-1Y-3M-0Y-0PTZ-0Y-0PTZ-1PTZ
26	BON"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-2PTZ
33	SNB"S" CM34630-D-3M-5Y-3M-1Y-1M-0Y-0PTZ
44	GOV-AZ X MUS"S" CM41257-I-8M-3Y-0M-2PTZ
56	4777(2) X FKN-6B/PVN"S" CM49912-37M-4Y-4Y-1M-1Y-0M-1PTZ
58	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-1M-0Y-0PTZ
62	IAS58(KAL-BB X CJ"S"/ALD"S") CM50464-12Y-6F-1Y-1Y-8M-1Y-0Z-0Y-1PTZ
64	IAS58(KAL-BB X CJ"S"/ALD"S") CM50464-12Y-6F-1Y-2Y-1M-3Y-0Z-0Y-3PTZ
68	BUC"S"-CHRC"S" CM52421-2M-7Y-5Y-1M-1Y-2M-0Y-1PTZ
76	QJD"S"-TRM X BDA-HJAC"S" CM60767-C-1Y-1M-1Y-1M-0Y-1PTZ
78	(CDG"S"-F61.70 X CNDR"S"/OLN)PHO"S" CM60907-K-1Y-2M-1Y-2M-0Y-1PTZ
86	IAS20-H567.71 CMH76.480-13Y-5B-1Y-1B-1Y-1B-0Y-0PTZ
87	IAS20-H567.71 X IAS20(2) CMH77.205-1Y-1B-7Y-1B-1Y-1B-0Y-0PTZ
92	IAS-20-H567.71 X IAS-20(4) CMH78.409-3Y-10B-1Y-1B-1Y-0B-0PTZ
106	THORNBIRD"S" F11919-A-502M-1Y-1F-701Y-3F-0Y-1PTZ
109	(BTY/6754. II. 1. T-K(2) X BZA)6754 K6B 7 -PTZ

Table 20. Advanced lines selected for further investigation by the cooperator at Svalov, Sweden

VTY NO.	VARIETY OR CROSS AND PEDIGREE
5	KVZ-7C 8M-4064-6Y-4M-3Y-1M-1Y-3M-0Y-0PTZ-0Y-0PTZ-1PTZ
24	BON"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-0PTZ
29	BON"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-1PTZ
54	ALD"S"-FVN"S" CM49901-14Y-2Y-1M-1Y-0M-0PTZ
61	ALD"S"-CDC CM30351-9M-2Y-1Y-4M-1Y-1M-0Y-1PTZ
71	RPB14.6B-NAC X DOVE"S" CM53829-N-7M-4Y-2Y-1M-3Y-1M-0Y-0PTZ

Table 21. Advanced lines selected for further investigation by the cooperator at Breda, Aleppo, Syria

VTY NO.	VARIETY OR CROSS AND PEDIGREE
2	OLENNSON CM33027-F-8M-1Y-8M-1Y-2M-0Y-4PTZ
4	UREB 81 CM33027-F-12M-1Y-4M-2Y-2M-0Y-0PTZ
6	KVZ-K4300L-6-A-4 SMD-176-3M-1Y-10Y-1Y-8M-0Y-0PTZ-0Y-1PTZ
11	ALD-2 CM11683A-1Y-1M-2AR-0Y-0PTZ
12	ALD-2 CM11683A-1Y-1M-2AR-0Y-2B-0Y-0PTZ
16	VEE"S" CM33027-F-1M-9Y-0M-97Y-0B-0PTZ
17	VEE"S" CM33027-F-12M-1Y-1M-1Y-1M-0Y-1PTZ
18	VEE"S" CM33027-F-12M-1Y-1M-1Y-2M-0Y-0PTZ
19	VEE"S" CM33027-F-12M-1Y-1M-1Y-2M-0Y-1PTZ
22	BOM"S" CM33203-K-9M-2Y-1M-1Y-1M-0Y-0PTZ
23	BOM"S" CM33203-K-9M-2Y-1M-1Y-2M-0Y-1PTZ
29	HANN"S" CM33682-L-1Y-9Y-1M-1Y-1B-0Y-0PTZ
30	SNB"S" CM34630-D-3M-2Y-1M-1Y-0M-0PTZ
31	SNB"S" CM34630-D-3M-2Y-1M-1Y-2M-2Y-0M-0PTZ
32	SNB"S" CM34630-D-5M-2Y-3M-3Y-0M-0PTZ
33	SNB"S" CM34630-D-5M-5Y-5M-1Y-1M-0Y-0PTZ
43	FINK"S" CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B-0PTZ
46	JUP-MUS"S"(CND67"S"-7C X CND67-INIA/TDB) CM43601-K-3Y-3M-6Y-2M-1Y-0B-1PTZ
59	ALD"S"-COC CM50351-9M-2Y-1M-3M-1Y-1M-0Y-2PTZ
68	BUC"S"-CHRC"S" CM52421-2M-7Y-5Y-1M-1Y-2M-0Y-1PTZ
69	BUC"S"-CHRC"S" CM52421-2M-7Y-5Y-1M-2Y-1M-0Y-0PTZ
71	RPB14. 68-NAC X DOVE"S" CM53829-N-7M-4Y-2Y-1M-3Y-1M-0Y-0PTZ
77	GJO"S"-TRM X BDA-HUAC"S" CM60767-C-1Y-1M-1Y-2M-0Y-0PTZ
78	(COQ"S"-F&1. 70 X CNDR"S"/DLN)PHO"S" CM60907-K-1Y-2M-1Y-2M-0Y-1PTZ
85	VEE"S"-SNB"S" CM61981-13Y-1M-2Y-1M-0Y-1PTZ
107	ALD"S"

Table 22. Advanced lines selected for further investigation by the cooperator at P.E.I., Canada

VTY NO.	VARIETY OR CROSS AND PEDIGREE
40	IAB-20
70	BUC"S"-CHRC"S" CM52421-11M-4Y-2Y-1M-4Y-1M-0Y-1PTZ
95	IAB-20-H567. 71 X IAB-20/MRNG(2) CMH78A. 415-3B-2Y-4B-1Y-1B-0Y-0PTZ

Table 23. Advanced lines selected for further investigation by the cooperator at C. Klein, Buenos Aires, Argentina

VTY NO.	VARIETY OR CROSS AND PEDIGREE
5	KVZ-7C SMN-4064-6Y-4M-3Y-1M-1Y-3M-OY- OPTZ-OY-OPTZ-1PTZ
6	KVZ-K4500L-6-A-4 SMD-176-3M-1Y-10Y-1Y-8M-OY-OPTZ- OY-1PTZ
14	RR-WW19/JI"S" X CND67-ND CH12272-N-1Y-1M-OY-1PTZ
15	TDB-B136(R) (F1CND67-PJ) CM23439-9M-1Y-OY-67Y-OPTZ
24	BOW"S" CH33203-K-9M-9Y-4M-4Y-1M-OY-OPTZ
26	BOW"S" CH33203-K-9M-9Y-4M-4Y-1M-OY-2PTZ
27	BOW"S" CH33203-K-9M-15Y-1M-4Y-3M-OY- OPTZ
28	BOW"S" CH33203-K-9M-33Y-1M-500Y-OM-1J- OJ-OPTZ
30	BNB"S" CM34630-D-5M-2Y-1M-1Y-OM-OPTZ
31	BNB"S" CM34630-D-5M-2Y-1M-1Y-2M-2Y-OM- OPTZ
49	YR-PAM"S" CM46091-16M-1Y-6M-3Y-1Y-1M-OY- 1PTZ
51	MAYA"S" X ND-P101/PAM"S" CM47775-J-1M-1Y-2M-2Y-OY-OPTZ
55	ALD"S"-PVN"S" CM49901-14Y-2Y-6M-4Y-OM-OPTZ
58	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-1M-OY-OPTZ
59	ALD"S"-CDC CM50351-9M-2Y-1M-3M-1Y-1M-OY- 2PTZ
61	ALD"S"-CDC CM50351-9M-2Y-1Y-4M-1Y-1M-OY- 1PTZ
62	IAB5B(KAL-BB X CJ"S"/ALD"S") CM50464-12Y-6F-1Y-1Y-8M-1Y-OZ- OY-1PTZ
63	IAB5B(KAL-BB X GJ"S"/ALD"S") CM50464-12Y-6F-1Y-1Y-8M-8Y-OZ- OY-1PTZ
64	IAB5B(KAL-BB X CJ"S"/ALD"S") CM50464-12Y-6F-1Y-2Y-1M-3Y-OZ- OY-3PTZ
67	HD2206-BIS"S" X PVN"S" CM52360-3Y-1Y-1M-1Y-2M-OY-1PTZ
70	BUC"S"-CHRC"S" CM52421-11M-4Y-2Y-1M-4Y-1M-OY- 1PTZ
77	QJD"S"-TRM X BDA-HMAC"S" CM60767-C-1Y-1M-1Y-2M-OY-OPTZ
90	NYU BAY-MEX CM477A. 932-18-6Y-3B-1Y-2B-1Y-1B- OY-1PTZ
99	CM474A. 754-PEL-ATR(2) CM479. 236-2Y-5B-2Y-1B-OY-1PTZ
104	QIRUA-H567. 71 X QIRUA CM479. 336-2Y-4B-1Y-4B-OY-OPTZ
109	(BTY/6754. II. 1. T-K(2) X BZA)6754 K6B 7 -PTZ

Table 24. Advanced lines selected for further investigation by the cooperator at Pergamino, Buenos Aires, Argentina

VTY NO.	VARIETY OR CROSS AND PEDIGREE
5	KVZ-7C SMN-4064-6Y-4M-3Y-1M-1Y-3M-OY- OPTZ-OY-OPTZ-1PTZ
6	KVZ-K4500L-6-A-4 SMD-176-3M-1Y-10Y-1Y-8M-OY-OPTZ- OY-1PTZ
23	BOW"S" CH33203-K-9M-2Y-1M-1Y-2M-OY-1PTZ
30	BNB"S" CM34630-D-5M-2Y-1M-1Y-OM-OPTZ
44	GOV-AZ X MUB"S" CM41257-I-8M-3Y-OM-2PTZ
68	BUC"S"-CHRC"S" CM52421-2M-7Y-5Y-1M-1Y-2M-OY- 1PTZ

Table 25. Advanced lines selected for further investigation by the cooperator at Palotina, Parana, Brazil

VTY NO.	VARIETY OR CROSS AND PEDIGREE	VTY NO.	VARIETY OR CROSS AND PEDIGREE
9	TITO CM8212-D-4M-5Y-2M-0Y-1PTZ	47	TES-MUS"S" CM45986 5M-2Y-2M 1Y-0Y-1PTZ
13	CND67-7C X NOR/CAL-CND67 CM11552-C-3Y-2M-0Y-1PTZ	59	ALD"S"-CDC CM50351-9M-2Y-1M-3M-1Y-1M-0Y-2PTZ
15	T08-B156(R) (F1CND67-PJ) CM23439-9M-1Y-0Y-67Y-OPTZ	61	ALD"S"-CDC CM50351-9M-2Y-1Y-4M-1Y-1M-0Y-1PTZ
16	VEE"S" CM33027-F-1M-9Y-0M-97Y-0B-OPTZ	64	IAS58(KAL-BB X CJ"S"/ALD"S") CM50464-12Y-6F-1Y-2Y-1M-3Y-0Z-0Y-3PTZ
17	VEE"S" CM33027-F-12M-1Y-1M-1Y-1M-0Y-1PTZ	71	RPB14.68-NAC X DOVE"S" CM53829-N-7M-4Y-2Y-1M-3Y-1M-0Y-OPTZ
18	VEE"S" CM33027-F-12M-1Y-1M-1Y-2M-0Y-OPTZ	73	(INIA"S"-ON X INIA-BB/JUP)BUC"S" CM58806-10Y-1M-1Y-2M-0Y-1PTZ
19	VEE"S" CM33027-F-12M-1Y-1M-1Y-2M-0Y-1PTZ	74	F6.74-BUN"S" X SIS"S" CM60042-M-1Y-2M-2Y-1M-0Y-1PTZ
21	VEE"S" CM33027-F-12M-1Y-3M-1Y-1M-1Y-0M-OPTZ	75	NAC-EMU"S"/T08(2)-7C X MN72131 CM60402-C-2Y-1M-1Y-1M-0Y-OPTZ
23	BOW"S" CM33203-K-9M-2Y-1M-1Y-2M-0Y-1PTZ	76	QJD"S"-TRM X BDA-HUAC"S" CM60767-C-1Y-1M-1Y-1M-0Y-1PTZ
26	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-2PTZ	77	QJD"S"-TRM X BDA-HUAC"S" CM60767-C-1Y-1M-1Y-2M-0Y-OPTZ
27	BOW"S" CM33203-K-9M-15Y-1M-4Y-3M-0Y-OPTZ	82	MIRLO"S"-BUC"S" CM61949-12Y-1M-1Y-1M-0Y-1PTZ
28	BOW"S" CM33203-K-9M-33Y-1M-500Y-0M-1J-0J-OPTZ	86	IAS20-H567.71 CMH78.480-13Y-5B-1Y-1B-1Y-1B-0Y-OPTZ
31	SNB"S" CM34630-D-5M-2Y-1M-1Y-2M-2Y-0M-OPTZ	87	IAS20-H567.71 X IAS20(2) CMH77.205-1Y-1B-7Y-1B-1Y-1B-0Y-OPTZ
34	TOW"S" CM34709-G-2M-2Y-10M-3Y-1M-0Y-OPTZ	88	IAS20-H567.71 X IAS20(2) CMH77.205-1Y-1B-8Y-5B-1Y-0B-OPTZ
35	YR-TRF"S" CM36749-10Y-3M-5Y-2M-1Y-0M-OPTZ	90	NYU BAY-MEX CMH77A.952-1B-6Y-3B-1Y-2B-1Y-1B-0Y-1PTZ
36	(JUP(7C-PATD(B)/LR64-INIA X INIA-BB) JANA CM37760-C-21Y-2M-1Y-3M-0Y-1PTZ	91	IAS-20-H567.71 X IAS-20/IAS-58 CMH78.390-2Y-2B-1Y-3B-1Y-0B-OPTZ
37	PFAU"S" CM38212-I-7Y-2M-1Y-3M-2Y-0M-OPTZ	94	IAS-20-H567.71 X IAS-20(3) CMH78A.404-7B-5Y-3B-1Y-0B-OPTZ
38	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-91B-0Y-1PTZ	103	BH1146-H567.71 X BH1146 CMH79.251-4Y-8B-6Y-1B-0Y-1PTZ
41	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-80B-0Y-1PTZ	104	GIRUA-H567.71 X GIRUA CMH79.336-2Y-4B-1Y-4B-0Y-OPTZ
43	JUP-BJY"S" CM39992-8M-3Y-1M-0Y-82B-0Y-OPTZ	105	IAS-20-H567.71 X IAS-20(4) CMH79A.209-5B-4Y-1B-0Y-OPTZ
45	FINK"S" CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B-OPTZ	110	RAF-MAC X TZPP(2)-ANE(3) L-795-1AP-1AP-0AP-3K-0AP-1PTZ
		111	KVZ-K4500.L.A.4 -OPTZ

Table 26. Advanced lines selected for further investigation by the cooperator at Cordoba, Argentina

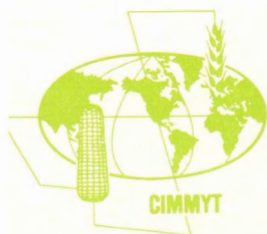
VTY NO.	VARIETY OR CROSS AND PEDIGREE
5	KVZ-7C SWM-4064-6Y-4M-3Y-1M-1Y-3M-0Y- OPTZ-0Y-OPTZ-1PTZ
6	KVZ-K4500L-6-A-4 SMD-176-3M-1Y-10Y-1Y-8M-0Y-OPTZ- 0Y-1PTZ
15	TDB-8156(R) (F1CND67-PJ) CM23439-9M-1Y-0Y-67Y-OPTZ
28	BOW"S" CM33203-K-9M-33Y-1M-500Y-0M-1J- 0J-OPTZ
30	SNB"S" CM34630-D-5M-2Y-1M-1Y-0M-OPTZ
31	SNB"S" CM34630-D-5M-2Y-1M-1Y-2M-2Y-0M- OPTZ
33	SNB"S" CM34630-D-5M-5Y-5M-1Y-1M-0Y-OPTZ
58	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-1M-0Y-OPTZ
59	ALD"S"-COC CM50351-9M-2Y-1M-3M-1Y-1M-0Y- 2PTZ
61	ALD"S"-COC CM50351-9M-2Y-1Y-4M-1Y-1M-0Y- 1PTZ
68	BUC"S"-CHRC"S" CM52421-2M-7Y-5Y-1M-1Y-2M-0Y- 1PTZ
69	BUC"S"-CHRC"S" CM52421-2M-7Y-5Y-1M-2Y-1M-0Y- OPTZ
70	BUC"S"-CHRC"S" CM52421-11M-4Y-2Y-1M-4Y-1M-0Y- 1PTZ
75	NAC-EMU"S"/TDB(2)-7C X MN72131 CM60402-C-2Y-1M-1Y-1M-0Y-OPTZ
78	(COG"S"-F61.70 X CNDR"S"/DLN)PHD"S" CM60907-K-1Y-2M-1Y-2M-0Y-1PTZ
83	MIRLO"S"-BUC"S" CM61494-12Y-3M-2Y-1M-0Y-1PTZ
99	CMH74A. 754-PEL-ATR(2) CMH79. 236-2Y-5B-2Y-1B-0Y-1PTZ

Table 27. Advanced lines selected for further investigation by the cooperator at Pichincha, Quito, Ecuador

VTY NO.	VARIETY OR CROSS AND PEDIGREE
3	GLENNSON CM33027-F-8M-1Y-8M-1Y-2M-0Y-5PTZ
35	YR-TRF"S" CM36749-10Y-3M-5Y-2M-1Y-0M-OPTZ
45	FINK"S" CM41860-A-3M-2Y-3M-1Y-1M-1Y-0B- OPTZ
46	JUP-MUS"S"(CND67"S"-7C X CND67-INIA/ TDB) CM43601-K-3Y-3M-6Y-2M-1Y-0B-1PTZ

Table 28. Advanced lines selected for further investigation by the cooperator at Taray, Cusco, Peru

VTY NO.	VARIETY OR CROSS AND PEDIGREE
6	KVZ-K4500L-6-A-4 SMD-176-3M-1Y-10Y-1Y-8M-0Y-OPTZ- 0Y-1PTZ
25	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-1PTZ
26	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-0Y-2PTZ
27	BOW"S" CM33203-K-9M-15Y-1M-4Y-3M-0Y- OPTZ
28	BOW"S" CM33203-K-9M-33Y-1M-500Y-0M-1J- 0J-OPTZ
29	HANN"S" CM33682-L-1Y-9Y-1M-1Y-1B-0Y-OPTZ
45	FINK"S" CM41860-A-3M-2Y-3M-1Y-1M-1Y-0B- OPTZ
48	YR-PAM"S" CM46091-16M-1Y-6M-2Y-1Y-2M-0Y- 1PTZ
49	YR-PAM"S" CM46091-16M-1Y-6M-3Y-1Y-1M-0Y- 1PTZ
50	YR-PAM"S" CM46091-16M-1Y-6M-3Y-1Y-1M-0Y- 2PTZ
51	MAYA"S" X ND-P101/PAM"S" CM47775-J-1M-1Y-2M-2Y-0Y-OPTZ
111	KVZ-K4500. L. A. 4 -OPTZ



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