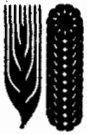




**Results of the Fifteenth
International Septoria Observation
Nursery (ISEPTON) 1984-85**





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GLOSSARY OF ABBREVIATIONS AND UNITS OF MEASURE
GLOSARIO DE ABREVIATURAS 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 trititica</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 pucérons 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> pv. translucens	Bacterial leaf streak or stripe (0-9 scale)	Rayado bacteriano y pajilla negra (escala 0-9)	Rayure bactérienne (échelle 0-9)
BAC SP		Bacterial species	Especies bacterianas	Espices bactériennes
BAC B	<i>Pseudomonas syringae</i> pv. striafaciens	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)
PLNT HT		Plant height (cm)	Altura de planta (cm)	Hauteur (cm)
POW M	<i>Erysiphe graminis</i>	Powdery mildew (0-9 scale)	Oídio o cenicilla polvorienta (escala 0-9)	Oïdium (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 P	<i>Septoria passerinii</i> sacc.	Septoria leaf blotch (barley)	Mancha foliar (cebada)	Tache septorienne des feuilles de l'orge
SEP S	<i>Septoria</i> spp.	Septoria glume/leaf blotch (0-9 scale)	Septoria (escala 0-9)	Septoria (échelle 0-9)
SEP 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 desgrene (espiga)	Egrenage en pourcentage
SL		Sea level	Nivel del mar	Niveau de la mer
SPT B	<i>Cochliobolus sativus</i> (syn. <i>Bipolaris 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 hectolítrico (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	Varietal	Variété
VTY		Variety	Varietal	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 Fifteenth International Septoria Observation Nursery

Lucy Gilchrist, Girma Bekele, Ravi Sing and Maximino Alcalá^{1/}

Introduction

Elevating wheat yield constraints and developing of widely adapted, disease-resistant and high-yield potential germplasm, have consistently been primary objectives of CIMMYT's Bread Wheat Program.

In the 1960s and early 1970s, leaf blotching diseases caused by *Septoria tritici* and *S. nodorum* were identified as a major yield constraint in semidwarf areas endemic with these diseases. The recognition of this problem started resistance breeding effort against septoria diseases which continued to be a threat to wheat production in high-rainfall regions of North America and the Southern Cone of South America.

Information gathering on resistance to septoria diseases started in 1970 with the distribution of the First International Septoria Nursery and continued with the distribution of International Septoria Observation Nursery (ISEPTON) since 1971. In these nurseries the high-yield potential, semidwarf plant type is combined with *Septoria tritici* leaf blotch resistance found in some wheats of South America, especially Brazil, and in some winter wheats (e.g. Kavkaz and Aurora) from the USSR. Thus the semidwarf wheats originating at CIMMYT in the 1980s displayed an acceptable level of resistance to *septoria tritici* blotch and are no longer completely vulnerable genetically.

Resistance breeding efforts have been successful in Mexico due to the existence of two locations where septoria leaf blotch is endemic, with a good supply of inoculum and severe epidemic 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; the final selection and evaluation are done at Patzcuaro.

The primary criterion for selecting germplasm for the ISEPTON continues to be reaction to *Septoria tritici* (leaf blotch), however, agronomic type, yield potential, and resistance to major diseases are also considered. This report is a summary of results obtained from the 15th ISEPTON with respect to yield, disease resistance, and agronomic characteristics. It is hoped that some of the material in this nursery proves to be useful to our cooperators in Septoria endemic regions and that the information contained herein will be of service to wheat breeders.

Methodology

The Fifteenth International Septoria Observation Nursery (ISEPTON) was sent in September 1984, to be grown by cooperators in their spring season of 1985. Sixty-seven nurseries went to cooperators in 46 countries. The 155 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 northwestern Mexico. Also at CIANO, 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 single 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 obtained.

Thirty-seven 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 *mean 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 methodologies 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.

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Cooperator participation— Two kinds of feedback information from cooperators are 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	$60(1.0) = 60.0$
0*	$(0)(0) = 0.0$

* 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 these 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	$[15(0.2) + 5(1.0)]/2 = 4.0$

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 readings (HR) may be reported as severity/response scores.

Discussion of results

Of the 67 nurseries distributed, data were received from 37 locations in 27 countries. Table 1 shows the locations from which data were collected and the variables reported. Averages for yield, agronomic characteristics and disease reactions across all locations for all entries are given in Table 2.

Yield

Many cooperators reported data on yield although this was not specifically requested. Yields reported for the whole nursery varied from 1076.4 kg/ha for entry 151, ETIT 38, to 3200.1 kg/ha for entry 93, [(4777(2) x FKN-GB/VEE''S'')BUC''S''-PVN''S''] (Table 2). Entries with the highest mean yields based on 14 locations are listed in Table 3. This includes 15 entries with mean yields ranging from 3200.1 kg/ha for entry 93, [(4777(2) x FKN-GB/VEE''S'')BUC''S''-PVN''S''], to 2801.7 kg/ha for entry 114, [IAS20(3)-H567.71].

Yield evaluations based on unreplicated trials could be misleading. However, some validity could be claimed on the basis of adaptability if the data are reported for many locations. To verify the results presented in Table 3, replicated trial is recommended.

Selection for further investigation

Entries most frequently selected (check mark) by cooperators for further investigations are listed in Table 4. Selection in a particular location indicates local adaptation and selection of the same entry across many locations suggests wide adaptability. Entry 64, F6.74-BUN'S' x SIS'S', appears to be the most widely adapted entry with the highest frequency of selection, 45.5% based on 37 locations that reported data.

It should be noted that 10 of the 15 highest yielding entries (Table 3) are also included in Table 4. This indicates that besides their high-yield potential, these entries are also widely adapted. These entries are: 64, 25, 93, 97, 117, 50, 68, 82, 119, and 2. The role of these lines in genetic improvements can not be over estimated.

Septoria tritici resistance

Entries most resistant to *Septoria tritici* based on 15 locations are reported in Table 5. The locations included: Cape Prov., South Africa; Mbeya-Uyole, Tanzania; Punjab, Pakistan; Quezaltenango, Guatemala; Warsaw, Poland; Elvas, Portugal; Sevilla-Rinconada, Spain; Adana-Cukurova, Turkey; Buenos Aires-C. Klein and Pegamino, Argentina; Chillan, Nuble, Hidango, and Temuco, and Cautin, Chile; Itapua, Paraguay; and Salto, Uruguay. These represent good screening sites, particularly the Southern Cone region of South America, as the disease is endemic in most of the locations and has a high degree of pathogenecity. The mean reaction scores for the reported 22 entries varied from 2.8 for entry 136, MNL69, to 4.0 for entry 126, CNDO. Compared to the resistant check, IAS20, with average reaction score of 4.4 (Table 2). These entries have excellent level of resistance and are highly recommended to be used in breeding programs for further genetic improvement.

Septoria nodorum resistance

The 32 entries most resistant to *Septoria nodorum* at five loctions are shown in Table 6. The locations from which the information is reported are: Punjab, Pakistan; Warsaw, Poland; Texas, USA.; Rio Grande do Sul-Cruz Alta, Brazil; and Itapua, Paraguay. The mean reaction scores for the entries varied from 1.3 entry 132, WLS, to 3.3 for entry 95, DOVE'S'-BOW'S'. The resistance check, IAS20, displayed an average reaction score of 3.8 and 7C, susceptible check, a mean score of 5.77 (Table 2). Thus, the reported entries displayed and acceptable level of resistance.

It is of interest to note that 11 of the reported *Septoria nodorum* resistant entries also displayed higher level of resistance to *S. tritici*. These are entries 132, 4, 5,

141, 154, 7, 131, 126, 135, 125, and 133. Such entries are valuable for resistance breeding against *Septoria* spp. leaf blotching.

Rust Resistance

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

Leaf rust data were gathered from 11 locations in seven countries including: South Africa, Poland, Turkey, Argentina, Brazil, Paraguay, and Uruguay (Table 7). In most of these locations leaf rust epidemics are common and these sites are ideal for screening. Thirty-six entries exhibited high level of resistance to leaf rust with ACI ranging from 0.1 for entry 13 to 1.1 for entry 29 (Table 7).

Twenty-eight entries were reported to be resistant to stem rust with ACI, ranging from 0.0 for entry 1, URES, to 1.3 for entry 19, BOW'S' (Table 8). The information is reported from eight locations from seven countries including, Kenya, Tanzania, Greece, Turkey, Brazil, Paraguay, and Peru. In most of these locations, endemic stem rusts are known to be virulent. Resistance is probably due to Sr31 as most of the reported lines carry 1B/1R translocation. (Entries 1, 11, 18, 24, 82, 143, 23, 139, 43, 102, 145, 144, 95, 15, and 19).

Stripe rust data were reported from nine locations including: Rift Valley-Njoro, Kenya; Mbeya-Uyole, Tanzania; Tunis-Beja, Tunisia; Elvas, Portugal; Sevilla-Rinconada, Spain; Izmir-Aegean, Turkey; Chillan-Nuble, Chile; Quito-Pichincha, Ecuador and Cusco-Taray, Peru. ACI varied from 0.0 for entry 34, FINK'S', to 2.0 for entry 52, BUC'S'-EMU'S', indicating a high level of resistance.

Specific adaptation

Cooperators of the 15th 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. The data returned by cooperators from 21 locations are shown in Tables 10-31. These locations are from 16 countries including: South Africa, Tanzania, Zambia, Bangladesh, Philippines, Thailand, Greece, Poland, Spain, Syria, Turkey, Argentina, Brazil, Chile, Ecuador, and Paraguay.

In addition to these 21 locations, material was selected from this nursery at 16 more. This reflects the acceptance of the germplasm and its wide adaptability for different agroclimatic regions.

Table 1. Locations returning reports and variables included

LOCATIONS	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
1	AFRICA	KENYA	RIFT VALLEY-NJORD	5 8
2	AFRICA	SOUTH AFRICA	CAPE PROV.	62
3	AFRICA	SOUTH AFRICA	CAPE PROVINCE-ELSENBURG	1 3 7 50 64
4	AFRICA	TANZANIA	E. AFRICA	3 4 50
5	AFRICA	TANZANIA	MBEYA-UYOLE	3 4 5 8 50 62 72
6	AFRICA	TUNISIA	TUNIS-BEJA	5
7	AFRICA	ZAMBIA	NORTHERN-KATITO	50
8	ASIA	BANGLADESH	JESSORE	1 3 4 9 50 68
9	ASIA	CHINA		3 4 36
10	ASIA	PAKISTAN	PUNJAB-ISLAMABAD	62 63
11	ASIA	PHILIPPINES	LAGUNA	1 3 4 9 50
12	ASIA	THAILAND	NAKHON RATCHSIMA	1 9 50
13	CENTRAL AMERICA	GUATEMALA	QUEZALTENANGO	3 4 9 62
14	EUROPE	GREECE	THESSALONIKI	1 3 4 8 50 61
15	EUROPE	NORWAY		1 3 4 10 61
16	EUROPE	POLAND	WARSAW	1 7 50 62 63
17	EUROPE	PORTUGAL	ELVAS	5 6 62
18	EUROPE	SPAIN	SEVILLA-RINCONADA	1 3 4 5 50 62 77
19	MIDDLE EAST	SYRIA	ALEPPO-TEL HADYA	1 9 50
20	MIDDLE EAST	TURKEY	ADANA-CUKUROVA	1 50 62

Table 1. (continued)

LOCATIONS	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED																
21	MIDDLE EAST	TURKEY	IZMIR-AEGEAN	5	7	8														
22	NORTH AMERICA	USA	TEXAS	63																
23	SOUTH AMERICA	ARGENTINA	BUENOS AIRES-C. KLEIN	1	3	7	36	50	62	79										
24	SOUTH AMERICA	ARGENTINA	BUENOS AIRES-PERGAMINO	7	50	62														
25	SOUTH AMERICA	ARGENTINA	CHACO	1	3	4	7	9	50	68										
26	SOUTH AMERICA	ARGENTINA	CORDOBA	50																
27	SOUTH AMERICA	BRAZIL	PARANA-PALOTINA	1	50															
28	SOUTH AMERICA	BRAZIL	PARANA-PONTA GROSSA	7	8	9	50	61												
29	SOUTH AMERICA	BRAZIL	RIO GRANDE DO SUL-CRUZ ALTA	7	50	61	63													
30	SOUTH AMERICA	CHILE	CHILLAN, NUBLE	5	62															
31	SOUTH AMERICA	CHILE	HIDANGO	9	50	62														
32	SOUTH AMERICA	CHILE	TEMUCO, CAUTIN	62																
33	SOUTH AMERICA	ECUADOR	QUITO, PICHINCHA	3	5	50	77													
34	SOUTH AMERICA	PARAGUAY	CACUPE	7	8															
35	SOUTH AMERICA	PARAGUAY	ITAPUA	7	8	36	50	62	63											
36	SOUTH AMERICA	PERU	CUSCO-TARAY	1	3	4	5	6	8	9										
37	SOUTH AMERICA	URUGUAY	SALTO	7	62															

*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	%	36	SCAB	%
50	CHECK	MARK	61	PDW M	0-9	62	SEP T	0-9	63	SEP N	0-9	64	SEP S	0-9
68	SPT B	0-9	72	TAN S	0-9	77	BYDV	0-9	79	BAC SP	0-9			

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

VTY NO.	VARIETY OR CROSS AND PEDIGREE	GRAIN	ORIGIN	YIELD KG/HA	HEAD DAYS	MAT DAYS	STRP RT. L	STRP RT. H	LEAF RUST	STEM RUST
NUMBER OF OBSERVATIONS:				(14)	(14)	(11)	(9)	(2)	(11)	(8)
1	URES			2691.6	88.5	133.5	5.3	0.0	21.6	0.0
2	THB"S"			2995.3	88.8	133.5	17.9	0.0	0.2	4.4
3	NBB79.4			1722.0	97.8	141.1	21.6	0.0	18.2	8.9
4	PF71131			2552.7	91.4	134.1	26.0	10.0	30.0	13.9
5	CEP7841			1916.7	89.9	135.0	7.3	0.0	0.3	6.6
6	PEL73151			1992.0	92.8	141.2	18.7	0.0	11.0	7.5
7	MASCARENHAS			1932.5	92.1	137.5	18.8	0.0	21.4	15.4
8	VACARIA			1612.5	92.6	138.9	19.1	0.0	20.0	15.6
9	AU-UP301 BMM485-500Y-0D-501Y-501B-501Y-501H-500Y			1953.1	89.2	135.4	6.9	0.0	46.4	3.0
10	HFO"S" BMM1285-2Y-3M-1Y-0M			2131.3	88.6	132.9	4.3	0.0	8.3	0.4
11	KVZ-K4500L. 6. A. 4 BMD176-3M-1Y-10Y-1Y-2M-0Y-OPTZ-0Y			2152.5	89.4	133.5	18.0	0.0	7.5	0.0
12	AMB"S" CM20707-A-1Y-8M-1Y-0Y-OPTZ			1738.3	85.1	133.4	17.5	0.0	2.9	0.9
13	NPR-FLR X 0TD-K2M R12 CM2697B-2M-300Y-0B			2102.2	83.4	129.4	27.5	0.0	0.1	5.8
14	TAN"S" CM30697-2M-8Y-1M-1Y-1B-0Y			1964.4	82.4	130.3	27.0	0.0	30.0	1.8
15	VEE"S" CM33027-F-12M-1Y-4M-1Y-1M-0Y			2783.8	90.6	136.5	9.1	0.0	21.7	0.8
16	KLT"S" CM33089-M-3M-11Y-0M-OPTZ			2043.8	91.7	137.0	0.1	0.0	31.4	1.5
17	CHAT"S" CM33090-N-1M-1Y-0M-65Y-0B			2425.4	92.1	136.9	12.4	0.0	25.5	0.0
18	BOW"S" CM33203-K-9M-9Y-4M-1Y-2M-0Y			2268.4	85.6	133.3	6.0	0.0	4.5	0.0
19	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-1Y-0M			2110.2	84.9	133.3	5.1	0.0	12.2	1.3
20	7CERROS (CHECK)			2005.6	84.4	132.1	38.3	10.0	41.4	2.6
21	BOW"S" CM33203-K-9M-15Y-1M-4Y-2M-0Y			1766.7	87.9	135.4	4.0	0.0	0.5	2.8
22	BOW"S" CM33203-K-9M-19Y-3M-3Y-0M			2226.9	88.5	135.6	8.6	0.0	13.7	2.5
23	BOW"S" CM33203-K-10M-7Y-3M-2Y-1M-0M			1538.9	89.2	135.0	0.3	0.0	0.2	0.1
24	BOW"S" CM33203-K-10M-7Y-3M-2Y-1M-0Y			2514.4	88.1	134.7	0.6	0.0	0.4	0.0
25	BB-GLL X CJ/F35.70 X KAL-BB CM34555-B-1M-4Y-1M-1Y-2M-0Y			2846.2	91.4	136.3	12.9	0.0	0.2	1.1
26	BMB"S" CM34630-D-5M-2Y-1M-1Y-1M-1Y-0M			1614.9	89.6	138.5	5.1	0.0	0.3	3.3
27	BMB"S" CM34630-D-5M-5Y-5M-1Y-1M-0Y			1445.7	91.9	139.0	3.4	0.0	0.2	3.3
28	[JUP(7C-PATD(B)/LR64-INIA66-BB X INI 66-BB)JANA CM37760-C-21Y-2M-1Y-3M-0Y			2796.9	87.1	134.5	14.8	5.0	3.8	8.5
29	SARA B2 CM38088-G-1Y-4M-1Y-3M-1Y-0M			2073.4	92.5	137.6	13.3	0.0	1.1	9.9

PLNT HT	LODO %	SCAB %	CHECK MARK	POM M 0-9	SEP T 0-9	SEP N 0-9	SEP B 0-9	SPT B 0-9	TAN S 0-9	BYDV 0-9	BAC SP 0-9
(9)	(1)	(3)	(22)	(4)	(15)	(5)	(1)	(2)	(1)	(2)	(1)
73.1	0.0	38.3	18.2	5.3	4.9	4.0	4.0	3.5	6.0	2.5	1.0
88.3	0.0	36.7	27.3	6.0	4.6	2.3	2.0	4.0	6.0	3.5	0.0
80.8	0.0	50.0	9.1	5.3	4.2	2.5	3.0	3.5	4.0	1.5	1.0
98.1	10.0	19.7	18.2	5.5	3.9	1.5	2.0	4.5	6.0	2.5	0.0
99.3	30.0	33.3	13.6	3.8	3.3	1.5	2.0	3.5	4.0	1.5	1.0
107.1	60.0	45.5	9.1	5.0	3.8	4.0	1.0	5.0	4.0	2.5	1.0
97.4	80.0	36.7	9.1	4.8	3.6	2.0	2.0	4.0	3.0	1.0	0.0
98.0	50.0	28.0	4.5	5.3	3.6	3.4	2.0	5.0	4.0	0.0	1.0
76.3	0.0	50.0	18.2	4.8	4.4	4.0	3.0	4.5	4.0	1.0	1.0
77.8	0.0	36.7	22.7	4.5	5.3	5.8	3.0	4.5	5.0	3.0	0.0
78.6	0.0	30.3	18.2	1.8	4.0	4.3	3.0	4.5	4.0	3.0	0.0
70.4	10.0	38.3	22.7	4.8	4.3	4.5	3.0	4.5	3.0	3.5	0.0
78.2	5.0	41.7	18.2	5.0	4.9	4.3	4.0	6.0	4.0	1.0	1.0
80.0	0.0	39.7	4.5	4.8	5.2	5.8	3.0	6.5	2.0	3.0	6.0
76.3	0.0	41.7	27.3	5.8	5.0	5.8	2.0	4.5	4.0	3.0	0.0
77.4	0.0	38.3	18.2	5.8	4.6	4.3	2.0	4.5	4.0	4.5	1.0
77.8	0.0	36.7	18.2	7.0	4.3	4.5	2.0	5.0	2.0	4.0	0.0
75.3	0.0	31.7	27.3	4.5	4.5	3.5	5.0	3.5	5.0	5.5	0.0
76.3	0.0	35.0	27.3	4.8	4.3	4.6	3.0	4.5	4.0	4.0	1.0
75.8	0.0	55.7	13.6	5.8	6.5	6.8	8.0	5.5	5.0	0.0	1.0
77.3	0.0	33.3	13.6	4.5	4.4	3.5	2.0	5.0	3.0	3.5	0.0
75.8	0.0	46.7	13.6	5.0	4.1	3.8	2.0	5.0	4.0	5.0	1.0
74.3	0.0	44.7	18.2	4.5	4.6	4.0	1.0	4.5	4.0	4.5	1.0
73.9	0.0	47.3	22.7	4.8	4.1	4.8	2.0	4.0	4.0	3.0	1.0
85.1	0.0	44.3	40.9	5.3	4.3	5.6	3.0	5.0	2.0	5.5	1.0
72.7	0.0	44.0	27.3	5.8	4.1	5.3	4.0	4.5	4.0	3.0	0.0
75.1	0.0	41.7	22.7	5.3	3.8	4.5	3.0	4.5	3.0	4.5	0.0
82.4	0.0	53.3	36.4	5.3	4.9	5.0	3.0	5.0	6.0	4.0	0.0
80.7	0.0	50.0	36.4	6.0	4.1	4.3	1.0	4.5	3.0	4.5	0.0

Table 2. (continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	GRAIN	ORIGIN	YIELD KG/HA	HEAD DAYS	MAY DAYS	STRP RT. L	STRP RT. H	LEAF RUST	STEM RUST	NUMBER OF OBSERVATIONS:								
											(14)	(14)	(11)	(9)	(2)	(11)	(8)		
30	MAYA-NAC CM39424-1Y-1M-4Y-1M-1Y-1M-0Y			2291.1	84.5	130.4	2.3	0.0	2.1	14.3									
31	CRDN"S" CM40457-5M-3Y-1M-2Y-0M-154M-0Y			2188.9	84.0	131.1	0.6	5.0	0.2	14.1									
32	TRT"S" CM40610-22Y-3M-2Y-1M-1Y-2M-0Y			2302.7	80.2	128.4	3.7	0.0	5.6	10.6									
33	GOV-AZ X MUS"S" CM41257-I-8M-2Y-1M-3Y-0M			1963.4	88.0	133.5	0.6	0.0	3.1	1.4									
34	FINK"S" CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B- OPTZ			2580.8	90.6	137.7	0.0	0.0	0.8	1.8									
35	CMT-YR X MDN"S" CM43405-A-2Y-1M-1Y-1M-1Y-0B-88M- 0Y-0PTZ			2309.8	90.2	136.9	0.1	0.0	46.9	2.1									
36	MUS"S"-PTM X MAYA-ALD"S" CM44740-A-3Y-1M-1Y-2M-1Y-2M-0Y			2656.2	81.2	129.7	0.1	0.0	51.6	5.6									
37	PF70354-ALD"S" CM47090-1Y-1F-4Y-1Y-1M-0Y			2242.2	90.7	135.3	21.6	0.0	41.4	0.8									
38	PF70354-ALD"S" CM47090-13M-1Y-1F-701Y-1F-704Y- 6F-0Y			2508.5	84.1	131.0	26.7	0.0	41.5	3.4									
39	PF70354-ALD"S" CM47090-14M-1Y-1F-703Y-10F-705Y- 2F-0Y			2555.8	88.9	134.4	25.6	0.0	37.0	5.1									
40	IAS20 (CHECK)			2242.4	89.6	134.2	42.9	20.0	38.4	40.0									
41	PF70354-MUS"S" CM47091-7M-1Y-1F-1Y-0Y			2172.7	87.1	133.3	17.0	0.0	9.8	3.6									
42	PF70354-MUS"S" CM47091-7M-1Y-3F-1Y-0Y			2783.0	86.7	132.5	15.9	0.0	10.1	1.1									
43	CAR853-COC X VEE"S" CM47556-EE-1M-1Y-5M-1Y-1Y-1M-0Y- OPTZ			2228.8	92.1	137.0	11.3	0.0	0.5	0.3									
44	AZ X CHR-DD. O5P/F12. 71-BLD"S" CM48326-A-3M-1Y-1M-2Y-1Y-0M			1732.9	79.9	130.5	21.3	0.0	42.3	7.0									
45	BUC"S"-BJY"S" CM49641-9Y-1M-1Y-1Y-0M			2353.9	82.8	132.6	25.1	0.0	14.4	14.6									
46	PVN"S"-SIS"S" CM49894-18Y-1Y-1M-1Y-1M-3Y-0M			2242.5	84.5	132.5	35.1	0.0	17.3	13.0									
47	ALD"S"-PUN"S" CM49901-14Y-2Y-1M-1Y-0M			2729.5	85.2	132.5	0.9	0.0	19.5	6.0									
48	4777(2) X FKN-OB/PVN"S" CM49912-40M-1Y-1Y-1M-0Y-0PTZ			2417.1	86.8	134.3	1.4	0.0	8.8	17.8									
49	CND"S"-SN64 X CND"S"-INIA"S"/PVN"S" CM49918-3M-3Y-1Y-1M-5Y-0M			2113.9	89.5	138.0	1.7	0.0	28.8	7.1									
50	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-2M-1Y-0M			2982.0	91.4	137.6	5.7	0.0	10.4	2.1									
51	ALD"S"-HN72130 CM50361-8Y-3M-1Y-4Y-2M-0Y-0PTZ			2534.4	93.1	138.3	17.0	0.0	2.2	2.9									
52	BUC"S"-EMU"S" CM52324-2M-1Y-2Y-2M-4Y-0M			2336.5	85.1	134.8	2.0	0.0	20.4	14.4									
53	BUC"S"-CHRC"S" CM52421-6M-2Y-2Y-1M-0Y			2446.5	85.8	134.5	5.7	0.0	15.3	5.6									
54	CNR"S" CM58446-A-1Y-3Y-3M-1Y-0M			2013.8	91.8	138.7	13.4	0.0	5.7	4.8									
55	TTR"S"-BOW"S" CM58857-2M-1Y-1M-2Y-0M			2393.2	90.7	137.7	14.6	0.0	33.5	1.3									
56	TTR"S"-JUN"S" CM59123-3M-1Y-1M-1Y-1M-0Y			2187.3	87.3	133.2	3.8	0.0	0.3	5.1									

PLNT HT	LODG %	SCAB %	CHECK MARK	POW M 0-9	SEP T 0-9	SEP N 0-9	SEP S 0-9	SPT B 0-9	TAN S 0-9	BYDV 0-9	BAC SP 0-9
(9)	(1)	(3)	(22)	(4)	(15)	(5)	(1)	(2)	(1)	(2)	(1)
77.9	0.0	54.3	22.7	5.0	5.1	3.8	4.0	5.0	3.0	3.0	1.0
77.4	0.0	38.3	13.6	7.0	5.6	4.3	8.0	5.0	5.0	3.0	1.0
75.8	0.0	50.0	18.2	5.0	5.3	4.5	8.0	6.0	4.0	5.0	0.0
73.8	0.0	41.7	31.8	3.3	4.6	5.0	6.0	5.0	6.0	3.5	1.0
77.8	0.0	41.7	22.7	3.8	4.8	5.8	3.0	4.5	5.0	6.0	1.0
77.1	0.0	46.7	31.8	6.3	4.8	7.0	2.0	4.5	5.0	4.0	1.0
77.9	0.0	43.3	22.7	6.5	4.3	5.0	3.0	4.0	6.0	3.5	0.0
85.1	0.0	35.0	27.3	6.8	4.4	5.3	2.0	4.0	3.0	4.0	0.0
85.0	0.0	45.0	22.7	6.0	4.3	3.5	2.0	5.0	5.0	4.0	0.0
88.7	0.0	33.3	22.7	4.5	4.2	3.8	1.0	5.0	3.0	3.5	0.0
105.4	30.0	43.3	18.2	5.5	4.2	3.8	3.0	4.5	4.0	0.0	0.0
76.8	0.0	55.7	13.6	4.8	5.1	6.4	3.0	4.0	5.0	4.0	1.0
78.6	5.0	55.7	36.4	4.0	4.9	4.8	2.0	4.0	5.0	3.0	0.0
79.9	0.0	38.3	36.4	4.0	4.2	4.8	3.0	3.5	2.0	3.0	0.0
73.6	0.0	49.0	4.5	6.0	4.6	3.0	8.0	4.0	6.0	5.0	1.0
74.2	0.0	41.7	27.3	6.3	5.7	5.5	8.0	4.0	3.0	2.0	0.0
78.6	0.0	58.3	18.2	5.8	5.5	4.5	8.0	6.5	4.0	3.0	3.0
79.3	0.0	40.3	22.7	5.5	4.2	3.3	4.0	6.0	4.0	3.0	0.0
77.0	0.0	45.0	18.2	4.3	4.9	4.5	4.0	6.0	3.0	3.0	0.0
82.4	0.0	43.0	22.7	4.8	5.1	5.0	5.0	6.0	3.0	3.5	1.0
76.1	0.0	51.3	36.4	7.3	4.6	6.5	3.0	4.5	4.0	3.0	1.0
70.7	0.0	49.7	31.8	6.8	4.5	4.3	2.0	4.0	3.0	2.5	1.0
77.9	0.0	62.3	13.6	6.5	5.2	4.3	2.0	5.5	4.0	4.5	1.0
77.4	0.0	51.7	9.1	5.8	6.1	5.5	3.0	5.5	3.0	3.0	0.0
82.1	0.0	73.3	13.6	3.5	4.3	4.4	2.0	5.0	4.0	4.0	3.0
81.3	0.0	42.7	4.5	6.8	4.8	4.3	3.0	4.5	2.0	4.5	0.0
77.3	0.0	33.3	18.2	4.8	4.9	4.3	4.0	4.5	2.0	3.5	1.0

Table 2. (continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	GRAIN	ORIGIN	YIELD KG/HA	HEAD DAYS	MAT DAYS	STRP RT. L	STRP RT. H	LEAF RUST	STEM RUST
		NUMBER OF OBSERVATIONS:		(14)	(14)	(11)	(9)	(2)	(11)	(8)
57	TTR"S"-JUN"S" CM59123-3M-1Y-2M-2Y-1M-0Y			2519.1	91.1	136.4	4.3	0.0	0.3	4.3
58	TTR"S"-JUN"S" CM59123-3M-1Y-3M-2Y-3M-0Y			2433.6	89.0	135.6	5.5	0.0	0.7	5.0
59	TTR"S"-JUN"S" CM59123-3M-1Y-3M-1Y-3M-0Y			2569.5	88.2	134.5	7.0	0.0	0.5	1.4
60	7CERRDS (CHECK)			2390.6	84.1	131.8	57.9	20.0	34.2	4.5
61	TTR"S"-JUN"S" CM59123-4M-1Y-1M-5Y-3M-0Y			2554.5	88.9	135.5	16.5	0.0	1.0	1.9
62	K6582-TDB X PEW"S" CM59608-1Y-1M-1Y-1M-2Y-1M-0Y			2481.0	86.9	134.4	10.9	0.0	5.6	2.5
63	PVN"S"(BB-CNO"S" X JAR/DRZ"S")(TL(LA FR-KAD85 X QB)(2)) CM59642-0Y-0M-0Y-1M-2Y-1M-0Y			2317.1	90.0	137.5	30.9	0.0	21.1	8.4
64	F6.74-BUN"S" X SIS"S" CM60042-M-1Y-2M-2Y-1M-1Y-0M			2880.2	89.0	137.0	18.3	0.0	0.6	14.5
65	(BB-CNO67 X CI12703/PHO"S")JUN"S" CM60170-0-2Y-1M-1Y-1M-1Y-1M-0Y			2967.5	87.9	134.2	1.1	0.0	2.4	10.3
66	QJO"S"-TRM X BDA-HUAC"S" CM60767-C-1Y-1M-1Y-2M-0Y			2408.5	85.5	134.2	36.3	0.0	11.5	4.0
67	BOW"S"-NAC CM61755-10Y-3M-1Y-3M-1Y-1M-0Y			2114.3	93.9	138.8	3.4	0.0	16.5	23.3
68	BOW"S"-NAC CM61755-13Y-1M-1Y-0M			2856.5	83.6	131.4	0.6	0.0	10.7	3.3
69	BOW"S"-PVN CM61830-8Y-1M-2Y-2M-1Y-1M-0Y			2307.6	83.4	130.4	15.5	0.0	34.0	5.9
70	BOW"S"-PVN CM61830-8Y-1M-2Y-2M-1Y-3M-0Y			2256.1	83.3	130.7	15.5	0.0	27.5	8.8
71	MIRLO"S"-BUC"S" CM61949-12Y-1M-1Y-1M-3Y-1M-0Y			1734.9	82.1	131.6	0.6	0.0	7.5	6.2
72	MIRLO"S"-BUC"S" CM61949-12Y-6M-2Y-3M-5Y-1M-0Y			2109.3	86.6	133.5	0.0	0.0	5.5	11.5
73	MIRLO"S"-BUC"S" CM61949-15Y-1M-1Y-1M-3Y-2M-0Y			2462.1	88.3	134.0	0.0	0.0	6.6	6.0
74	VEE"S"-SNB"S" CM61981-4Y-1M-5Y-2M-0Y			1825.9	91.9	137.4	4.0	0.0	20.1	1.3
75	BOW"S" X YD"S"-ZZ"S" CM62045-8Y-1M-1Y-4M-4Y-2M-0Y			1995.2	79.4	129.4	18.0	0.0	21.7	6.9
76	NN72360-SNB"S" CM62067-5Y-4M-1Y-1M-1Y-1M-0Y			2655.1	87.8	133.5	5.1	0.0	14.2	14.6
77	MON"S" X SIS"S"-CAN"S" CM62142-5Y-2M-1Y-1M-3Y-1M-0Y			1698.4	81.1	129.1	9.7	0.0	5.5	2.1
78	MON"S" X SIS"S"-CAN"S" CM62142-5Y-3M-1Y-2M-3Y-1M-0Y			2517.5	82.7	130.6	8.6	0.0	0.2	1.6
79	SIS"S"-CAN"S" X ALD"S" CM62319-3Y-1M-1Y-1M-2Y-1M-0Y			1839.4	87.8	134.1	27.9	0.0	21.1	6.1
80	IAS20 (CHECK)			2297.3	89.9	133.5	51.1	15.0	31.3	29.8
81	NAC X H499.71A-JUP/NAC-BUC"S" CM64014-B-2M-1Y-1M-1Y-2M-0Y			2337.8	80.8	130.1	3.5	0.0	9.6	0.0
82	NAC-VEE"S" CM64224-5Y-1M-1Y-2M-0Y			2849.9	81.6	130.1	9.5	0.0	27.4	0.0
83	R37-GHL121 X KAL-BB/JUP-MUS"S" CM64611-4M-1Y-1M-3Y-2M-0Y			2276.3	84.9	133.1	14.8	0.0	18.3	2.1
84	KEA"S"(KAL-BB X CJ"S"/ALD"S") CM64617-7M-1Y-1M-1Y-1M-0Y			2522.6	82.4	130.3	18.7	0.0	27.6	2.6
85	TAN"S"-SNB"S" CM64639-1M-1Y-2M-1Y-1M-0Y			2587.0	91.4	137.2	27.4	0.0	11.3	13.9

PLNT HT	LODO %	SCAB %	CHECK MARK	POW M 0-9	SEP T 0-9	SEP N 0-9	SEP S 0-9	SPT B 0-9	TAN S 0-9	BYDV 0-9	BAC SP 0-9
(9)	(1)	(3)	(22)	(4)	(15)	(5)	(1)	(2)	(1)	(2)	(1)
73.0	0.0	35.0	18.2	7.0	4.8	2.8	4.0	4.0	4.0	3.5	0.0
77.1	0.0	40.7	18.2	6.3	4.7	4.0	3.0	4.5	4.0	5.0	1.0
73.6	0.0	36.0	18.2	6.8	4.9	4.0	5.0	4.5	4.0	6.0	0.0
77.3	5.0	75.7	13.6	6.8	6.0	6.0	8.0	5.5	6.0	0.0	3.0
81.4	0.0	35.3	22.7	6.0	4.7	5.0	3.0	5.5	6.0	3.0	0.0
87.9	0.0	44.0	27.3	5.3	4.7	5.3	3.0	4.0	3.0	3.5	1.0
86.1	0.0	41.7	27.3	3.8	4.4	4.8	4.0	4.0	3.0	6.0	0.0
87.8	0.0	32.0	45.5	4.5	4.3	3.5	3.0	5.0	4.0	0.0	0.0
77.4	0.0	30.3	27.3	6.5	4.5	4.3	4.0	4.5	2.0	3.0	0.0
79.6	0.0	38.3	13.6	6.0	5.5	5.6	3.0	4.5	3.0	3.5	1.0
81.6	0.0	33.3	13.6	4.8	4.2	3.0	2.0	4.5	2.0	3.0	0.0
79.6	0.0	32.0	31.8	5.5	4.8	5.4	6.0	4.0	4.0	4.0	0.0
74.3	0.0	33.7	22.7	6.8	4.5	3.8	6.0	4.5	4.0	0.0	0.0
73.3	0.0	35.3	18.2	6.0	4.6	3.8	5.0	4.5	3.0	0.0	0.0
81.8	0.0	46.7	9.1	4.5	5.1	5.5	3.0	5.0	4.0	4.0	1.0
80.1	0.0	45.0	13.6	3.0	5.2	3.3	3.0	5.0	3.0	3.0	1.0
82.0	0.0	36.7	36.4	3.5	4.9	4.0	3.0	4.5	2.0	3.5	0.0
71.8	0.0	40.3	13.6	5.8	4.2	4.4	2.0	5.0	3.0	4.0	0.0
76.2	0.0	46.7	18.2	3.8	5.4	2.8	5.0	4.0	3.0	0.0	1.0
74.6	0.0	38.3	27.3	5.3	5.4	4.0	5.0	5.5	2.0	3.5	0.0
76.2	0.0	46.7	18.2	4.8	5.4	4.2	8.0	3.5	4.0	0.0	0.0
77.3	0.0	45.0	18.2	6.5	5.4	4.0	6.0	5.0	3.0	0.0	0.0
79.8	0.0	51.7	13.6	7.0	5.2	3.3	3.0	5.0	5.0	0.0	3.0
104.6	10.0	41.7	18.2	6.3	4.7	3.8	3.0	5.0	5.0	0.0	0.0
86.3	0.0	38.3	31.8	5.8	5.1	3.8	9.0	4.5	6.0	3.0	0.0
78.8	0.0	51.3	31.8	5.5	5.5	3.8	9.0	4.0	3.0	3.5	1.0
71.1	0.0	41.3	18.2	5.8	5.1	4.0	8.0	4.5	5.0	3.0	1.0
79.7	0.0	36.7	18.2	6.3	4.6	3.5	6.0	5.5	3.0	3.0	1.0
81.3	0.0	45.0	13.6	6.8	5.2	3.0	3.0	4.5	6.0	3.0	5.0

Table 2. (continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	GRAIN	ORIGIN	YIELD KG/HA	HEAD DAYS	MAT DAYS	STRP RT. L	STRP RT. H	LEAF RUST	STEM RUST	NUMBER OF OBSERVATIONS:									
											(14)	(14)	(11)	(9)	(2)	(11)	(8)			
86	VEE"S" X 7C-ALD"S" CM64661-1Y-1M-2Y-1M-0Y			2156.6	86.4	133.0	20.3	0.0	23.8	4.9										
87	TI-TDB X ALD"S"/7C-ALD"S" CM64850-1Y-1M-1Y-0M			2289.4	89.2	135.4	20.0	0.0	30.8	28.1										
88	PF70354-VEE"S" CM65063-3Y-0Z-0Y			2818.6	86.3	132.8	25.9	0.0	31.9	3.5										
89	BLO"S"-PBN"S" CM65076-5Y-1M-1Y-2M-0Y			1971.2	81.5	130.9	0.0	0.0	0.6	0.9										
90	TAN"S"-BDW"S" CM65078-7M-1Y-3M-1Y-1M-0Y			2305.1	90.6	137.6	31.8	0.0	0.9	5.5										
91	MJI-VEE"S" X PVN"S" CM65845-F-1M-2Y-2M-1Y-1M-0Y			2136.8	89.4	134.2	34.8	20.0	25.4	3.0										
92	MJI-VEE"S" X PVN"S" CM65845-F-1M-2Y-2M-2Y-0M			2706.9	88.5	134.5	30.0	0.0	30.6	4.5										
93	(4777(2) X FKN-QB/VEE"S")BUC"S"-PVN" CM66684-B-1M-6Y-2M-2Y-0M			3200.1	85.0	132.4	3.0	0.0	0.3	1.4										
94	(4777(2) X FKN-QB/VEE"S")BUC"S"-PVN" CM66684-B-1M-6Y-1M-3Y-1M-0Y			2523.8	88.4	138.1	0.0	0.0	0.4	2.1										
95	DOVE"S"-BDW"S" CM67449-12Y-3M-2Y-1M-0Y			2589.0	89.8	135.5	0.3	0.0	14.5	0.5										
96	ULC-PVN"S" X TAN"S" CM67766-9Y-4M-3Y-2M-0Y			2262.8	88.9	135.5	10.7	0.0	26.9	1.6										
97	PF70354-BDW"S" CM67910-17Y-1M-4Y-1M-0Y			2929.5	86.9	132.3	13.1	0.0	21.3	7.8										
98	(AU-UP301 X QLL-SX/PEW"S")MAI"S"- MAYA"S" X PEW"S" CM67245-C-1M-3Y-1M-9Y-2M-0Y			2150.5	81.4	129.7	0.0	0.0	1.8	19.9										
99	KEA"S"-BUC"S" CM67354-11Y-1M-1Y-0M			3035.7	84.3	133.2	11.0	0.0	28.1	17.5										
100	7CERROS (CHECK)			2383.7	83.9	132.1	58.3	40.0	35.5	2.6										
101	ULC-PVN"S" X TAN"S" CM67766-9Y-1M-1Y-2M-0Y			2346.5	85.5	131.7	0.0	0.0	20.0	1.6										
102	[(KVZ/TDB-CTFN X BB)BLO"S"]JALD"S" CM67980-7Y-3M-3Y-2M-0Y			2081.7	86.4	133.1	9.7	0.0	12.5	0.3										
103	ALTAR"S"-DOVE"S" CM68008-3Y-1M-5Y-2M-0Y			2140.7	84.1	130.2	0.9	0.0	20.1	10.3										
104	BDW"S"-TAN"S" CM68159-4Y-2M-3Y-1M-0Y			2880.6	86.9	134.9	33.7	20.0	36.4	3.7										
105	ANB"S"-JUP CM68198-2Y-1M-2Y-3M-0Y			1735.5	88.9	136.9	17.9	0.0	1.3	1.1										
106	VEE"S"-PEW"S" CM68367-4Y-1M-2Y-0M			2627.6	84.5	132.3	19.1	0.0	31.8	1.7										
107	HER-TAN"S" X CMH77A.89B.2B-DOVE"S" CM68999-D-3Y-1M-2Y-3M-0Y			2150.5	81.4	129.9	1.1	0.0	6.0	1.3										
108	CDC-HDRK"S" X PHO"S"/NFN-YKW X FURY- MO CM69134-C-3Y-1M-2Y-2M-0Y			2213.3	90.2	136.5	29.7	0.0	38.9	20.7										
109	CDC-HDRK"S" X PHO"S"/NFN-YKW X FURY- MO CM69134-C-3Y-2M-1Y-1M-0Y			2583.6	86.4	132.2	19.3	0.0	34.7	6.1										
110	YACO"S"-PHO"S"/CAL-CHKW X VEE"S" CM69135-B-1Y-1M-3Y-2M-0Y			1775.7	84.6	131.3	2.8	0.0	21.0	5.4										
111	(BH1146 X KAL-BB/CDC)SIS"S"-CAN"S" X ALD"S" CM69305-C-2Y-2M-1Y-1M-0Y			2086.2	90.4	136.0	12.0	0.0	10.8	7.1										
112	IAS20-H567.71 CMH76.480-13Y-5B-1Y-1B-1Y-1B-0Y- 1PTZ-0Y			2147.7	88.6	132.1	10.0	0.0	2.4	31.1										

PLNT HT	LODC %	SCAB %	CHECK MARK	POW H 0-9	SEP T 0-9	SEP N 0-9	SEP S 0-9	SPT B 0-9	TAN S 0-9	BYDV 0-9	BAC SP 0-9
(9)	(1)	(3)	(22)	(4)	(15)	(5)	(1)	(2)	(1)	(2)	(1)
87.2	0.0	36.7	4.5	5.3	5.6	2.5	5.0	4.5	5.0	3.5	1.0
82.1	0.0	40.0	9.1	6.0	5.0	4.3	3.0	5.0	3.0	3.5	1.0
81.9	0.0	43.3	27.3	5.5	4.6	5.0	2.0	5.0	3.0	3.0	1.0
79.1	0.0	33.3	9.1	5.3	4.9	4.8	5.0	4.5	6.0	4.0	1.0
78.4	0.0	33.3	18.2	5.8	4.9	2.8	3.0	4.0	3.0	0.0	0.0
79.1	0.0	35.0	13.6	6.0	4.7	4.0	4.0	3.5	3.0	----	1.0
80.6	0.0	40.0	13.6	5.5	5.1	5.3	4.0	4.5	4.0	----	1.0
78.2	0.0	42.3	40.9	5.5	4.9	3.5	3.0	5.0	6.0	4.0	1.0
81.0	0.0	43.3	22.7	5.3	4.3	4.4	3.0	4.0	2.0	4.5	0.0
87.6	0.0	46.7	18.2	4.0	4.9	3.3	5.0	4.5	3.0	4.0	1.0
81.8	0.0	46.7	9.1	4.5	5.4	4.3	4.0	4.5	6.0	4.0	1.0
89.9	5.0	41.7	40.9	4.8	4.6	4.5	4.0	5.0	3.0	4.0	1.0
80.0	0.0	40.0	22.7	5.3	5.5	2.0	6.0	6.0	3.0	3.5	0.0
72.8	0.0	47.3	18.2	5.3	5.2	3.8	4.0	5.0	6.0	4.5	0.0
78.0	----	66.7	9.1	4.8	6.3	5.0	8.0	6.0	4.0	----	1.0
80.6	0.0	41.7	13.6	3.5	5.1	3.8	4.0	5.0	3.0	5.5	1.0
78.6	0.0	41.7	9.1	5.0	5.8	4.5	3.0	4.0	5.0	4.5	0.0
78.4	0.0	55.7	0.0	4.8	6.1	3.8	5.0	6.0	4.0	3.5	0.0
83.8	0.0	43.3	18.2	6.3	6.1	4.3	4.0	6.0	3.0	4.5	0.0
79.3	0.0	33.3	0.0	4.0	6.2	6.0	5.0	4.5	4.0	3.5	1.0
75.0	0.0	59.0	18.2	5.8	5.7	2.8	5.0	5.0	5.0	4.0	1.0
77.6	0.0	40.0	22.7	4.8	4.9	4.5	3.0	4.5	6.0	5.0	1.0
78.9	0.0	40.0	18.2	5.0	4.3	3.3	2.0	3.5	4.0	6.0	1.0
77.0	0.0	46.7	18.2	4.8	5.5	5.5	3.0	4.5	6.0	2.0	1.0
84.0	0.0	36.7	13.6	3.8	4.8	3.5	5.0	5.5	3.0	2.5	0.0
89.0	0.0	53.3	4.5	3.0	4.1	5.0	3.0	4.0	5.0	2.0	0.0
84.0	0.0	25.3	22.7	5.8	4.8	5.5	3.0	5.0	4.0	3.5	0.0

Table 2. (continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	GRAIN	ORIGIN	YIELD KG/HA	HEAD DAYS	MAT DAYS	STRP RT. L	STRP RT. H	LEAF RUST	STEM RUST	NUMBER OF OBSERVATIONS:									
											(14)	(14)	(11)	(9)	(2)	(11)	(8)			
113	IAS20-H567. 71 CMH76. 480-13Y-3B-1Y-1B-1Y-1B-0Y- 2PTZ-0Y			2009. 5	88. 4	132. 0	7. 5	0. 0	3. 2	37. 1										
114	IAS20(3)-H567. 71 CMH77. 205-1Y-1B-7Y-1B-1Y-1B-0Y- OPTZ			2801. 7	84. 7	131. 4	10. 4	0. 0	2. 8	37. 4										
115	P. AR-H567. 71 CMH77A. 260-2B-1Y-7B-1Y-1PTZ-0Y			2060. 0	84. 1	131. 5	25. 8	0. 0	2. 1	21. 1										
116	P. AR(2)-H567. 71 CMH78. 421-3Y-3B-1Y-1B-0Y-1PTZ-0Y			2728. 4	84. 4	131. 5	28. 5	0. 0	4. 0	34. 0										
117	THB"B" F11915-A-502M-1Y-1F-702Y-5F-0Y			2866. 3	89. 6	134. 9	21. 0	0. 0	2. 6	6. 9										
118	THB"B" F11915-A-502M-1Y-3F-702Y-2F-0Y			2477. 4	89. 1	135. 1	20. 4	0. 0	0. 3	1. 6										
119	PF72640-PF7326 X PF7065-ALD"B" F11933-D-500M-3Y-1F-704Y-3F-0Y			2882. 5	89. 9	135. 1	20. 4	0. 0	0. 3	7. 4										
120	IAS20 (CHECK)			2173. 5	89. 9	135. 7	46. 8	20. 0	31. 9	30. 3										
121	[(MYS4/N10-Y50 X K. LINE)CDJCJ"B">PA 49 B12981-H-1Z-1Z-1A-1A-0A-1PTZ-0Y			2489. 5	92. 8	140. 5	23. 5	0. 0	37. 1	3. 9										
122	KVZ-COM GE1066-9B-1B-6B-0B-7KE-0KE			2137. 6	95. 5	142. 3	24. 6	0. 0	16. 5	3. 7										
123	(BTY/6754. II. 1. T-K-(2) X BZA)6754. II 1 K6867			2184. 2	86. 9	134. 2	20. 8	0. 0	13. 9	3. 4										
124	P68. 1482-P-P-I 2. 71-74T-1T-1T-2T-OM			1681. 1	91. 4	139. 8	26. 2	5. 0	22. 8	14. 6										
125	TC67			1339. 0	100. 3	148. 6	24. 8	5. 0	3. 6	9. 6										
126	CNDO			1529. 1	102. 2	151. 7	25. 3	25. 0	17. 1	13. 3										
127	HCL			1836. 8	95. 7	145. 7	38. 6	7. 5	15. 3	7. 5										
128	YAV"B"-AA"B" CD32617-18B-1Y-1M-0Y			1415. 4	86. 0	139. 0	18. 8	0. 0	11. 5	29. 0										
129	WIN"B"-AA"B" CD12454-3Y-11M-1Y-2Y-2M-1Y-OM			2428. 3	86. 0	134. 3	30. 4	10. 0	13. 2	30. 4										
130	D67. 54-4A-9A/JO"B" X RD119-200-4Y			2539. 2	95. 4	149. 1	16. 7	2. 5	2. 1	16. 1										
131	RBC			1753. 9	100. 3	149. 5	36. 4	35. 0	9. 2	0. 3										
132	MLB			1568. 6	102. 5	152. 0	16. 6	25. 0	6. 9	2. 0										
133	65150-LDS			1894. 0	97. 0	147. 0	14. 4	20. 0	5. 8	5. 4										
134	LDS MUT-OTA"B" X OS"B"/LDS MUT-OTA"B X ROK"B" CD28220-6-1M-2Y-5Y-OM			1792. 5	87. 7	137. 8	12. 9	10. 0	5. 4	12. 3										
135	MHMD. TIFF E2-OZ 369 D244-A-2I-1M-0Y			1478. 9	99. 7	151. 5	27. 1	12. 5	3. 9	34. 3										
136	MLN69			1365. 9	98. 8	152. 3	1. 8	0. 0	8. 1	16. 0										
137	B. CP MUT			1362. 4	99. 3	154. 8	13. 8	12. 5	11. 9	6. 3										
138	BET LEHEM VOLCANI 393-676			1871. 4	82. 9	129. 7	44. 8	40. 0	23. 8	11. 6										
139	BOW"B" CH33203-K-9M-2Y-2M-1Y-2M-1Y-2M- 0Y-1PTZ-0Y			1883. 6	89. 1	134. 1	21. 9	0. 0	11. 3	0. 0										
140	7CERR08 (CHECK)			1387. 9	86. 2	133. 4	47. 1	40. 0	35. 3	1. 8										
141	COLOTANA C113556			1722. 5	95. 8	140. 5	16. 1	0. 0	13. 6	9. 9										
142	IAB 20-IASSUL			1592. 7	93. 9	139. 5	25. 1	25. 0	11. 9	7. 6										
143	KVZ-K4500L. A. 4. BMD176-3M-1Y-10Y-1Y-1M-0Y-OPTZ			2288. 7	89. 0	135. 3	13. 1	0. 0	5. 5	0. 0										

PLNT HT	LODC %	SCAB %	CHECK MARK	POM N 0-9	SEP T 0-9	SEP N 0-9	SEP S 0-9	BPT B 0-9	TAN S 0-9	BYDV 0-9	BAC SP 0-9
(9)	(1)	(3)	(22)	(4)	(15)	(5)	(1)	(2)	(1)	(2)	(1)
85.0	0.0	33.7	13.6	6.8	4.9	5.0	3.0	4.5	3.0	5.0	1.0
81.8	0.0	56.7	9.1	6.5	5.2	5.5	4.0	5.5	4.0	0.0	1.0
74.1	0.0	45.0	4.5	6.0	5.5	5.8	3.0	5.5	6.0	0.0	5.0
77.8	0.0	43.3	18.2	6.5	4.7	3.8	4.0	5.5	3.0	2.0	0.0
92.0	0.0	53.3	40.9	5.8	4.4	2.5	2.0	5.0	4.0	2.5	1.0
91.3	0.0	43.3	27.3	5.8	4.5	3.8	2.0	4.0	5.0	2.5	1.0
93.0	0.0	43.3	31.8	6.5	4.6	3.2	2.0	4.5	4.0	3.5	1.0
109.6	20.0	38.3	18.2	6.8	4.7	3.8	2.0	5.5	6.0	0.0	3.0
86.6	0.0	45.0	13.6	7.3	4.5	4.4	2.0	4.0	6.0	1.0	1.0
87.3	0.0	59.0	27.3	6.5	4.3	4.6	2.0	3.5	4.0	4.0	1.0
101.7	0.0	46.7	4.5	6.0	5.6	6.5	5.0	6.0	5.0	0.0	1.0
78.2	0.0	32.0	4.5	7.0	4.0	4.2	4.0	4.0	4.0	3.0	1.0
88.3	5.0	51.0	4.5	2.8	3.8	3.0	0.0	3.5	5.0	1.0	1.0
71.6	0.0	49.0	13.6	3.0	4.0	2.3	0.0	4.0	3.0	5.5	0.0
110.0	0.0	50.0	4.5	3.3	4.1	4.7	0.0	3.0	4.0	4.0	0.0
83.3	5.0	66.7	4.5	4.3	4.6	6.8	4.0	5.0	3.0	3.0	1.0
89.3	5.0	66.7	9.1	4.0	3.5	4.8	6.0	4.5	6.0	5.5	1.0
89.3	0.0	55.0	18.2	3.0	3.8	5.8	0.0	4.5	4.0	4.5	0.0
104.1	80.0	58.5	13.6	3.7	3.7	2.0	0.0	3.5	5.0	3.5	0.0
117.6	30.0	47.5	4.5	3.0	3.5	1.3	0.0	4.0	4.0	6.5	0.0
95.0	0.0	52.5	4.5	6.3	3.2	3.0	0.0	3.5	6.0	7.5	0.0
72.0	0.0	55.0	9.1	6.0	3.8	4.4	3.0	4.0	3.0	4.0	0.0
103.5	5.0	80.0	4.5	4.3	3.7	2.3	0.0	3.5	5.0	3.0	3.0
77.0	0.0	50.5	13.6	5.3	2.8	3.5	0.0	3.0	4.0	3.0	0.0
73.3	0.0	50.5	4.5	6.0	3.8	3.8	0.0	3.5	4.0	3.0	0.0
69.3	5.0	80.0	9.1	5.0	4.3	4.0	9.0	6.0	5.0	----	3.0
67.8	0.0	46.7	13.6	5.7	4.8	5.0	3.0	5.0	7.0	4.0	0.0
74.3	0.0	76.7	4.5	4.0	5.8	5.3	5.0	6.0	6.0	----	1.0
112.5	5.0	46.0	9.1	6.0	3.8	1.7	0.0	5.5	4.0	1.0	0.0
104.6	30.0	36.0	9.1	5.7	4.7	4.2	3.0	5.0	3.0	4.0	3.0
77.6	0.0	32.7	31.8	1.7	3.7	4.8	4.0	4.0	4.0	4.0	0.0

Table 2. (continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	GRAIN	ORIGIN	YIELD KG/HA	HEAD DAYS	MAT DAYS	STRP RT. L	STRP RT. H	LEAF RUST	STEM RUST	NUMBER OF OBSERVATIONS:									
											(14)	(14)	(11)	(9)	(2)	(11)	(8)			
144	KVZ/7C SM4064-6Y-4H-3Y-1H-3Y-0Y-OPTZ			2240.4	86.4	133.9	7.1	0.0	0.7	0.5										
145	KVZ-UP301 CM20976-12Y-1H-1Y-0Y-3PTZ			1764.0	95.4	142.3	1.0	0.0	14.9	0.3										
146	LAKHISH			1268.2	85.9	136.0	20.0	2.5	23.5	15.4										
147	DLAF CI 19930			1648.0	98.3	148.1	17.8	5.0	2.1	18.3										
148	TITAN CI 12615			1221.3	95.5	142.9	59.8	50.0	7.4	15.4										
149	TOROPI			1663.2	93.2	142.7	20.9	20.0	19.4	6.0										
150	VERANOPOLIS=FN. 35			1422.0	99.8	149.8	20.0	10.0	20.9	29.5										
151	ETIT 38			1076.4	93.0	147.9	12.4	5.0	6.8	1.0										
152	N. 163			1291.9	100.7	148.5	18.3	5.0	14.7	0.3										
153	ZENATI-BOUTEILLE			1008.9	84.4	135.5	30.6	27.5	14.7	32.5										
154	BEAGLE			2074.9	85.8	141.4	14.1	0.0	14.3	9.9										
155	HAPACHE			1553.8	82.4	134.5	13.6	0.0	4.8	0.7										
156	LOCAL CHECK			2318.7	80.1	128.7	20.1	0.0	26.7	14.0										

PLNT HT	LOG %	SCAB %	CHECK MARK	POW H 0-9	SEP T 0-9	SEP N 0-9	SEP B 0-9	SPT B 0-9	TAN B 0-9	BYDV 0-9	BAC BP 0-9
(9)	(1)	(3)	(22)	(4)	(15)	(5)	(1)	(2)	(1)	(2)	(1)
87.2	0.0	33.3	18.2	5.3	5.0	5.0	6.0	3.0	5.0	5.0	0.0
77.6	0.0	53.3	13.6	3.0	5.5	6.0	3.0	3.0	6.0	6.0	1.0
72.4	0.0	45.7	4.5	2.3	6.1	4.5	3.0	4.5	6.0	3.0	1.0
87.0	5.0	50.0	9.1	3.3	4.4	3.3	0.0	3.5	5.0	3.0	1.0
112.6	60.0	58.5	4.5	7.7	4.8	3.0	0.0	3.5	6.0	---	1.0
114.8	50.0	49.0	9.1	3.7	4.5	1.7	0.0	4.5	4.0	3.0	0.0
97.9	20.0	53.5	4.5	6.3	4.6	3.7	1.0	5.5	6.0	4.5	1.0
98.7	90.0	90.0	0.0	6.5	5.7	6.0	0.0	4.5	4.0	6.5	1.0
114.0	60.0	47.5	9.1	4.5	4.3	1.7	0.0	4.5	5.0	4.0	0.0
96.0	10.0	58.3	4.5	7.0	5.7	6.0	3.0	6.0	5.0	3.5	1.0
102.9	5.0	40.0	18.2	0.0	3.4	1.8	0.0	4.5	4.0	5.0	0.0
87.7	5.0	56.7	9.1	0.0	4.1	2.3	0.0	4.0	5.0	3.5	1.0
81.5	5.0	30.0	4.5	3.0	6.0	5.5	4.0	6.0	6.0	4.0	3.0

Table 3. Top-performing entries: Yield

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS													MEAN	
		3	8	11	12	14	15	16	18	19	20	23	25	27		36
93	(4777(2) X FKN-08/VEE"S")BUC"S"-PVN" CM66684-B-1M-6Y-2M-2Y-0M	2366	5325	1213	1706	1284	3933	3380	---	2266	8500	1561	1750	4889	3428	3200.1
99	KEA"S"-BUC"S" CM67354-11Y-1M-1Y-0M	1783	4397	1422	1573	1553	3226	2300	---	3133	7630	1447	1688	4741	4571	3035.7
2	THB"S"	2516	3655	1333	2453	1838	3453	1800	---	---	7000	2650	1250	---	5000	2995.3
50	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-2M-1Y-0M	3433	2948	800	466	1369	1306	1600	6199	---	6750	2022	1688	4852	5333	2982.0
65	(BB-CND67 X CI12703/PHD"S")JUN"S" CM60170-G-2Y-1M-1Y-1M-1Y-0Y	1766	3155	1280	1146	1784	2919	1840	---	---	7630	1861	1875	5259	5095	2967.5
97	PF70354-BOW"S" CM67910-17Y-1M-4Y-1M-0Y	3016	4544	1973	2373	707	3479	2500	---	---	---	1903	1625	4963	5142	2929.5
119	PF72640-PF7326 X PF7065-ALD"S" F11933-D-500M-3Y-1F-704Y-3F-0Y	3216	3523	1289	2493	1123	3786	2800	---	2533	---	2486	2125	---	6333	2882.5
104	BOW"S"-TAN"S" CM68159-4Y-2M-3Y-1M-0Y	2316	4710	1114	1999	1507	2879	1760	---	---	---	1853	2375	6222	4952	2880.6
64	F6.74-BUN"S" X SIS"S" CM60042-M-1Y-2M-2Y-1M-1Y-0M	2150	3575	1001	1359	1646	2253	2000	---	1200	5130	2525	2000	6222	6381	2880.2
117	THB"S" F11915-A-502M-1Y-1F-702Y-5F-0Y	3433	3756	1337	2106	1146	4679	2390	---	2666	---	2433	2250	---	5333	2866.3
68	BOW"S"-NAC CM61755-13Y-1M-1Y-0M	3000	3375	1806	1679	2292	2333	2180	---	---	7500	2381	1875	---	3000	2856.5
82	NAC-VEE"S" CM64224-3Y-1M-1Y-2M-0Y	1116	4242	936	1773	1307	3026	2290	4683	---	7250	2469	1250	---	3857	2849.9
25	BB-GLL X CJ/F35.70 X KAL-BB CM34555-B-1M-4Y-1M-1Y-2M-0Y	2116	4846	2066	1319	1738	3653	1860	---	2466	5880	1753	1875	5333	2095	2846.2
88	PF70354-VEE"S" CM65063-3Y-0Z-0Y	4433	4014	1369	2173	1330	2986	2580	---	---	---	1600	1250	5556	3714	2818.6
114	IAS20(3)-H567.71 CMH77.205-1Y-1B-7Y-1B-1Y-1B-0Y- OPTZ	2583	5233	1357	1306	---	2773	2230	---	---	6880	1286	1750	---	2619	2801.7

Table 4. Top-performing entries: Frequency of selection for further investigation

VTY NO.	VARIETY OR CROSS AND PEDIGREE	CRAIN	ORIGIN	CHECK MARK
		NUMBER OF OBSERVATIONS: (22)		
64	F6. 74-BUN"S" X SIS"S" CM60042-M-1Y-2M-2Y-1M-1Y-OM			43.5
25	BB-QLL X CJ/F35. 70 X KAL-BB CM34555-B-1M-4Y-1M-1Y-2M-0Y			40.9
93	(4777(2) X FXN-GB/VEE"S")BUC"S"-PWN" CM66684-B-1M-6Y-2M-2Y-OM			40.9
97	PF70354-BOW"S" CM67910-17Y-1M-4Y-1M-0Y			40.9
117	THB"S" F11913-A-302M-1Y-1F-702Y-3F-0Y			40.9
28	[JUP(7C-PATD(B)/LR64-INIA66-BB X INI 66-BB)]ANA CM37760-C-21Y-2M-1Y-3M-0Y			36.4
29	SARA 82 CM38088-0-1Y-4M-1Y-3M-1Y-OM			36.4
42	PF70354-MUB"S" CM47091-7M-1Y-3F-1Y-0Y			36.4
43	CARB33-CDC X VEE"S" CM47556-EE-1M-1Y-3M-1Y-1Y-1M-0Y- OPTZ			36.4
50	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-2M-1Y-OM			36.4
73	MIRLD"S"-BUC"S" CM61949-15Y-1M-1Y-1M-3Y-2M-0Y			36.4
33	OOV-AZ X MUB"S" CM41257-I-8M-2Y-1M-3Y-OM			31.8
35	CMT-YR X MCN"S" CM43405-A-2Y-1M-1Y-1M-1Y-0B-88M- 0Y-OPTZ			31.8
51	ALD"S"-MN72130 CM50361-8Y-3M-1Y-4Y-2M-0Y-OPTZ			31.8
68	BOW"S"-NAC CM61755-13Y-1M-1Y-OM			31.8
81	NAC X H499. 71A-JUP/NAC-BUC"S" CM64014-B-2M-1Y-1M-1Y-2M-0Y			31.8
82	NAC-VEE"S" CM64224-5Y-1M-1Y-2M-0Y			31.8
119	PF72640-PF7326 X PF7065-ALD"S" F11933-D-500M-3Y-1F-704Y-3F-0Y			31.8
143	KVZ-K4500L. A. 4. BMD176-3M-1Y-10Y-1Y-1M-0Y-OPTZ			31.8
2	THB"S"			27.3
15	VEE"S" CM33027-F-12M-1Y-4M-1Y-1M-0Y			27.3
18	BOW"S" CM33203-K-9M-9Y-4M-1Y-2M-0Y			27.3
19	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-1Y-OM			27.3
26	SNB"S" CM34630-D-5M-2Y-1M-1Y-1M-1Y-OM			27.3
37	PF70354-ALD"S" CM47090-1Y-1F-4Y-1Y-1M-0Y			27.3
45	BUC"S"-BJY"S" CM49641-9Y-1M-1Y-1Y-OM			27.3

Table 5. Top-performing entries: *Septoria tritici*

VITY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS															MEAN
		2	5	10	13	16	17	18	20	23	24	30	31	32	35	37	
136	RLM69	3	5	0	3	4	---	0	2	3	4	0	---	6	---	3	2.8
133	63190-LDS	3	4	2	4	7	---	0	---	4	5	0	---	3	---	3	3.2
	5 CEP7841	7	5	0	3	3	2	0	2	5	5	0	3	7	---	4	3.3
134	BEAGLE	4	3	2	4	5	2	0	---	4	4	0	---	4	7	5	3.4
129	WIN"S"-AA"S" CD12454-3Y-11M-1Y-2Y-2M-1Y-OM	7	5	2	4	6	---	0	0	7	---	0	---	4	---	3	3.5
132	MLS	3	6	2	3	5	---	0	---	5	5	0	---	7	---	3	3.5
	7 MASCARENHAS	9	5	2	3	2	3	1	2	4	---	1	2	8	---	5	3.6
	8 VACARIA	7	3	0	3	6	4	0	1	7	---	0	3	8	---	5	3.6
131	RBC	5	5	2	3	5	---	0	---	6	---	0	---	7	5	3	3.7
135	MMO. TIPP E2-OZ 369 D244-A-21-1M-OY	3	4	2	3	7	---	0	---	7	6	0	---	6	---	3	3.7
143	KVZ-K4500L. A. 4. BMD176-3M-1Y-10Y-1Y-1M-OY-OPTZ	7	4	2	3	6	---	2	1	4	6	0	2	7	5	3	3.7
	6 PEL73151	5	3	2	3	3	4	0	---	4	6	1	3	7	8	4	3.8
127	SNB"S" CP34630-D-5M-5Y-5M-1Y-1M-OY	5	2	2	3	4	5	3	---	4	5	0	3	8	---	5	3.8
125	YCA7	5	5	2	3	6	4	0	---	5	7	0	---	4	---	4	3.8
130	D67. 54-4A-7A/JO"S" X RD119-200-4Y	4	8	2	4	6	---	0	1	6	5	0	---	5	---	4	3.8
134	LDS MUT-OTA"S" X OS"S"/LDS MUT-OTA"S X ROM"S" CD28220-0-1M-2Y-5Y-OM	3	6	2	3	6	---	0	---	4	6	0	---	5	7	3	3.8
137	S. CP MUT	9	4	2	3	5	---	0	---	3	5	0	---	7	---	4	3.8
141	COLDTANA CI13554	5	5	2	3	5	---	0	---	6	5	0	3	7	---	4	3.8
	4 PF71131	9	7	0	3	4	3	0	2	4	5	3	3	8	---	---	3.9
11	KVZ-K4500L. A. 4. BMD176-3M-1Y-10Y-1Y-2M-OY-OPTZ- OY	5	8	0	2	4	6	7	2	4	3	0	2	8	---	5	4.0
124	P48. 1482-P-P-1 2. 71-74T-1T-1T-2T-OM	3	4	2	3	6	4	0	---	7	---	0	4	8	7	---	4.0
126	CNDO	5	7	2	3	7	---	0	---	4	6	0	---	6	---	4	4.0

Table 6. Top-performing entries: *Septoria nodorum*

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS					MEAN
		10	16	22	29	35	
132	WLB	0	2	2	---	---	1.3
4	PF71131	2	1	1	2	---	1.5
5	CEP7841	2	1	1	2	---	1.5
141	COLOTANA C113556	0	1	4	---	---	1.7
149	TOROP1	0	2	3	---	---	1.7
152	N. 163	0	1	4	---	---	1.7
154	BEAGLE	0	2	3	2	---	1.8
7	MASCARENHAS	2	1	3	2	---	2.0
98	(AU-UP301 X OLL-SX/PEW"S")MAI"S"- MAYA"S" X PEW"S" CM67245-C-1M-3Y-1M-9Y-2M-0Y	0	2	4	2	---	2.0
131	RBC	0	2	4	---	---	2.0
2	THB"S"	2	2	3	2	---	2.3
126	CNDO	0	2	5	---	---	2.3
135	MHMD. TIPP E2-OZ 369 D244-A-2I-1M-0Y	2	3	2	---	---	2.3
155	MAPACHE	0	3	4	2	---	2.3
3	NSB79. 4	2	2	4	2	---	2.5
86	VEE"S" X 7C-ALD"S" CM64661-1Y-1M-2Y-1M-0Y	0	2	6	2	---	2.5
117	THB"S" F11915-A-502M-1Y-1F-702Y-5F-0Y	2	2	4	2	---	2.5
57	TTR"S"-JUN"S" CM59123-3M-1Y-2M-2Y-1M-0Y	2	1	6	2	---	2.8
75	BOW"S" X YD"S"-ZZ"S" CM62045-8Y-1M-1Y-4M-4Y-2M-0Y	0	2	7	2	---	2.8
90	TAN"S"-BOW"S" CM65078-7M-1Y-3M-1Y-1M-0Y	0	1	6	4	---	2.8
106	VEE"S"-PEW"S" CM68367-4Y-1M-2Y-0M	0	3	6	2	---	2.8
44	AZ X CHR-DD. 05P/F12. 71-BLO"S" CM48326-A-3M-1Y-1M-2Y-1Y-0M	0	3	7	2	---	3.0
67	BOW"S"-NAC CM61755-10Y-3M-1Y-3M-1Y-1M-0Y	2	1	7	2	---	3.0
85	TAN"S"-SNB"S" CM64639-1M-1Y-2M-1Y-1M-0Y	2	2	6	2	---	3.0
125	TC67	0	2	4	---	6	3.0
133	65150-LDS	0	2	3	---	7	3.0
148	TITAN CI 12615	2	2	5	---	---	3.0
119	PF72640-PF7326 X PF7065-ALD"S" F11933-D-500M-3Y-1F-704Y-3F-0Y	0	2	5	2	7	3.2
47	ALD"S"-PVN"S" CM49901-14Y-2Y-1M-1Y-0M	0	2	7	4	---	3.3
72	MIRLO"S"-BUC"S" CM61949-12Y-6M-2Y-3M-5Y-1M-0Y	2	2	7	2	---	3.3
79	SIS"S"-CAN"S" X ALD"S" CM62319-3Y-1M-1Y-1M-2Y-1M-0Y	0	2	5	6	---	3.3
95	DOVE"S"-BOW"S" CM67449-12Y-3M-2Y-1M-0Y	2	4	5	2	---	3.3

Table 6. (continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS					MEAN
		10	16	22	29	35	
108	CDC-HORK"S" X PHO"S"/NFN-YKW X FURY- MO CM69134-C-3Y-1M-2Y-2M-0Y	2	2	6	---	---	3.3
147	DLAF CI 19930	0	2	8	---	---	3.3
8	VACARIA	2	2	3	2	8	3.4
18	BOW"S" CM33203-K-9M-9Y-4M-1Y-2M-0Y	2	2	4	6	---	3.5
21	BOW"S" CM33203-K-9M-15Y-1M-4Y-2M-0Y	2	2	4	6	---	3.5
38	PF70354-ALD"S" CM47090-13M-1Y-1F-701Y-1F-704Y- 6F-0Y	2	2	6	4	---	3.5
64	F6.74-BUN"S" X S16"S" CM60042-M-1Y-2M-2Y-1M-1Y-0M	2	1	7	4	---	3.5
84	KEA"S"(KAL-BB X CJ"S"/ALD"S") CM64617-9M-1Y-1M-1Y-1M-0Y	0	2	6	6	---	3.5
93	(4777(2) X FKN-GB/VEE"S")BUC"S"-PVN" " CM66684-B-1M-6Y-2M-2Y-0M	2	2	6	4	---	3.5
110	YACO"S"-PHO"S"/CAL-CHKW X VEE"S" CM69135-B-1Y-1M-3Y-2M-0Y	0	3	5	6	---	3.5
136	MLN69	2	2	3	---	7	3.5
150	VERANDPOLTB-FN.35	2	2	7	---	---	3.7
22	BOW"S" CM33203-K-9M-19Y-3M-3Y-0M	2	2	5	6	---	3.8
30	MAYA-NAC CM39424-1Y-1M-4Y-1M-1Y-1M-0Y	2	2	5	6	---	3.8
39	PF70354-ALD"S" CM47090-14M-1Y-1F-703Y-10F-705Y- 2F-0Y	2	2	5	2	8	3.8
40	IAS20 (CHECK)	7	2	4	2	---	3.8
69	BOW"S"-PVN CM61830-BY-1M-2Y-2M-1Y-1M-0Y	2	2	7	4	---	3.8
70	BOW"S"-PVN CM61830-BY-1M-2Y-2M-1Y-3M-0Y	0	2	7	6	---	3.8
80	IAS20 (CHECK)	7	2	4	2	---	3.8
81	NAC X H499.71A-JUP/NAC-BUC"S" CM64014-B-2M-1Y-1M-1Y-2M-0Y	0	3	6	6	---	3.8
82	NAC-VEE"S" CM64224-5Y-1M-1Y-2M-0Y	0	3	6	6	---	3.8
99	KEA"S"-BUC"S" CM67354-11Y-1M-1Y-0M	2	3	8	2	---	3.8
101	ULC-PVN"S" X TAN"S" CM67766-9Y-1M-1Y-2M-0Y	2	2	5	6	---	3.8
103	ALTAR"S"-DOVE"S" CM68008-3Y-1M-5Y-2M-0Y	2	3	6	4	---	3.8
116	P. AR(2)-H567.71 CMH78.421-3Y-3B-1Y-1B-0Y-1PTZ-0Y	2	1	6	6	---	3.8
118	THB"S" F11915-A-502M-1Y-3F-702Y-2F-0Y	2	2	5	2	8	3.8
120	IAS20 (CHECK)	7	1	5	2	---	3.8
137	S. CP MUT	2	2	4	---	7	3.8
1	URES	2	2	6	6	---	4.0
6	PEL73151	7	2	3	---	---	4.0
9	AU-UP301 SMH485-500Y-0D-501Y-501B-501Y- 501M-500Y	2	3	5	6	---	4.0

Table 7. Top-performing entries: Leaf rust

ENTRY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS											MEAN
		3	16	21	23	24	25	28	29	34	35	37	
13	NPR-FLR X CTD-KZM M12 CM26978-2M-300Y-08	0	0	----	0	0	TMS	0	0	TMR	0	0	0.1
2	THB"S"	0	0	----	0	0	TMS	0	0	0	TS	0	0.2
3	CEP7841	0	0	----	0	0	TMS	0	0	TR	0	0	0.2
23	BOW"S" CM33203-K-10M-7Y-3M-2Y-1M-0M	0	0	----	0	TMS	TMS	0	0	TMR	TMS	0	0.2
25	BB-OLL X CJ/F35.70 X KAL-BB CM34555-B-1M-4Y-1M-1Y-2M-0Y	0	0	----	0	0	TMS	0	0	TR	TMS	0	0.2
27	SNB"S" CM34630-D-5M-5Y-5M-1Y-1M-0Y	0	0	----	0	0	TMS	0	0	----	TS	0	0.2
31	CRDM"S" CM40457-5M-3Y-1M-2Y-0M-154M-0Y	0	0	----	0	0	TMS	0	0	0	TS	0	0.2
56	TTR"S"-JUN"S" CM59123-3M-1Y-1M-1Y-1M-0Y	0	0	----	0	0	TMS	0	0	0	0	2MS	0.3
78	MON"S" X SIS"S"-CAN"S" CM62142-3Y-3M-1Y-2M-3Y-1M-0Y	0	0	0	0	0	TMS	0	0	TMR	0	2MS	0.3
93	(4777(2) X FKN-08/VEE"S")BUC"S"-PVM" CM66684-B-1M-6Y-2M-2Y-0M	0	0	0	0	0	TMS	0	0	TM	0	TMS	0.3
118	THB"S" F11915-A-502M-1Y-3F-702Y-2F-0Y	0	0	0	0	0	TMS	0	0	0	TMS	TMR	0.3
119	PF72640-PF7326 X PF7063-ALD"S" F11933-D-500M-3Y-1F-704Y-3F-0Y	0	0	0	0	0	TMS	0	0	----	0	2MS	0.3
24	BOW"S" CM33203-K-10M-7Y-3M-2Y-1M-0Y	0	0	----	0	0	TMS	0	0	0	TMS	TMS	0.3
26	SNB"S" CM34630-D-5M-2Y-1M-1Y-1M-1Y-0M	0	0	----	0	0	TMS	0	0	0	TMS	TMS	0.3
57	TTR"S"-JUN"S" CM59123-3M-1Y-2M-2Y-1M-0Y	0	0	----	0	0	TMS	0	0	TR	TMS	2MS	0.4
94	(4777(2) X FKN-08/VEE"S")BUC"S"-PVM" CM66684-B-1M-6Y-1M-3Y-1M-0Y	0	0	0	0	0	TMS	0	0	TMS	TMS	TMS	0.4
21	BOW"S" CM33203-K-9M-15Y-1M-4Y-2M-0Y	0	0	0	0	0	TMS	5MR	0	5R	TS	0	0.5
43	CARB33-CDC X VEE"S" CM47556-EE-1M-1Y-5M-1Y-1Y-1M-0Y- OPTZ	0	0	----	0	0	TMS	5MR	0	TM	TMS	0	0.5
59	TTR"S"-JUN"S" CM59123-3M-1Y-3M-1Y-3M-0Y	0	0	----	0	0	TMS	0	0	TMS	TMS	2MS	0.5
89	BLO"S"-PSN"S" CM65076-5Y-1M-1Y-2M-0Y	0	10R	0	0	0	TMS	0	0	TMS	TMS	0	0.6
58	TTR"S"-JUN"S" CM59123-3M-1Y-3M-2Y-3M-0Y	0	0	----	0	0	5MS	0	0	----	TMS	2MS	0.6
64	F6.74-BUN"S" X SIS"S" CM60042-M-1Y-2M-2Y-1M-1Y-0M	0	0	0	0	TMS	5MS	0	0	TMS	TMS	TMS	0.7
144	KVZ77C SM4064-6Y-4M-3Y-1M-3Y-0Y-OPTZ	0	0	0	0	0	TMS	0	----	----	TMS	5MS	0.7
34	FINK"S" CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B- OPTZ	0	0	0	0	TMR	TMS	0	5MR	5M	TMS	2MS	0.8
61	TTR"S"-JUN"S" CM59123-4M-1Y-1M-5Y-3M-0Y	0	0	10MS	0	0	TMS	0	0	0	10MS	0	0.9
90	TAN"S"-BOW"S" CM65078-7M-1Y-3M-1Y-1M-0Y	0	0	0	TS	0	TMS	0	0	0	TMS	2MR	1.0
29	SARA B2 CM38088-Q-1Y-4M-1Y-3M-1Y-0M	0	20MR	----	0	TMS	TMS	1MR	0	0	TMS	0	1.1
105	ANB"S"-JUP CM68198-2Y-1M-2Y-3M-0Y	0	0	0	0	10S	TMS	0	0	TM	TS	TMS	1.3
98	(AU-UP301 X 5LL-5X/FEW"S")MAI"S"- MAYA"S" X FEW"S" CM67245-C-1M-3Y-1M-9Y-2M-0Y	0	0	0	0	10S	TMS	0	0	TM-MS	10MS	0	1.8
30	MAYA-NAC CM29424-1Y-1M-4Y-1M-1Y-1M-0Y	0	10R	----	0	0	TMS	0	0	0	20S-MS	0	2.1
115	P AR-H567 71 CM477A 260-2B-1Y-7B-1Y-1P7Z-0Y	0	0	20MS-S	0	0	TMS	0	0	----	0	----	2.1
130	D67.54-4A-9A/JO"S" X RD119-200-4Y	0	30MR	----	0	0	TMS	1MR	TMR	10MR	5MR	2MS	2.1
147	OLAF CI 15930	0	0	0	0	20S	TMS	0	0	0	TMS	TS	2.1
51	ALD"S"-MN72130 CM50361-8Y-3M-1Y-4Y-2M-0Y-OPTZ	0	0	----	5S	0	TMS	0	0	0	20MS	0	2.2
65	(BB-CNO67 X C112703/PHO"S")JUN"S" CM60170-G-2Y-1M-1Y-1M-1Y-1M-0Y	0	0	0	5S	10MS	TMS	0	0	5MS	10MS-MR	2MS	2.4
112	IAS20-H567 71 CM476.460-13Y-5B-1Y-1B-1Y-1B-0Y- 1P7Z-0Y	0	20MR	0	0	0	TMS	0	TS	0	0	20MS	2.4

Table 8. Top-performing entries: Stem rust

VTY NO	VARIETY OR CROSS AND PLOIDREE	LOCATIONS									MEAN
		1	5	14	21	28	34	35	36		
1	URES	0	0	0	0	0	0	0	TR	0.0	
11	KVZ-K4500L A. 4 SM0176-3M-1Y-10Y-1Y-2M-0Y-OPTZ-0Y	0	0	0	0	0	0	0	TR	0.0	
17	CHAT"S" CM33090-N-1M-1Y-0M-65Y-0B	0	0	0	0	0	0	0	TR	0.0	
18	BOW"S" CM33203-K-9M-9Y-4M-1Y-2M-0Y	0	0	0	0	0	0	0	TR	0.0	
24	BOW"S" CM33203-K-10M-7Y-3M-2Y-1M-0Y	0	0	0	0	0	0	0	TR	0.0	
81	NAC X H499. 71A-JUP/NAC-BUC"S" CM64014-B-2M-1Y-1M-1Y-2M-0Y	0	0	0	0	0	0	0	TR	0.0	
82	NAC-VEE"S" CM64224-5Y-1M-1Y-2M-0Y	0	0	0	0	0	0	0	TR	0.0	
139	BOW"S" CM33203-K-9M-2Y-2M-1Y-2M-1Y-2M-0Y-1PTZ-0Y	TR	0	0	0	0	0	0	TR	0.0	
143	KVZ-K4500L A. 4 SM0176-3M-1Y-10Y-1Y-1M-0Y-OPTZ	0	0	0	0	0	0	0	TR	0.0	
23	BOW"S" CM33203-K-10M-7Y-3M-2Y-1M-0M	0	0	0	TMS	0	0	0	---	0.1	
43	CAR853-CDC X VEE"S" CM47556-EE-1M-1Y-5M-1Y-1Y-1M-0Y-OPTZ	TR	0	0	0	0	TMR	0	5MR	0.3	
102	[(KVZ/TDB-CTFN X BB)BLO"S"]JALD"S" CM67980-7Y-3M-3Y-2M-0Y	TR	0	0	0	0	0	---	5MR	0.3	
131	RBC	0	0	0	0	0	10R	0	TR	0.3	
145	KVZ-UP301 CM20596-12Y-1M-1Y-0Y-3PTZ	0	0	0	0	0	10R	0	TR	0.3	
152	N. 163	----	0	0	0	0	0	0	5MR	0.3	
10	HPD"S" SM11285-2Y-3M-1Y-0M	TR	0	0	0	0	5M	0	TR	0.4	
95	DOVE"S"-BOW"S" CM67449-12Y-3M-2Y-1M-0Y	TR	0	0	5MS-MR	0	0	TS	TR	0.5	
144	KVZ/7C SM4064-6Y-4M-3Y-1M-3Y-0Y-OPTZ	0	0	0	0	0	10R	0	5MR	0.5	
155	MAPACHE	----	0	0	0	0	10MR	0	---	0.7	
15	VEE"S" CM33027-F-12M-1Y-4M-1Y-1M-0Y	0	0	0	0	0	10M	0	TR	0.8	
37	PF70354-ALD"S" CM47090-1Y-1F-4Y-1Y-1M-0Y	5MR	0	0	0	0	10MR	0	TR	0.8	
12	ANB"S" CM20707-A-1Y-8M-1Y-0Y-OPTZ	0	0	0	5S	0	0	0	5MR	0.9	
89	BLO"S"-PSN"S" CM65076-5Y-1M-1Y-2M-0Y	10R	0	0	0	0	TMS	0	10MR	0.9	
151	ETIT 3B	TR	0	0	0	0	5S	TS	5MR	1.0	
25	BB-GLL X CJ/F35. 70 X KAL-BB CM34555-B-1M-4Y-1M-1Y-2M-0Y	0	0	0	5MS	0	5M	0	5MR	1.1	
42	PF70354-HUS"S" CM47091-7M-1Y-3F-1Y-0Y	TR	0	0	5S	0	5MR	0	5MR	1.1	
105	ANB"S"-JUP CM68193-2Y-1M-2Y-3M-0Y	TR	0	0	5MS	0	TR	----	10MR	1.1	
55	TTR"S"-BOW"S" CM58857-2M-1Y-1M-2Y-0M	TR	0	0	10S	0	0	0	TR	1.2	

Table 8. (continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS									MEAN
		1	5	14	21	28	34	35	36		
19	BON"S" CM33203-K-9M-9Y-4M-4Y-1M-1Y-0M	0	0	0	10MS	0	0	0	5MR	1.3	
74	VEE"S"-SND"S" CM61781-4Y-1M-5Y-2M-0Y	0	0	0	0	0	5R	TS	10MS	1.3	
107	HER-TAN"S" X CMH77A, 89B, 2B-DOVE"B" CM68999-D-3Y-1M-2Y-3M-0Y	5R	0	0	0	0	0	----	10MS	1.3	
33	GOV-AZ X MUS"S" CM41257-I-8M-2Y-1M-3Y-0M	TR	0	0	10S	0	TM	0	TR	1.4	
59	TTR"S"-JUN"S" CM59123-3M-1Y-3M-1Y-3M-0Y	TR	0	0	10MS	0	0	TS	5MR	1.4	
93	(4777(2) X FKN-0B/VEE"S")BUC"S"-PVN" CM66684-B-1M-6Y-2M-2Y-0M	TR	0	0	5MR	0	0	TMS	10MS	1.4	
16	KLT"S" CM33089-W-3M-11Y-0M-OPTZ	TR	0	0	5MS	0	10M	0	5MR	1.5	
78	MON"S" X SIS"S"-CAN"S" CM62142-5Y-3M-1Y-2M-3Y-1M-0Y	0	0	0	TR-5B	0	10MS	0	5MR	1.6	
96	ULC-PVN"S" X TAN"S" CM67766-9Y-4M-3Y-2M-0Y	10MS	0	0	TMR-MS	0	5MR	0	5MR	1.6	
101	ULC-PVN"S" X TAN"S" CM67766-9Y-1M-1Y-2M-0Y	0	0	0	10MS	0	5R	----	5MR	1.6	
118	THB"S" F11915-A-302M-1Y-3F-702Y-2F-0Y	5R	0	0	0	0	10M	----	10MR	1.6	
106	VEE"S"-PEW"S" CM68367-4Y-1M-2Y-0M	0	0	0	0	0	10MR	----	10MS	1.7	
14	TAN"S" CM30697-2M-8Y-1M-1Y-1B-0Y	0	0	0	0	0	20M	0	5MR	1.8	
34	FINK"S" CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B-OPTZ	TR	0	0	10MS	0	5M	TS	5MR	1.8	
140	7CERROS (CHECK)	TR	0	0	10MS	0	20R	0	5MR	1.8	
61	TTR"S"-JUN"S" CM59123-4M-1Y-1M-5Y-3M-0Y	0	0	0	10MS	0	5MR	TS	10MR	1.9	
132	WLS	10MR	0	0	10S	0	10R	0	TR	2.0	

Table 9. Top-performing entries: Stripe rust on leaves

VITY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS										MEAN
		1	5	6	17	19	21	30	33	36		
34	FINK"S" CM41860-A-9M-2Y-3M-1Y-1M-1Y-0B- OPTZ	0	0	----	----	0	0	0	0	0	0.0	
72	MIRLO"S"-BUC"S" CM61949-12Y-6M-2Y-3M-3Y-1M-0Y	TR	0	----	----	0	0	0	0	0	0.0	
73	MIRLO"S"-BUC"S" CM61949-13Y-1M-1Y-1M-3Y-2M-0Y	TR	0	----	----	0	THR	0	0	0	0.0	
89	BLD"S"-PSN"S" CM65076-5Y-1M-1Y-2M-0Y	0	0	----	----	0	0	0	0	0	0.0	
94	(4777(2) X FKN-GB/VEE"S")BUC"S"-PVN" CM66684-B-1M-6Y-1M-3Y-1M-0Y	0	0	----	----	0	0	0	0	0	0.0	
98	(AU-UP301 X GLL-8X/PEW"S")MAI"S"- MAYA"S" X PEM"S" CM67245-C-1M-3Y-1M-9Y-2M-0Y	0	0	----	----	0	0	0	0	0	0.0	
101	ULC-PVN"S" X TAN"S" CM67766-9Y-1M-1Y-2M-0Y	0	0	----	----	0	0	0	0	0	0.0	
16	KLT"S" CM33089-W-3M-11Y-0M-0PTZ	SR	0	----	----	0	0	0	0	0	0.1	
35	CHT-YR X MON"S" CM43405-A-2Y-1M-1Y-1M-1Y-0B-8BM- 0Y-0PTZ	TMS	0	----	----	0	0	0	0	0	0.1	
36	MUS"S"-PTH X MAYA-ALD"S" CM44740-A-3Y-1M-1Y-2M-1Y-2M-0Y	TMS	0	----	----	0	0	0	0	0	0.1	
23	BOW"S" CM33203-K-10M-7Y-3M-2Y-1M-0M	10R	0	----	----	0	0	0	0	0	0.3	
95	DOVE"S"-BOW"S" CM67449-12Y-3M-2Y-1M-0Y	5MR	0	----	----	0	0	0	0	0	0.3	
24	BOW"S" CM33203-K-10M-7Y-3M-2Y-1M-0Y	5MS	0	----	----	0	0	0	0	0	0.6	
31	CROW"S" CM40457-3M-3Y-1M-2Y-0M-154M-0Y	10MR	0	----	----	0	0	0	0	TR	0.6	
33	GOV-AZ X MUS"S" CM41257-I-8M-2Y-1M-3Y-0M	5MS	0	----	----	0	0	0	0	0	0.6	
68	BOW"S"-NAC CM61755-13Y-1M-1Y-0M	5MS	0	----	----	0	0	0	0	0	0.6	
71	MIRLO"S"-BUC"S" CM61949-12Y-1M-1Y-1M-3Y-1M-0Y	SR	0	10MR	----	0	0	0	0	0	0.6	
47	ALD"S"-PVN"S" CM49901-14Y-2Y-1M-1Y-0M	TR	0	----	----	10MR	0	0	5MR	0	0.9	
103	ALTAR"S"-DOVE"S" CM68008-3Y-1M-5Y-2M-0Y	10MS-MR	0	----	----	0	0	0	0	0	0.9	
145	KVZ-UP301 CM20596-12Y-1M-1Y-0Y-3PTZ	10MR	0	10MR	----	0	0	0	0	0	1.0	
65	(BB-CND67 X CI12703/PHD"S")JUN"S" CM60170-G-2Y-1M-1Y-1M-1Y-1M-0Y	10MR	0	----	----	10MR	0	0	0	0	1.1	
107	HER-TAN"S" X CMH77A 898.2B-DOVE"S" CM68999-D-3Y-1M-2Y-3M-0Y	20MR	0	----	----	0	0	0	0	0	1.1	
48	4777(2) X FKN-GB/PVN"S" CM49912-40M-1Y-1Y-1M-0Y-0PTZ	0	0	----	----	0	0	0	10S	0	1.4	
49	CND"S"-SN64 X CND"S"-INIA"S"/PVN"S" CM49918-3M-3Y-1Y-1M-5Y-0M	0	0	----	----	5MR	0	0	10S	0	1.7	
136	MLN69	10R	0	----	10MR-MS	0	0	0	5MR	10MR	1.8	
52	BUC"S"-EMU"S" CM52324-2M-1Y-2Y-2M-4Y-0M	0	0	----	----	0	0	5MS	10S	0	2.0	

Table 10. Advanced lines selected for further investigation by cooperators at Cape Province-Eisenburg, South Africa.

VTY NO.	VARIETY OR CROSS AND PEDIGREE
1	URES
9	AU-UP301 SM485-500Y-0D-501Y-501B-501Y-501H-500Y
10	HPO"S" SM11285-2Y-3M-1Y-0M
15	VEE"S" CH33027-F-12M-1Y-4M-1Y-1M-0Y
16	KLT"S" CH33089-W-3M-11Y-0M-OPTZ
17	CHAT"S" CH33090-N-1M-1Y-0M-65Y-0B
18	BOW"S" CH33203-K-9M-9Y-4M-1Y-2M-0Y
19	BOW"S" CH33203-K-9M-9Y-4M-4Y-1M-1Y-0M
20	7CERROS (CHECK)
22	BOW"S" CH33203-K-9M-19Y-3M-3Y-0M
23	BOW"S" CH33203-K-10M-7Y-3M-2Y-1M-0M
26	SNB"S" CH34630-D-5M-2Y-1M-1Y-1M-1Y-0M
29	SARA 82 CH38088-0-1Y-4M-1Y-3M-1Y-0M
30	MAYA-NAC CH39424-1Y-1M-4Y-1M-1Y-1M-0Y
37	PF70354-ALD"S" CM47090-1Y-1F-4Y-1Y-1M-0Y
38	PF70354-ALD"S" CM47090-13M-1Y-1F-701Y-1F-704Y-6F-0Y
39	PF70354-ALD"S" CM47090-14M-1Y-1F-703Y-10F-705Y-2F-0Y
40	IAS20 (CHECK)
50	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-2M-1Y-0M
54	CNR"S" CM58446-A-1Y-3Y-3M-1Y-0M
66	QJD"S"-TRM X BDA-HUAC"S" CM60767-C-1Y-1M-1Y-2M-0Y
67	BOW"S"-NAC CM61755-10Y-3M-1Y-3M-1Y-1M-0Y
72	MIRLO"S"-BUC"S" CM61949-12Y-6M-2Y-3M-5Y-1M-0Y
73	MIRLO"S"-BUC"S" CM61949-15Y-1M-1Y-1M-3Y-2M-0Y
85	TAN"S"-SNB"S" CM64639-1M-1Y-2M-1Y-1M-0Y
94	(4777(2) X FKN-GB/VEE"S")BUC"S"-PVN" CM66684-B-1M-6Y-1M-3Y-1M-0Y
95	DOVE"S"-BOW"S" CM67449-12Y-3M-2Y-1M-0Y
108	CDC-HORK"S" X PHO"S"/NFN-YKW X FURY-MO CM69134-C-3Y-1M-2Y-2M-0Y

Table 11. Advanced lines selected for further investigation by cooperators at Tanzania.

VTY NO.	VARIETY OR CROSS AND PEDIGREE
20	7CERROS (CHECK)
25	BB-QLL X CJ/F35.70 X KAL-BB CM34555-B-1M-4Y-1M-1Y-2M-0Y
28	[JUP (7C-PAT0(S)/LR64-INIA66-BB X INI 66-BB)JANA CM37760-C-21Y-2M-1Y-3M-0Y
38	PF70354-ALD"S" CM47090-13M-1Y-1F-701Y-1F-704Y-6F-0Y
42	PF70354-HUS"S" CM47091-7M-1Y-3F-1Y-0Y
45	BUC"S"-BJV"S" CM49641-9Y-1M-1Y-1Y-0M
56	TTR"S"-JUN"S" CM59123-3M-1Y-1M-1Y-1M-0Y
73	MIRLO"S"-BUC"S" CM61949-15Y-1M-1Y-1M-3Y-2M-0Y
75	BOW"S" X YD"S"-ZZ"S" CM62045-8Y-1M-1Y-4M-4Y-2M-0Y
106	VEE"S"-PEW"S" CM68367-4Y-1M-2Y-0M

Table 12. Advanced lines selected for further investigation by cooperators at Mbeya-Uyole, Tanzania.

VTY NO.	VARIETY OR CROSS AND PEDIGREE	VTY NO.	VARIETY OR CROSS AND PEDIGREE
9	AJ-UP301 SM4483-300Y-0D-301Y-301B-301Y-301M-300Y	73	MIRLO"S"-BUC"S" CM61949-13Y-1M-1Y-1M-3Y-2M-0Y
15	VEE"S" CM33027-F-12M-1Y-4M-1Y-1M-0Y	74	VEE"S"-SNB"S" CM61981-4Y-1M-5Y-2M-0Y
16	KLT"S" CM33089-M-3M-11Y-0M-OPTZ	75	BOM"S" X YD"S"-ZZ"S" CM62049-8Y-1M-1Y-4M-4Y-2M-0Y
19	BOM"S" CM33203-K-9M-9Y-4M-4Y-1M-1Y-0M	76	MN72360-SNB"S" CM62067-5Y-4M-1Y-1M-1Y-1M-0Y
21	BOM"S" CM33203-K-9M-15Y-1M-4Y-2M-0Y	77	MON"S" X SIS"S"-CAN"S" CM62142-3Y-2M-1Y-1M-3Y-1M-0Y
22	BOM"S" CM33203-K-9M-19Y-3M-3Y-0M	78	MON"S" X SIS"S"-CAN"S" CM62142-5Y-3M-1Y-2M-3Y-1M-0Y
23	BOM"S" CM33203-K-10M-7Y-3M-2Y-1M-0M	79	SIS"S"-CAN"S" X ALD"S" CM62319-3Y-1M-1Y-1M-2Y-1M-0Y
24	BOM"S" CM33203-K-10M-7Y-3M-2Y-1M-0Y	89	BLO"S"-PEM"S" CM63076-3Y-1M-1Y-2M-0Y
26	SNB"S" CM34630-D-5M-2Y-1M-1Y-1M-1Y-0M	90	TAN"S"-BOM"S" CM63078-7M-1Y-3M-1Y-1M-0Y
27	SNB"S" CM34630-D-5M-3Y-5M-1Y-1M-0Y	91	MJI-VEE"S" X PVN"S" CM63843-F-1M-2Y-2M-1Y-1M-0Y
34	FINK"S" CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B-OPTZ	97	PF70354-BOM"S" CM67910-17Y-1M-4Y-1M-0Y
35	CHT-YR X MON"S" CM43403-A-2Y-1M-1Y-1M-1Y-0B-88M-0Y-OPTZ	98	(AJ-UP301 X OLL-SX/PEM"S")MAI"S"- MAYA"S" X PEM"S" CM67843-C-1M-3Y-1M-9Y-2M-0Y
45	BUC"S"-BJY"S" CM49641-9Y-1M-1Y-1Y-0M	101	ULC-PVN"S" X TAN"S" CM67764-9Y-1M-1Y-2M-0Y
46	PVN"S"-SIS"S" CM49894-18Y-1Y-1M-1Y-1M-3Y-0M	102	((KVZ/TDS-CTFN X 9B)BLO"S")JALD"S" CM67980-7Y-3M-3Y-2M-0Y
47	ALD"S"-PVN"S" CM49901-14Y-2Y-1M-1Y-0M	106	VEE"S"-PEM"S" CM68367-4Y-1M-2Y-0M
48	4777(2) X FKN-0B/PVN"S" CM49912-40M-1Y-1Y-1M-0Y-OPTZ	108	CDC-MORR"S" X PHO"S"/NPN-YKM X FURY- MO CM69134-C-3Y-1M-2Y-2M-0Y
49	CNO"S"-SN64 X CNO"S"-INIA"S"/PVN"S" CM49918-3M-3Y-1Y-1M-5Y-0M	110	YACO"S"-PHO"S"/CAL-CHUM X VEE"S" CM69128-B-1Y-1M-2Y-2M-0Y
50	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-2M-1Y-0M	122	KVZ-CBN BE1064-9B-1B-6B-0B-7KE-0KE
57	TTR"S"-JUN"S" CM59123-3M-1Y-2M-2Y-1M-0Y	127	NCL
58	TTR"S"-JUN"S" CM59123-3M-1Y-3M-2Y-3M-0Y	131	RBC
59	TTR"S"-JUN"S" CM59123-3M-1Y-3M-1Y-3M-0Y	138	BET LEHEM VOLCANI 393-676
63	PVN"S"(BB-CNO"S" X JAR/ORZ"S")(TL(LA FR-KAD85 X 9B)(2)) CM59642-0Y-0M-0Y-1M-2Y-1M-0Y	143	KVZ-UP301 CM20596-12Y-1M-1Y-0Y-3PTZ
65	(BB-CNO67 X CI12703/PHO"S")JUN"S" CM60170-0-2Y-1M-1Y-1M-1Y-1M-0Y	146	LAKHISH
67	BOM"S"-NAC CM61755-10Y-3M-1Y-3M-1Y-1M-0Y	152	N. 163
69	BOM"S"-PVN CM61830-8Y-1M-2Y-2M-1Y-1M-0Y		
70	BOM"S"-PVN CM61830-8Y-1M-2Y-2M-1Y-3M-0Y		

Table 13. Advanced lines selected for further investigation by cooperators at Northern-Katito, Zambia.

VTY NO.	VARIETY OR CROSS AND PEDIGREE
4	PF71131
6	PEL73151
29	SARA 82 CM38088-0-1Y-4M-1Y-3M-1Y-0M
37	PF70354-ALD"S" CM47090-1Y-1F-4Y-1Y-1M-0Y
64	F6 74-BUN"S" X SIS"S" CM60042-M-1Y-2M-2Y-1M-1Y-0M
73	MIRLO"S"-BUC"S" CM61949-15Y-1M-1Y-1M-3Y-2M-0Y
97	PF70354-BOM"S" CM67910-17Y-1M-4Y-1M-0Y
117	THB"S" F11915-A-502M-1Y-1F-702Y-3F-0Y
118	THB"S" F11915-A-502M-1Y-3F-702Y-2F-0Y
119	PF72440-PF7326 X PF7065-ALD"S" F11933-D-500M-3Y-1F-704Y-3F-0Y
142	IAS 20-IASSUAL
149	TOROP1

Table 14. Advances lines selected for further investigation by cooperators at Jessore, Bangladesh.

VTY NO.	VARIETY OR CROSS AND PEDIGREE
32	TRT"S" CM40610-22Y-3M-2Y-1M-1Y-2M-0Y
62	K6582-TOB X PEW"S" CM59608-1Y-1M-1Y-1M-2Y-1M-0Y
68	BOM"S"-NAC CM61755-13Y-1M-1Y-0M
69	BOM"S"-PVN CM61830-8Y-1M-2Y-2M-1Y-1M-0Y
72	MIRLO"S"-BUC"S" CM61949-12Y-6M-2Y-3M-3Y-1M-0Y
75	BOM"S" X VD"S"-ZZ"S" CM62045-8Y-1M-1Y-4M-4Y-2M-0Y
77	MON"S" X SIS"S"-CAN"S" CM62142-3Y-2M-1Y-1M-3Y-1M-0Y
81	NAC X H499.71A-JUP/NAC-BUC"S" CM64014-B-2M-1Y-1M-1Y-2M-0Y
82	NAC-VEE"S" CM64224-3Y-1M-1Y-2M-0Y
83	R37-QHL121 X KAL-BB/JUP-MUS"S" CM64611-4M-1Y-1M-3Y-2M-0Y
84	KEA"S"(KAL-BB X CJ"S"/ALD"S") CM64617-9M-1Y-1M-1Y-1M-0Y
93	(4777(2) X FKN-08/VEE"S")BUC"S"-PVN" CM66684-B-1M-6Y-2M-2Y-0M
95	DOVE"S"-BOM"S" CM67449-12Y-3M-2Y-1M-0Y
97	PF70354-BOM"S" CM67910-17Y-1M-4Y-1M-0Y
98	(AU-UP301 X QLL-SX/PEW"S")MAI"S"- MAYA"S" X PEW"S" CM67245-C-1M-3Y-1M-9Y-2M-0Y
104	BOM"S"-TAN"S" CM68159-4Y-2M-3Y-1M-0Y
123	(BTY/6754. II. 1. T-K-(2) X BZA)6754. II 1 K6867

Table 15. Advanced lines selected for further investigation by cooperators at Laguna, Philippines.

VTY NO.	VARIETY OR CROSS AND PEDIGREE
25	BB-QLL X CJ/F35.70 X KAL-BB CM34355-B-1M-4Y-1M-1Y-2M-0Y
48	4777(2) X FKN-08/PVN"S" CM49912-40M-1Y-1Y-1M-0Y-0PTZ
52	BUC"S"-EMU"S" CM52324-2M-1Y-2Y-2M-4Y-0M
68	BOM"S"-NAC CM61755-13Y-1M-1Y-0M
73	MIRLO"S"-BUC"S" CM61949-15Y-1M-1Y-1M-3Y-2M-0Y
74	VEE"S"-SNB"S" CM61981-4Y-1M-3Y-2M-0Y
97	PF70354-BOM"S" CM67910-17Y-1M-4Y-1M-0Y
116	P. AR(2)-H567.71 CMH7B.421-3Y-3B-1Y-1B-0Y-1PTZ-0Y

Table 16. Advanced lines selected for further investigation by cooperators at Nakhon Ratchasima, Thailand.

VTY NO	VARIETY OR CROSS AND PEDIGREE	VTY NO	VARIETY OR CROSS AND PEDIGREE
2	THB"S"	71	MIRLO"S"-BUC"S" CM61949-12Y-1M-1Y-1M-3Y-1M-0Y
4	PF71131	72	MIRLO"S"-BUC"S" CM61949-12Y-6M-2Y-3M-5Y-1M-0Y
12	ANB"S" CM20707-A-1Y-8M-1Y-0Y-OPTZ	73	MIRLO"S"-BUC"S" CM61949-15Y-1M-1Y-1M-3Y-2M-0Y
13	NPR-FLR X CTD-KZM M12 CM26978-2M-300Y-0S	77	MON"S" X SIS"S"-CAN"S" CM62142-5Y-2M-1Y-1M-3Y-1M-0Y
18	BOW"S" CM33203-K-9M-9Y-4M-1Y-2M-0Y	78	MON"S" X SIS"S"-CAN"S" CM62142-5Y-3M-1Y-2M-3Y-1M-0Y
19	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-1Y-0M	79	SIS"S"-CAN"S" X ALD"S" CM62319-3Y-1M-1Y-1M-2Y-1M-0Y
20	7CERROS (CHECK)	80	IAS20 (CHECK)
29	SARA 82 CM38088-C-1Y-4M-1Y-3M-1Y-0M	81	NAC X H499, 71A-JUP/NAC-BUC"S" CM64014-B-2M-1Y-1M-1Y-2M-0Y
35	CMT-YR X MON"S" CM43405-A-2Y-1M-1Y-1M-1Y-0B-88M-0Y-OPTZ	82	NAC-VEE"S" CM64224-5Y-1M-1Y-2M-0Y
37	PF70354-ALD"S" CM47090-1Y-1F-4Y-1Y-1M-0Y	83	R37-OHL121 X KAL-BB/JUP-MUS"S" CM64611-4M-1Y-1M-3Y-2M-0Y
38	PF70354-ALD"S" CM47090-13M-1Y-1F-701Y-1F-704Y-6F-0Y	84	KEA"S" (KAL-BB X CJ"S"/ALD"S") CM64617-9M-1Y-1M-1Y-1M-0Y
39	PF70354-ALD"S" CM47090-14M-1Y-1F-703Y-10F-705Y-2F-0Y	88	PF70354-VEE"S" CM65063-3Y-0Z-0Y
40	IAS20 (CHECK)	93	(4777(2) X FKN-0B/VEE"S")BUC"S"-PVN" CM66684-B-1M-6Y-2M-2Y-0M
41	PF70354-MUS"S" CM47091-7M-1Y-1F-1Y-0Y	97	PF70354-BOW"S" CM67910-17Y-1M-4Y-1M-0Y
42	PF70354-MUS"S" CM47091-7M-1Y-3F-1Y-0Y	104	BOW"S"-TAN"S" CM68159-4Y-2M-3Y-1M-0Y
44	AZ X CHR-DD, 05P/F12, 71-BLD"S" CM48326-A-3M-1Y-1M-2Y-1Y-0M	109	COC-HDRK"S" X PHO"S"/NFN-YKM X FURY-MO CM69134-C-3Y-2M-1Y-1M-0Y
46	PVN"S"-SIS"S" CM49894-18Y-1Y-1M-1Y-1M-3Y-0M	110	YACD"S"-PHO"S"/CAL-CHKW X VEE"S" CM69135-B-1Y-1M-3Y-2M-0Y
53	BUC"S"-CHRC"S" CM52421-6M-2Y-2Y-1M-0Y	112	IAS20-H567, 71 CMH76, 480-13Y-5B-1Y-1B-1Y-1B-0Y-1PTZ-0Y
59	TTR"S"-JUN"S" CM59123-3M-1Y-3M-1Y-3M-0Y	113	IAS20-H567, 71 CMH76, 480-13Y-5B-1Y-1B-1Y-1B-0Y-2PTZ-0Y
60	7CERROS (CHECK)	117	THB"S" F11915-A-502M-1Y-1F-702Y-3F-0Y
62	K6582-TDB X PEW"S" CM59608-1Y-1M-1Y-1M-2Y-1M-0Y	119	PF72640-PF7326 X PF7065-ALD"S" F11933-D-500M-3Y-1F-704Y-3F-0Y
69	BOW"S"-PVN CM61830-8Y-1M-2Y-2M-1Y-1M-0Y	120	IAS20 (CHECK)
70	BOW"S"-PVN CM61830-8Y-1M-2Y-2M-1Y-3M-0Y		

Table 17. Advanced lines selected for further investigation by cooperators at Thessaloniki, Greece.

VTY NO.	VARIETY OR CROSS AND PEDIGREE
18	BOM ⁸ CM33203-K-9H-9V-4H-1V-2H-0Y
23	BOM ⁸ CM33203-K-10H-7V-3H-2V-1H-0H
24	BOM ⁸ CM33203-K-10H-7V-3H-2V-1H-0Y
26	BOM ⁸ CM34630-D-5H-2V-1H-1V-1H-1V-0H
32	TRT ⁸ CM40610-22V-3H-2V-1H-1V-2H-0Y
34	FINK ⁸ CM41860-A-5H-2V-3H-1V-1H-1V-08-0PTZ
38	CHT-YR X MON ⁸ CM43405-A-2V-1H-1V-1H-1V-08-88H-0Y-0PTZ
39	PF70354-ALD ⁸ CM47090-14H-1V-1F-703V-10F-705V-2F-0Y
42	PF70354-MUS ⁸ CM47091-7H-1V-3F-1V-0Y
44	GJD ⁸ -TRH X BDA-HJAC ⁸ CM60767-C-1V-1H-1V-2H-0Y
48	BOM ⁸ -NAC CM61755-13V-1H-1V-0H
90	TAN ⁸ -BOM ⁸ CM65078-7H-1V-3H-1V-1H-0Y
107	HER-TAN ⁸ X CM477A, 898, 28-DOVE ⁸ CM68999-D-3V-1H-2V-3H-0Y
122	KVZ-COM SE1066-78-18-68-08-7KE-0KE
139	BOM ⁸ CM33203-K-9H-2V-2H-1V-2H-1V-2H-0Y-1PTZ-0Y
154	BEAGLE

Table 18. Advanced lines selected for further investigation by cooperators at Warsaw, Poland.

VTY NO.	VARIETY OR CROSS AND PEDIGREE	VTY NO.	VARIETY OR CROSS AND PEDIGREE
1	URES	63	PVN"S" (BB-CND"S" X JAR/ORZ"S") (TLILA FR-KAD85 X GB) (2)) CM59642-0Y-0M-0Y-1M-2Y-1M-0Y
2	THB"S"	64	F6 74-BUN"S" X SIS"S" CM60042-M-1Y-2M-2Y-1M-1Y-0M
4	PF71131	65	(BB-CND67 X CI12703/PHO"S") JUN"S" CM60170-G-2Y-1M-1Y-1M-1Y-1M-0Y
6	PEL73151	66	GJO"S"-TRM X BDA-HUAC"S" CM60767-C-1Y-1M-1Y-2M-0Y
7	MASCARENHAS	67	BOM"S"-NAC CM61755-10Y-3M-1Y-3M-1Y-1M-0Y
19	BOM"S" CM33203-K-9M-9Y-4M-4Y-1M-1Y-0M	68	BOM"S"-NAC CM61755-13Y-1M-1Y-0M
21	BOM"S" CM33203-K-9M-15Y-1M-4Y-2M-0Y	69	BOM"S"-PVN CM61830-BY-1M-2Y-2M-1Y-1M-0Y
24	BOM"S" CM33203-K-10M-7Y-3M-2Y-1M-0Y	74	VEE"S"-SNB"S" CM61981-4Y-1M-5Y-2M-0Y
25	BB-GLL X CJ/F35.70 X KAL-BB CM34555-B-1M-4Y-1M-1Y-2M-0Y	75	BOM"S" X YD"S"-ZZ"S" CM62045-BY-1M-1Y-4M-4Y-2M-0Y
26	SNB"S" CM34630-D-5M-2Y-1M-1Y-1M-1Y-0M	76	MN72360-SNB"S" CM62067-5Y-4M-1Y-1M-1Y-1M-0Y
29	SARA B2 CM38088-Q-1Y-4M-1Y-3M-1Y-0M	79	SIS"S"-CAN"B" X ALD"S" CM62319-3Y-1M-1Y-1M-2Y-1M-0Y
30	MAYA-NAC CM39424-1Y-1M-4Y-1M-1Y-1M-0Y	80	IAS20 (CHECK)
31	CROW"S" CM40457-5M-3Y-1M-2Y-0M-154M-0Y	81	NAC X H499.71A-JUP/NAC-BUC"S" CM64014-B-2M-1Y-1M-1Y-2M-0Y
32	TRT"S" CM40610-22Y-3M-2Y-1M-1Y-2M-0Y	82	NAC-VEE"S" CM64224-5Y-1M-1Y-2M-0Y
35	CMT-YR X MON"S" CM43409-A-2Y-1M-1Y-1M-1Y-08-88M-0Y-OPTZ	83	R37-DHL121 X KAL-BB/JUP-MUS"S" CM64611-4M-1Y-1M-3Y-2M-0Y
36	MUS"S"-PTH X MAYA-ALD"S" CM44740-A-3Y-1M-1Y-2M-1Y-2M-0Y	84	KEA"S" (KAL-BB X CJ"S"/ALD"S") CM64617-9M-1Y-1M-1Y-1M-0Y
37	PF70354-ALD"S" CM47090-1Y-1F-4Y-1Y-1M-0Y	87	TI-TOB X ALD"S"/7C-ALD"S" CM64850-1Y-1M-1Y-0M
38	PF70354-ALD"S" CM47090-13M-1Y-1F-701Y-1F-704Y-6F-0Y	88	PF70354-VEE"S" CM65063-3Y-0Z-0Y
39	PF70354-ALD"S" CM47090-14M-1Y-1F-703Y-10F-705Y-2F-0Y	90	TAN"S"-BOM"S" CM65078-7M-1Y-3M-1Y-1M-0Y
40	IAS20 (CHECK)	91	HJI-VEE"S" X PVN"S" CM65845-F-1M-2Y-2M-1Y-1M-0Y
45	BUC"S"-BJY"S" CM49641-9Y-1M-1Y-1Y-0M	92	HJI-VEE"S" X PVN"S" CM65845-F-1M-2Y-2M-2Y-0M
49	CND"S"-SN64 X CND"S"-INIA"S"/PVN"S" CM49918-3M-3Y-1Y-1M-5Y-0M	93	(4777(2) X FKN-GB/VEE"S") BUC"S"-PVN" CM66684-B-1M-6Y-2M-2Y-0M
50	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-2M-1Y-0M	94	(4777(2) X FKN-GB/VEE"S") BUC"S"-PVN" CM66684-B-1M-6Y-1M-3Y-1M-0Y
52	BUC"S"-EMU"S" CM52324-2M-1Y-2Y-2M-4Y-0M	96	ULC-PVN"S" X TAN"S" CM67766-9Y-4M-3Y-2M-0Y
54	CNR"S" CM58446-A-1Y-3Y-3M-1Y-0M	97	PF70354-BOM"S" CM67910-17Y-1M-4Y-1M-0Y
58	TTR"S"-JUN"S" CM59123-3M-1Y-3M-2Y-3M-0Y	98	(AU-UP301 X GLL-SX/PEW"S") MAI"S"-MAYA"S" X PEW"S" CM67245-C-1M-3Y-1M-9Y-2M-0Y
60	7CERROS (CHECK)	99	KEA"S"-BUC"S" CM67354-11Y-1M-1Y-0M
61	TTR"S"-JUN"S" CM59123-4M-1Y-1M-5Y-3M-0Y	100	7CERROS (CHECK)

Table 18. (continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	VTY NO.	VARIETY OR CROSS AND PEDIGREE
101	ULC-PVN"S" X TAN"S" CM67766-9Y-1M-1Y-2M-0Y	121	<[(HY54/N10-Y50 X K.LINE)CDJCJ"S"}PA 49 B13981-H-1Z-1Z-1A-1A-0A-1PTZ-0Y
102	[(KVZ/TOB-CTFN X BB)BLD"S"JALD"S" CM67980-7Y-3M-3Y-2M-0Y	126	CNDO
104	BOW"S"-TAN"S" CM68159-4Y-2M-3Y-1M-0Y	130	D67 54-4A-9A/JD"S" X RD119-200-4Y
108	CDC-HORK"S" X PHO"S"/NFN-YKN X FURY- MO CM69134-C-3Y-1M-2Y-2M-0Y	131	RBC
109	CDC-HORK"S" X PHO"S"/NFN-YKN X FURY- MO CM69134-C-3Y-2M-1Y-1M-0Y	132	MLS
114	IAS20(3)-H567. 71 CMH77. 203-1Y-1B-7Y-1B-1Y-1B-0Y- OPTZ	139	BOW"S" CM33203-K-9M-2Y-2M-1Y-2M-1Y-2M- 0Y-1PTZ-0Y
115	P. AR-H567. 71 CMH77A. 260-2B-1Y-7B-1Y-1PTZ-0Y	141	COLOTANA CI13536
116	P. AR(2)-H567. 71 CMH78. 421-3Y-3B-1Y-1B-0Y-1PTZ-0Y	142	IAS 20-IASSUL
117	THB"S" F11915-A-502M-1Y-1F-702Y-5F-0Y	143	KVZ-K4500L. A. 4. SMD176-3M-1Y-10Y-1Y-1M-0Y-OPTZ
118	THB"S" F11915-A-502M-1Y-3F-702Y-2F-0Y	144	KVZ/7C SMM4064-6Y-4M-3Y-1M-3Y-0Y-OPTZ
119	PF72640-PF7326 X PF7065-ALD"S" F11933-D-500M-3Y-1F-704Y-3F-0Y	147	DLAF CI 15930
120	IAS20 (CHECK)	148	TITAN CI 12615
		149	TOROPI
		150	VERANOPOLIS=FN 35
		152	N 163
		153	ZENATI-BOUEILLE
		154	BEAGLE

Table 19. Advanced lines selected for further investigation by cooperators at Sevilla-Rinconada, Spain.

VTY NO.	VARIETY OR CROSS AND PEDIGREE
13	NPR-FLR X 0T0-KZH M12 CM26978-2M-300V-08
28	[JUP (7C-PATO(B)/LR64-INITA66-BB X INI 66-BB) JANA CM37760-C-21V-2M-1Y-3M-0Y
33	GOV-AZ X MUS"S" CM41257-I-8M-2Y-1M-3Y-0M
36	MUS"S"-PTH X MAYA-ALD"S" CM44740-A-3Y-1M-1Y-2M-1Y-2M-0Y
47	ALD"S"-PUN"S" CM49901-14Y-2Y-1M-1Y-0M
50	PAT10-ALD"S" X PAT72300/PUN"S" CM49922-1M-2Y-3Y-2M-1Y-0M
51	ALD"S"-HN72130 CM50361-8Y-3M-1Y-4Y-2M-0Y-OPTZ
82	NAC-VEE"S" CM64224-5Y-1M-1Y-2M-0Y
122	KVZ-CGN SE1066-9S-1S-6S-0S-7KE-OKE
134	LDS MUT-GTA"S" X OS"S"/LDS MUT-GTA"S X ROK"S" CD28220-0-1M-2Y-5Y-0M

Table 20. Advanced lines selected for further investigation by cooperators at Aleppo-Tel Hadya, Syria.

VTY NO.	VARIETY OR CROSS AND PEDIGREE
1	URES
5	CEP7841
10	HPO"S" SMH1285-2Y-3M-1Y-0M
15	VEE"S" CM33027-F-12M-1Y-4M-1Y-1M-0Y
17	CHAT"S" CM33090-N-1M-1Y-0M-65Y-08
25	BB-OLL X C.J/F35.70 X KAL-BB CM34555-B-1M-4Y-1M-1Y-2M-0Y
29	SARA 82 CM38088-0-1Y-4M-1Y-3M-1Y-0M
30	MAYA-NAC CM39424-1Y-1M-4Y-1M-1Y-1M-0Y
33	ODV-AZ X MUS"S" CM41257-I-8M-2Y-1M-3Y-0M
42	PF70354-MUS"S" CM47091-7M-1Y-3F-1Y-0Y
43	CAR853-COC X VEE"S" CM47556-EE-1M-1Y-5M-1Y-1Y-1M-0Y- OPTZ
52	BUC"S"-ENU"S" CM52324-2M-1Y-2Y-2M-4Y-0M
64	F6.74-BUN"S" X SIS"S" CM60042-M-1Y-2M-2Y-1M-1Y-0M
77	MON"S" X SIS"S"-CAN"S" CM62142-3Y-2M-1Y-1M-3Y-1M-0Y
81	NAC X H499.71A-JUP/NAC-BUC"S" CM64014-B-2M-1Y-1M-1Y-2M-0Y
83	R37-0HL121 X KAL-BB/JUP-MUS"S" CM64611-4M-1Y-1M-3Y-2M-0Y
91	HJI-VEE"S" X PVN"S" CM65845-F-1M-2Y-2M-1Y-1M-0Y
93	(4777(2) X FKN-GB/VEE"S")BUC"S"-PVN" " " CM66684-B-1M-6Y-2M-2Y-0M
94	(4777(2) X FKN-GB/VEE"S")BUC"S"-PVN" " " CM66684-B-1M-6Y-1M-3Y-1M-0Y
99	KEA"S"-BUC"S" CM67354-11Y-1M-1Y-0M
107	HER-TAN"S" X CMH77A.898.28-DOVE"S" CM68999-D-3Y-1M-2Y-3M-0Y
109	COC-HORK"S" X PHO"S"/NFN-YKW X FURY- HD CM69134-C-3Y-2M-1Y-1M-0Y
117	THB"S" F11915-A-502M-1Y-1F-702Y-5F-0Y
119	PF72640-PF7326 X PF7065-ALD"S" F11933-D-500M-3Y-1F-704Y-3F-0Y
122	KVZ-CGN SE1066-9S-1S-6S-0S-7KE-OKE
141	COLOTANA CI13556
144	KVZ/7C SMH4064-6Y-4M-3Y-1M-3Y-0Y-OPTZ

Table 21. Advanced lines selected for further investigation by cooperators at Adana Cukurova, Turkey.

VTY NO.	VARIETY OR CROSS AND PEDIGREE	VTY NO.	VARIETY OR CROSS AND PEDIGREE
2	THB"S"	70	BOW"S"-PVN CM61830-8Y-1M-2Y-2M-1Y-3M-0Y
4	PF71131	73	MIRLO"S"-BUC"S" CM61949-15Y-1M-1Y-1M-3Y-2M-0Y
5	CEP7B41	76	MN72360-5NB"S" CM62067-5Y-4M-1Y-1M-1Y-1M-0Y
7	MASCARENHAS	78	MON"S" X SIS"S"-CAN"S" CM62142-5Y-3M-1Y-2M-3Y-1M-0Y
8	VACARIA	81	NAC X H499.71A-JUP/NAC-BUC"S" CM64014-B-2M-1Y-1M-1Y-2M-0Y
10	HPD"S" SM11285-2Y-3M-1Y-0M	82	NAC-VEE"S" CM64224-5Y-1M-1Y-2M-0Y
11	KVZ-K4500L. A. 4 SM0176-3M-1Y-10Y-1Y-2M-0Y-OPTZ-0Y	83	TAN"S"-SNB"S" CM64639-1M-1Y-2M-1Y-1M-0Y
15	VEE"S" CM33027-F-12M-1Y-4M-1Y-1M-0Y	92	MJI-VEE"S" X PVN"S" CM65845-F-1M-2Y-2M-2Y-0M
22	BOW"S" CM33203-K-9M-19Y-3M-3Y-0M	93	(4777(2) X FKN-GB/VEE"S")BUC"S"-PVN" CM66684-B-1M-6Y-2M-2Y-0M
24	BOW"S" CM33203-K-10M-7Y-3M-2Y-1M-0Y	94	(4777(2) X FKN-GB/VEE"S")BUC"S"-PVN" CM66684-B-1M-6Y-1M-3Y-1M-0Y
25	BB-QLL X CJ/F35.70 X KAL-BB CM34555-B-1M-4Y-1M-1Y-2M-0Y	99	KEA"S"-BUC"S" CM67354-11Y-1M-1Y-0M
28	[JUP(7C-PATD(B)/LR64-INIA66-BB X INI66-BB)JANA CM37760-C-21Y-2M-1Y-3M-0Y	111	(BH1146 X KAL-BB/CDC)SIS"S"-CAN"S" X ALD"S" CM69305-C-2Y-2M-1Y-1M-0Y
30	MAYA-NAC CM39424-1Y-1M-4Y-1M-1Y-1M-0Y	112	IAB20-H567.71 CM76.480-13Y-5B-1Y-1B-1Y-1B-0Y-1PTZ-0Y
34	FINK"S" CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B-0PTZ	113	IAB20-H567.71 CM76.480-13Y-5B-1Y-1B-1Y-1B-0Y-2PTZ-0Y
36	MUS"S"-PTH X MAYA-ALD"S" CM44740-A-3Y-1M-1Y-2M-1Y-2M-0Y	114	IAB20(3)-H567.71 CM77.205-1Y-1B-7Y-1B-1Y-1B-0Y-0PTZ
40	IAS20 (CHECK)	116	P. AR(2)-H567.71 CM78.421-3Y-3B-1Y-1B-0Y-1PTZ-0Y
42	PF70354-MUS"S" CM47091-7M-1Y-3F-1Y-0Y	120	IAB20 (CHECK)
46	PVN"S"-SIS"S" CM49894-18Y-1Y-1M-1Y-1M-3Y-0M	121	{{(MY54/N10-Y50 X K.LINE)CD1CJ"S"}PA49 B13981-H-1Z-1Z-1A-1A-0A-1PTZ-0Y
48	4777(2) X FKN-GB/PVN"S" CM49912-40M-1Y-1Y-1M-0Y-0PTZ	129	WIN"S"-AA"S" CD12454-3Y-11M-1Y-2Y-2M-1Y-0M
50	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-2M-1Y-0M	130	D67.54-4A-9A/JO"S" X RD119-200-4Y
51	ALD"S"-MN72130 CM50361-8Y-3M-1Y-4Y-2M-0Y-0PTZ	136	MLN69
64	F6.74-BUN"S" X SIS"S" CM60042-M-1Y-2M-2Y-1M-1Y-0M	143	KVZ-K4500L. A. 4. SM0176-3M-1Y-10Y-1Y-1M-0Y-0PTZ
65	(BB-CNO67 X CI12703/PHD"S")JUN"S" CM60170-G-2Y-1M-1Y-1M-1Y-1M-0Y		
68	BOW"S"-NAC CM61755-13Y-1M-1Y-0M		
69	BOW"S"-PVN CM61830-8Y-1M-2Y-2M-1Y-1M-0Y		

Table 22. Advanced lines selected for further investigation by cooperators at Buenos Aires-C. Klein, Argentina.

VTY NO.	VARIETY OR CROSS AND PEDIGREE	VTY NO.	VARIETY OR CROSS AND PEDIGREE
2	THB"S"	64	F6.74-BUN"S" X SIS"S" CM60042-M-1Y-2M-2Y-1M-1Y-0M
10	HPO"S" SM11285-2Y-3M-1Y-0M	65	(BB-CNO67 X CI12703/PHO"S")JUN"S" CM60170-G-2Y-1M-1Y-1M-1Y-1M-0Y
12	ANB"S" CM20707-A-1Y-8M-1Y-0Y-OPTZ	68	BOW"S"-NAC CM61755-13Y-1M-1Y-0M
18	BOW"S" CM33203-K-9M-9Y-4M-1Y-2M-0Y	70	BOW"S"-PVN CM61830-8Y-1M-2Y-2M-1Y-3M-0Y
21	BOW"S" CM33203-K-9M-15Y-1M-4Y-2M-0Y	73	MIRLO"S"-BUC"S" CM61949-15Y-1M-1Y-1M-3Y-2M-0Y
25	BB-GLL X CJ/F35.70 X KAL-BB CM34555-B-1M-4Y-1M-1Y-2M-0Y	76	MN72360-SNB"S" CM62067-5Y-4M-1Y-1M-1Y-1M-0Y
27	SNB"S" CM34630-D-5M-5Y-5M-1Y-1M-0Y	81	NAC X H499.71A-JUP/NAC-BUC"S" CM64014-B-2M-1Y-1M-1Y-2M-0Y
28	[JUP(7C-PATO(B)/LR64-INIA66-BB X INI 66-BB)JANA CM37760-C-21Y-2M-1Y-3M-0Y	82	NAC-VEE"S" CM64224-5Y-1M-1Y-2M-0Y
33	OOV-AZ X MUS"S" CM41257-I-8M-2Y-1M-3Y-0M	89	BLO"S"-PSN"S" CM65076-5Y-1M-1Y-2M-0Y
43	CAR853-CDC X VEE"S" CM47556-EE-1M-1Y-5M-1Y-1Y-1M-0Y- OPTZ	93	(4777(2) X FKN-GB/VEE"S")BUC"S"-PVN" " CM66684-B-1M-6Y-2M-2Y-0M
45	BUC"S"-BJY"S" CM49641-9Y-1M-1Y-1Y-0M	97	PF70354-BOW"S" CM67910-17Y-1M-4Y-1M-0Y
47	ALD"S"-PVN"S" CM49901-14Y-2Y-1M-1Y-0M	110	YACO"S"-PHO"S"/CAL-CHKW X VEE"S" CM69135-B-1Y-1M-3Y-2M-0Y
48	4777(2) X FKN-GB/PVN"S" CM49912-40M-1Y-1Y-1M-0Y-OPTZ	119	PF72640-PF7326 X PF7065-ALD"S" F11933-D-500M-3Y-1F-704Y-3F-0Y
49	CND"S"-SN64 X CND"S"-INIA"S"/PVN"S" CM49918-3M-3Y-1Y-1M-5Y-0M	126	CNDO
51	ALD"S"-MN72130 CM50361-8Y-3M-1Y-4Y-2M-0Y-OPTZ	130	D67.54-4A-9A/JO"S" X RD119-200-4Y
59	TTR"S"-JUN"S" CM59123-3M-1Y-3M-1Y-3M-0Y	136	MLN69
61	TTR"S"-JUN"S" CM59123-4M-1Y-1M-5Y-3M-0Y	143	KVZ-K4500L.A.4. SM0176-3M-1Y-10Y-1Y-1M-0Y-OPTZ
63	PVN"S"(BB-CNO"S" X JAR/ORZ"S")(TLILA FR-KAD85 X GB)(2)]] CM59642-0Y-0M-0Y-1M-2Y-1M-0Y	144	KVZ/7C SM14064-6Y-4M-3Y-1M-3Y-0Y-OPTZ
		154	BEAGLE
		155	MAPACHE

Table 23. Advanced lines selected for further investigation by cooperators at Buenos Aires-Pergamino, Argentina.

VTY NO.	VARIETY OR CROSS AND PEDIGREE
2	THB"S"
11	KVZ-K4500L 6. A. 4 SM0176-3M-1Y-10Y-1Y-2M-0Y-0PTZ-0Y
12	ANB"S" CM20707-A-1Y-8M-1Y-0Y-0PTZ
17	CHAT"S" CM33090-N-1M-1Y-0M-65Y-0B
28	[JUP(7C-PATO(B)/LR64-INIA66-BB X INI 66-BB)]JANA CM37760-C-21Y-2M-1Y-3M-0Y
29	SARA 82 CM38088-G-1Y-4M-1Y-3M-1Y-0M
34	FINK"S" CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B-0PTZ
35	CHT-YR X MON"S" CM43405-A-2Y-1M-1Y-1M-1Y-0B-88M-0Y-0PTZ
43	CAR853-CDC X VEE"S" CM47556-EE-1M-1Y-5M-1Y-1Y-1M-0Y-0PTZ
51	ALD"S"-MN72130 CM50361-8Y-3M-1Y-4Y-2M-0Y-0PTZ
56	TTR"S"-JUN"S" CM59123-3M-1Y-1M-1Y-1M-0Y
57	TTR"S"-JUN"S" CM59123-3M-1Y-2M-2Y-1M-0Y
58	TTR"S"-JUN"S" CM59123-3M-1Y-3M-2Y-3M-0Y
61	TTR"S"-JUN"S" CM59123-4M-1Y-1M-5Y-3M-0Y
64	F6. 74-BUN"S" X SIS"S" CM60042-M-1Y-2M-2Y-1M-1Y-0M
107	HER-TAN"S" X CMH77A. 898. 2B-DDVE"S" CM68999-D-3Y-1M-2Y-3M-0Y
108	CDC-HORK"S" X PHO"S"/NFN-YKW X FURY-MD CM69134-C-3Y-1M-2Y-2M-0Y
117	THB"S" F11915-A-502M-1Y-1F-702Y-5F-0Y
118	THB"S" F11915-A-502M-1Y-3F-702Y-2F-0Y
121	[(MY54/N10-Y50 X K. LINE)CDJCJ"S"]PA 49 B13981-H-1Z-1Z-1A-1A-0A-1PTZ-0Y

Table 24. Advanced lines selected for further investigation by cooperators at Chaco, Argentina:

VTY NO.	VARIETY OR CROSS AND PEDIGREE	VTY NO.	VARIETY OR CROSS AND PEDIGREE
9	AU-UP301 SM4485-500Y-0D-501Y-501B-501Y-501M-500Y	47	ALD"S"-PVN"S" CM49901-14Y-2Y-1M-1Y-0M
13	NPR-FLR X GTO-KZH M12 CM26978-2M-300Y-0S	49	CND"S"-SN64 X CND"S"-INIA"S"/PVN"S" CM49918-3M-3Y-1Y-1M-5Y-0M
14	TAN"S" CM30697-2M-8Y-1M-1Y-1B-0Y	50	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-2M-1Y-0M
25	BB-OLL X CJ/F35.70 X KAL-BB CM34555-B-1M-4Y-1M-1Y-2M-0Y	51	ALD"S"-MN72130 CM50361-8Y-3M-1Y-4Y-2M-0Y-OPTZ
26	SNB"S" CM34630-D-5M-2Y-1M-1Y-1M-1Y-0M	53	BUC"S"-CHRC"S" CM52421-6M-2Y-2Y-1M-0Y
27	SNB"S" CM34630-D-5M-5Y-5M-1Y-1M-0Y	56	TTR"S"-JUN"S" CM59123-3M-1Y-1M-1Y-1M-0Y
28	[JUP(7C-PATD(B)/LR64-INIA66-BB X INI 66-BB) JANA CM37760-C-21Y-2M-1Y-3M-0Y	58	TTR"S"-JUN"S" CM59123-3M-1Y-3M-2Y-3M-0Y
29	SARA 82 CM38088-C-1Y-4M-1Y-3M-1Y-0M	63	PVN"S"(BB-CND"S" X JAR/ORZ"S")(TLILA FR-YAD85 X CB)(2)J CM59642-0Y-0M-0Y-1M-2Y-1M-0Y
30	MAYA-NAC CM39424-1Y-1M-4Y-1M-1Y-1M-0Y	71	MIRLO"S"-BUC"S" CM61949-12Y-1M-1Y-1M-3Y-1M-0Y
31	CROW"S" CM40457-5M-3Y-1M-2Y-0M-154M-0Y	98	(AU-UP301 X CLL-SX/PEW"S")MAI"S"- MAYA"S" X PEW"S" CM67245-C-1M-3Y-1M-9Y-2M-0Y
32	TRT"S" CM40610-22Y-3M-2Y-1M-1Y-2M-0Y	106	VEE"B"-PEW"S" CM68367-4Y-1M-2Y-0M
33	ODV-AZ X MUS"S" CM41257-1-8M-2Y-1M-3Y-0M	112	IAS20-H567.71 CM476.480-13Y-5B-1Y-1B-1Y-1B-0Y- 1PTZ-0Y
35	CHT-YR X MON"S" CM43405-A-2Y-1M-1Y-1M-1Y-0B-88M- 0Y-OPTZ	116	P. AR(2)-H567.71 CM478.421-3Y-3B-1Y-1B-0Y-1PTZ-0Y
36	MUS"S"-PTM X MAYA-ALD"S" CM44740-A-3Y-1M-1Y-2M-1Y-2M-0Y	117	THB"S" F11915-A-502M-1Y-1F-702Y-5F-0Y
43	CAR853-CDC X VEE"S" CM47556-EE-1M-1Y-5M-1Y-1Y-1M-0Y- OPTZ	118	THB"S" F11915-A-502M-1Y-3F-702Y-2F-0Y
45	BUC"S"-BJY"S" CM49641-9Y-1M-1Y-1Y-0M	119	PF72640-PF7326 X PF7065-ALD"S" F11933-D-500M-3Y-1F-704Y-3F-0Y
46	PVN"S"-SIS"S" CM49894-18Y-1Y-1M-1Y-1M-3Y-0M	122	KVZ-CGN BE1066-9B-1S-6B-0S-7KE-0KE
		124	P68.1482-P-P-I 2.71-74T-1T-1T-2T-0M
		140	7CERROS (CHECK)

Table 25. Advanced lines selected for further investigation by cooperators at Cordoba, Argentina.

VTY NO.	VARIETY OR CROSS AND PEDIGREE	VTY NO.	VARIETY OR CROSS AND PEDIGREE
10	HPD"S" SM11285-2Y-3M-1Y-0M	64	F6.74-BUN"B" X SIS"S" CM60042-H-1Y-2M-2Y-1M-1Y-0M
25	BB-OLL X CJ/F35.70 X KAL-BB CM34555-B-1M-4Y-1M-1Y-2M-0Y	93	(4777(2) X FKN-CB/VEE"S")BUC"S"-PVN" CM66684-B-1M-6Y-2M-2Y-0M
27	SNB"S" CM34630-D-5M-5Y-5M-1Y-1M-0Y	94	(4777(2) X FKN-CB/VEE"S")BUC"S"-PVN" CM66684-B-1M-6Y-1M-3Y-1M-0Y
33	ODV-AZ X MUS"S" CM41257-1-8M-2Y-1M-3Y-0M	107	HER-TAN"S" X CM477A.898.2B-DOVE"S" CM68999-D-3Y-1M-2Y-3M-0Y
43	CAR853-CDC X VEE"S" CM47556-EE-1M-1Y-5M-1Y-1Y-1M-0Y- OPTZ	117	THB"S" F11915-A-502M-1Y-1F-702Y-5F-0Y
62	K6582-TOB X PEW"S" CM59608-1Y-1M-1Y-1M-2Y-1M-0Y	118	THB"S" F11915-A-502M-1Y-3F-702Y-2F-0Y

Table 26. Advanced lines selected for further investigation by cooperators at Parana-Palotina, Brazil.

VTY NO.	VARIETY OR CROSS AND PEDIGREE	VTY NO.	VARIETY OR CROSS AND PEDIGREE
1	URES	84	KEA"S"(KAL-BB X CJ"S"/ALD"S") CM64617-9M-1Y-1M-1Y-1M-0Y
9	AU-UP301 SM485-500Y-0D-501Y-501B-501Y- 501M-500Y	86	VEE"S" X 7C-ALD"S" CM64661-1Y-1M-2Y-1M-0Y
13	VEE"S" CM33027-F-12M-1Y-4M-1Y-1M-0Y	87	TI-T08 X ALD"S"/7C-ALD"S" CM64830-1Y-1M-1Y-0M
16	KLT"S" CM33089-W-3M-11Y-0M-OPTZ	88	PF70354-VEE"S" CM65063-3Y-0Z-0Y
17	CHAT"S" CM33090-N-1M-1Y-0M-65Y-0B	92	MJI-VEE"S" X PVN"S" CM65843-F-1M-2Y-2M-2Y-0M
18	BOW"S" CM33203-K-9M-9Y-4M-1Y-2M-0Y	93	(4777(2) X FKN-0B/VEE"S")BUC"S"-PVN" CM66684-B-1M-6Y-2M-2Y-0M
24	BOW"S" CM33203-K-10M-7Y-3M-2Y-1M-0Y	95	DOVE"S"-BOW"S" CM67449-12Y-3M-2Y-1M-0Y
25	BB-GLL X CJ/F35.70 X KAL-BB CM34555-B-1M-4Y-1M-1Y-2M-0Y	96	ULC-PVN"S" X TAN"S" CM67766-9Y-4M-3Y-2M-0Y
28	[JUP(7C-PATO(B)/LR64-INIA66-BB X INI 66-BB)JANA CM37760-C-21Y-2M-1Y-3M-0Y	97	PF70354-BOW"S" CM67910-17Y-1M-4Y-1M-0Y
35	CMT-YR X MON"S" CM43405-A-2Y-1M-1Y-1M-1Y-0B-88M- 0Y-OPTZ	99	KEA"S"-BUC"S" CM67354-11Y-1M-1Y-0M
43	CARB53-COC X VEE"S" CM47556-EE-1M-1Y-3M-1Y-1Y-1M-0Y- OPTZ	100	7CERROS (CHECK)
49	CNO"S"-SN64 X CNO"S"-INIA"S"/PVN"S" CM49918-3M-3Y-1Y-1M-5Y-0M	101	ULC-PVN"S" X TAN"S" CM67766-9Y-1M-1Y-2M-0Y
50	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-2M-1Y-0M	104	BOW"S"-TAN"S" CM68159-4Y-2M-3Y-1M-0Y
51	ALD"S"-MN72130 CM50361-8Y-3M-1Y-4Y-2M-0Y-OPTZ	106	VEE"S"-PEW"S" CM68367-4Y-1M-2Y-0M
54	CNR"S" CM58446-A-1Y-3Y-3M-1Y-0M	107	HER-TAN"S" X CMH77A.898.2B-DOVE"S" CM68999-D-3Y-1M-2Y-3M-0Y
55	TTR"S"-BOW"S" CM58857-2M-1Y-1M-2Y-0M	109	COC-HORK"S" X PHO"S"/NFN-YKW X FURY- MO CM69134-C-3Y-2M-1Y-1M-0Y
57	TTR"S"-JUN"S" CM59123-3M-1Y-2M-2Y-1M-0Y	112	IAS20-H567.71 CMH76.480-13Y-5B-1Y-1B-1Y-1B-0Y- 1PTZ-0Y
59	TTR"S"-JUN"S" CM59123-3M-1Y-3M-1Y-3M-0Y	120	IAS20 (CHECK)
60	7CERROS (CHECK)	145	KVZ-UP301 CM20396-12Y-1M-1Y-0Y-3PTZ
61	TTR"S"-JUN"S" CM59123-4M-1Y-1M-5Y-3M-0Y	156	LOCAL CHECK
62	K6582-T08 X PEW"S" CM59408-1Y-1M-1Y-1M-2Y-1M-0Y		
63	PVN"S"(BB-CND"S" X JAR/ORZ"S")<TLILA FR-KAD85 X GB(2)) CM59642-0Y-0M-0Y-1M-2Y-1M-0Y		
64	F6.74-BUN"S" X SIS"S" CM60042-M-1Y-2M-2Y-1M-1Y-0M		
65	(BB-CND67 X CI12703/PHO"S")JUN"S" CM60170-G-2Y-1M-1Y-1M-1Y-1M-0Y		
76	MN72360-SNB"S" CM62067-5Y-4M-1Y-1M-1Y-1M-0Y		
80	IAS20 (CHECK)		

Table 27. Advanced lines selected for further investigation by cooperators at Parana-Ponta Grossa, Brazil.

VTY NO.	VARIETY OR CROSS AND PEDIGREE
11	KVZ-K4500L. A. 4 BMD176-3M-1Y-10Y-1Y-2M-0Y-OPTZ-0Y
19	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-1Y-0M
33	GOV-AZ X MUS"S" CM41297-I-8M-2Y-1M-3Y-0M
34	FINK"S" CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B-OPTZ
37	PF70354-ALD"S" CM47090-1Y-1F-4Y-1Y-1M-0Y
41	PF70354-MUS"S" CM47091-7M-1Y-1F-1Y-0Y
42	PF70354-MUS"S" CM47091-7M-1Y-3F-1Y-0Y
62	K6582-TDB X PEN"S" CM39608-1Y-1M-1Y-1M-2Y-1M-0Y
80	IAS20 (CHECK)
88	PF70354-VEE"S" CM65063-3Y-0Z-0Y
95	DOVE"S"-BOW"S" CM67449-12Y-3M-2Y-1M-0Y
97	PF70354-BOW"S" CM67910-17Y-1M-4Y-1M-0Y
117	THB"S" F11915-A-502M-1Y-1F-702Y-5F-0Y
143	KVZ-K4500L. A. 4 BMD176-3M-1Y-10Y-1Y-1M-0Y-OPTZ

Table 28. Advanced lines selected for further investigation by cooperators at Rio Grande Do Sul-Cruz Alta, Brazil.

VTY NO.	VARIETY OR CROSS AND PEDIGREE
3	NS879. 4
5	CEP7B41
76	HN72360-SNB"S" CM62067-5Y-4M-1Y-1M-1Y-1M-0Y
85	TAN"S"-SNB"S" CM64639-1M-1Y-2M-1Y-1M-0Y
112	IAS20-H567. 71 CM476. 480-13Y-5B-1Y-1B-1Y-1B-0Y-1PTZ-0Y
113	IAS20-H567. 71 CM476. 480-13Y-5B-1Y-1B-1Y-1B-0Y-2PTZ-0Y

Table 29. Advanced lines selected for further investigation by cooperators at Hidango, Chile.

VTY NO.	VARIETY OR CROSS AND PEDIGREE
12	ANB"S" CM20707-A-1Y-8M-1Y-0Y-OPTZ
15	VEE"S" CM33027-F-12M-1Y-4M-1Y-1M-0Y
16	KLT"S" CM33089-W-3M-11Y-0M-OPTZ
23	BOW"S" CM33203-K-10M-7Y-3M-2Y-1M-0M
28	[JUP (7C-PATO(B)/LR64-INIA66-BB X INI 66-BB) IANA CM37760-C-21Y-2M-1Y-3M-0Y
29	SARA 82 CM38088-Q-1Y-4M-1Y-3M-1Y-0M
41	PF70354-MUS"S" CM47091-7M-1Y-1F-1Y-0Y
42	PF70354-MUS"S" CM47091-7M-1Y-3F-1Y-0Y
43	CAR853-CDC X VEE"S" CM47556-EE-1M-1Y-5M-1Y-1Y-1M-0Y-OPTZ
45	BUC"S"-BJY"S" CM49641-9Y-1M-1Y-1Y-0M
63	PVN"S"(BB-CND"S" X JAR/ORZ"S")<TL[LA FR-KAD85 X 08](2)] CM59642-0Y-0M-0Y-1M-2Y-1M-0M
64	F6.74-BUN"S" X SIS"S" CM60042-M-1Y-2M-2Y-1M-1Y-0M
88	PF70354-VEE"S" CM65063-3Y-0Z-0Y
122	KVZ-CGN SE1066-9S-1S-6S-0S-7KE-0KE
125	TC67
126	CNDD
128	YAV"S"-AA"S" CD32617-18B-1Y-1M-0Y
129	WIN"S"-AA"S" CD12454-3Y-11M-1Y-2Y-2M-1Y-0M
130	D67.54-4A-9A/JO"S" X RD119-200-4Y
131	RBC
133	65150-LDS
134	LDS MUT-GTA"S" X OS"S"/LDS MUT-GTA"S X ROM"S" CD28220-Q-1M-2Y-5Y-0M
135	MHMD. TIPP E2-OZ 369 D244-A-2I-1M-0Y
136	MLN69
137	S. CP MUT
138	BET LEHEM VOLCANI 393-676
139	BOW"S" CM33203-K-9M-2Y-2M-1Y-2M-1Y-2M-0Y-1PTZ-0Y
143	KVZ-K4500L. A. 4. SWD176-3M-1Y-10Y-1Y-1M-0Y-OPTZ
145	KVZ-UP301 CM20596-12Y-1M-1Y-0Y-3PTZ
147	DLAF CI 15930

Table 30. Advanced lines selected for further investigation by cooperators at Quito-Pichincha, Ecuador.

VTY NO.	VARIETY OR CROSS AND PEDIGREE
2	THB"S"
3	NSB79.4
36	MUS"S"-PTM X MAYA-ALD"S" CM44740-A-3Y-1M-1Y-2M-1Y-2M-0Y
37	PF70354-ALD"S" CM47090-1Y-1F-4Y-1Y-1M-0Y
38	PF70354-ALD"S" CM47090-13M-1Y-1F-701Y-1F-704Y-6F-0Y
39	PF70354-ALD"S" CM47090-14M-1Y-1F-703Y-10F-705Y-2F-0Y
42	PF70354-MUS"S" CM47091-7M-1Y-3F-1Y-0Y
47	ALD"S"-PUN"S" CM49901-14Y-2Y-1M-1Y-0M
50	PAT10-ALD"S" X PAT72300/PVN"S" CM49922-1M-2Y-3Y-2M-1Y-0M
51	ALD"S"-HW72130 CM50361-8Y-3M-1Y-4Y-2M-0Y-OPTZ
81	NAC X H499.71A-JUP/NAC-BUC"S" CM64014-B-2M-1Y-1M-1Y-2M-0Y
82	NAC-VEE"S" CM64224-5Y-1M-1Y-2M-0Y
88	PF70354-VEE"S" CM65063-3Y-0Z-0Y
117	THB"S" F11915-A-502M-1Y-1F-702Y-5F-0Y
118	THB"S" F11915-A-502M-1Y-3F-702Y-2F-0Y
119	PF72640-PF7326 X PF7065-ALD"S" F11933-D-500M-3Y-1F-704Y-3F-0Y
143	KVZ-K4500L. A. 4. SWD176-3M-1Y-10Y-1Y-1M-0Y-OPTZ
154	BEAGLE
155	MAPACHE

Table 31. Advanced lines selected for further investigation by cooperators at Itapua, Paraguay.

VTY NO.	VARIETY OR CROSS AND PEDIGREE
11	KVZ-K4500L. 6. A. 4 SMD176-3M-1Y-10Y-1Y-2M-0Y-OPTZ-0Y
12	ANB"S" CM20707-A-1Y-8M-1Y-0Y-OPTZ
13	NPR-FLR X QTD-K2M H12 CM26978-2M-300Y-0S
18	BOW"S" CM33203-K-9M-9Y-4M-1Y-2M-0Y
19	BOW"S" CM33203-K-9M-9Y-4M-4Y-1M-1Y-0M
26	SNB"S" CM34630-D-5M-2Y-1M-1Y-1M-1Y-0M
27	SNB"S" CM34630-D-5M-5Y-5M-1Y-1M-0Y
31	CROW"S" CM40457-5M-3Y-1M-2Y-0M-154M-0Y
33	GOV-AZ X MUS"S" CM41297-I-8M-2Y-1M-3Y-0M
43	CAR853-COC X VEE"S" CM47956-EE-1M-1Y-5M-1Y-1Y-1M-0Y-OPTZ
56	TTR"S"-JUN"S" CM59123-3M-1Y-1M-1Y-1M-0Y
57	TTR"S"-JUN"S" CM59123-3M-1Y-2M-2Y-1M-0Y
61	TTR"S"-JUN"S" CM59123-4M-1Y-1M-5Y-3M-0Y
62	K6582-TOB X PEW"S" CM59608-1Y-1M-1Y-1M-2Y-1M-0Y
64	F6. 74-BUN"S" X SIS"S" CM60042-M-1Y-2M-2Y-1M-1Y-0M
65	(BB-CNO67 X CI12703/PHO"S")JUN"S" CM60170-Q-2Y-1M-1Y-1M-1Y-1M-0Y
68	BOW"S"-NAC CM61795-13Y-1M-1Y-0M
78	MON"B" X SIS"S"-CAN"B" CM62142-5Y-3M-1Y-2M-3Y-1M-0Y
90	TAN"S"-BOW"S" CM65078-7M-1Y-3M-1Y-1M-0Y
93	(4777(2) X FKN-QB/VEE"S")BUC"S"-PVN" CM66684-B-1M-6Y-2M-2Y-0M
98	(AU-UP301 X GLL-SX/PEW"S")MAI"S"-MAYA"S" X PEW"S" CM67245-C-1M-3Y-1M-9Y-2M-0Y
143	KVZ-K4500L. A. 4. SMD176-3M-1Y-10Y-1Y-1M-0Y-OPTZ
144	KVZ/7C SMM4064-6Y-4M-3Y-1M-3Y-0Y-OPTZ



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