CIMMYT-ICARDA
Results of the Fourteenth International Barley Observation Nursery (IBON) 1986-87

Resultados del 14° Vivero
Internacional de Observación de Cebada
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H. Vivar, M. Alcalá, and F. Cárdenas

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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	*Alternaria triticina*	Alternaria leaf blight (0-9 scale)	Tizón por alternaria (escala 0-9)	Alternaria (échelle 0-9)
ANT DMGE	–	Ant damage (percentage)	Porcentaje de daño por hormigas	Dégat du aux fourmis en pourcentage
APHD DMGE	–	Aphid damage (percentage)	Porcentaje de daño por áfidos	Dégat du aux pucerons en pourcentage
ARMY WORM	–	Army worm damage (percentage)	Porcentaje de daño por gusano cogollero	Dégat du aux noctuelles en pourcentage
BAC S	*Xanthomonas campestris* pv. translucens	Bacterial leaf streak or stripe and black chaff (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	*Psuedomonas syringae* pv. striafaciens	Bacterial blight (0-9 scale)	Tizón bacteriano de la hoja (escala 0-9)	Brulure bactérienne des feuilles (échelle 0-9)
BAR S	*Pyrenophora graminea* (syn. *Drechslera gramineum*, syn. *Helminthosporium gramineum*)	Barley stripe (0-9 scale)	Mancha estriada de la cebada	Taches brunes de l'orge (*Helminthosporium gramineum*) (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	*Ustilago hordei (U. kolleri)*	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	*Fusarium nivale* (syn. *Monographella nivalis*)	Fusarium leaf blotch (0-9 scale)	Mancha de la hoja y moho níveo (moho blanco) (escala 0-9)	Tache de la feuille (*Fusarium nivale*)(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	*Helminthosporium* 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	*Puccinia recondita*	Wheat leaf rust (Cobb scale)	Roya de la hoja-trigo (escala de Cobb)	Rouille brune du blé (échelle de Cobb)
LEAF RUST	*Puccinia hordei*	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	*Ustilago nuda (U. tritici)*	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	*Pyrenophora teres* (syn. *Drechslera teres*, syn. *Helminthosporium teres*)	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	*Erysiphe graminis*	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 %	*Fusarium* spp.	Head scab (percentage)	Porcentaje de roña	Fusarium de l'épi en pourcentage
SCLD	*Rhynchosporium secalis*	Scald (0-9 scale)	Escaldedura (escala 0-9)	Rhyncosporium (échelle 0-9)
SDMT INDX	–	Sedimentation index (cc)	Indice de sedimentación (cc)	Indice de sédimentation (cc)
SEP N	*Leptosphaeria nodorum* (syn. *Septoria nodorum*)	Septoria glume blotch (0-9 scale)	Tizón de la gluma (escala 0-9)	Septoria nodorum (échelle 0-9)
SEP P	*Septoria passerinii sacc.*	Septoria leaf blotch (barley)	Mancha foliar (cebada)	Tache septorienne des feuilles de l'orge
SEP S	*Septoria* spp.	Septoria glume/leaf blotch (0-9 scale)	Septoria (escala 0-9)	Septoria (échelle 0-9)
SEP T	*Mycosphaerella graminicola* (syn. *Septoria tritici*)	Septoria leaf blotch (0-9 scale)	Mancha foliar o tizón foliar (escala 0-9)	Septoria tritici (échelle 0-9)
SHTR %	–	Shattering, head (percentage)	Porcentaje de desgrane (espiga)	Egrenage en pourcentage
SL	–	Sea level	Nivel del mar	Niveau de la mer
SPT B	*Cochliobolus sativus* (syn. *Bipolaris sorokiniana*, syn. *Helminthosporium sativum*)	Spot blotch (0-9 scale)	Tizón foliar (escala 0-9)	Tache de la feuille (*Helminthosporium sativum*) (échelle 0-9)
STEM RUST	*Puccinia graminis*	Stem rust (Cobb scale)	Roya del tallo (escala de Cobb)	Rouille noire (échelle de Cobb)
STRP RT.H	*Puccinia striiformis*	Stripe rust, head (percentage)	Porcentaje de roya amarilla (espiga)	Rouille jaune sur épi en pourcentage
STRP RT.L	*Puccinia striiformis*	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)	Mosaique striée de l'orge (échelle 0-9)
TAN S	*Pyrenophora tritici-repentis* (syn. *Helminthosporium tritici-repentis*)	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	Variedad	Variété
VTY	–	Variety	Variedad	Variété
YELL BERR	–	Yellow berry (percentage)	Porcentaje de panza blanca	Mitedinage en pourcentage
YIELD KG/HA	–	Yield (kg/ha)	Rendimiento (kg/ha)	Rendement (kg/ha)

Introduction to the Fourteenth International Barley Observation Nursery

Hugo Vivar, Maximino Alcalá and Francisco Cárdenas[1]

Methodology

The Fourteenth International Barley Observation Nursery (IBON) was sent in September 1986 to be grown by cooperators in their spring season of 1987. Eighty nurseries went to cooperators in 47 countries. The 185 advanced lines and checks in the nursery had been chosen from among the best materials. All had been grown and observed by scientists in a high yield environment under pressure from major diseases at the CIANO Experiment Station in the Yaqui Valley in northwest Mexico. Here, too, seed for this international nursery was multiplied, cleaned and treated with insecticide and organic fungicide before shipment.

Instruction 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 requested by CIMMYT-ICARDA. In receiving and processing the data returned by cooperators, CIMMYT-ICARDA assumes that the nursery was properly handled and that accurate results were reported. We cannot, however, attest to the rigor with which the trials were grown and results were obtained.

Thirty-seven of the cooperators receiving the nursery returned field books with performance data at their locations in time to be included in this report. The choice of variables measured and the data returned rest 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 usefulness, we present the results in three forms:

1. One summary, listing the sites from which data were returned, with notations of all variables recorded and reported.

2. A table reporting the means of all observations from sites with uniform and discrete data for each variable measured for each line in the nursery.

3. Selected tables reporting the best performance by individual lines on major variables, usually the top 5 to 10 percent. The table of contents lists all variables reported in this way.

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

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1 Head, ICARDA barley program; head, international nurseries; and research assistant.

Cooperator participation - Feedback of two kinds from cooperators is vital to the quality of this and other CIMMYT-ICARDA 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 both.

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%.

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-5R	[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

Leaf rust - Scores from nine locations--two in Africa, two in Europe, two in the Middle East, two in North America, and one in South America--were received. The pathogens in Germany infected most of the IBON entries, except #8 (score: 10MR). Race identification in previous years by the USDA Rust Laboratory, Minnesota (USA), indicates the presence of races 8, 9 19, and 30 in Mexico, race 19 being predominant. The fifteen entries with the lowest scores are shown in Table 3.

Powdery mildew - Scores for powdery mildew were reported from thirteen locations--nine in European countries where the disease is severe, one in Africa, two in the Middle East, and one in Asia. Relatively low scores across locations indicate the presence of resistant material among the top fifteen entries (Table 4). The pathogens in southern Spain infected all IBON entries. Mexico, with only occasional incidence of the disease in barley plots, does not lend itself to screening for powdery mildew.

Spot blotch - Scores came from four countries. The top fifteen entries, which showed moderate levels of resistance, appear in Table 5. No screening for spot blotch is conducted in Mexico, and caution is recommended in interpreting the data presented here, since a form of *Pyrenophora teres* produces symptoms similar to those caused by *Cochiobolus sativus*. Precise identification requires laboratory study of spores, and as far as we know, the field symptoms reported here do not include laboratory analysis.

Net blotch - Scores for net blotch from twelve locations are seen in Table 6, each score from a different country. Virulence was high in Brazil, where none of the IBON entries proved resistant. Among the top fifteen entries across all locations, there are entries susceptible to pathogens from South Africa and Spain. Improved net blotch resistance is expected in the near future, since screening is practiced under field conditions in Mexico's "hot spot" for the disease, where both the reticulate and spot forms are present.

Stripe rust - Data came from three locations in the Andean region of South America, where race 24 of *Puccinia striiformis* f. sp. hordei is present, and from Pakistan, where no race

identification is available. Sister lines from the crosses Gloria/Copal and Gloria/Come showed the lowest infection levels, and are presented among the top fifteen entries (Table 7). These crosses also represent the first germplasm with multiple disease resistance (they possess good resistance to stripe rust, scald, and leaf and stem rust) produced by the program.

Scald - Scores were received from eight locations--two in Africa, three in Europe, and three in North America. Screening for scald in Mexico is done under artificial epidemics created using two methods: 1) infected straw from a previous crop is placed between rows at the tillering stage, and 2) spores of *Rhynchosporium secalis* are applied several times during the growth cycle--usually after a rainfall. Most IBON entries showed a low-to-intermediate reaction to scald. The best 15 are listed in Table 8.

Stem rust - Stem rust is apparently not important in most barley producing areas where the IBON was tested. The only data on stem rust was obtained from nurseries that were artificially inoculated with *Puccinia graminis* in the Yaqui Valley of northwestern Mexico. The top fifteen entries, shown in Table 9, proved resistant to the Mexican pathogens.

Introducción al 14º Vivero Internacional de Observación de Cebada

Hugo Vivar, Maximino Alcalá y Francisco Cárdenas[1]

Metodología

En septiembre de 1986, se distribuyó el 14º Vivero Internacional de Observación de Cebada (IBON) para que los colaboradores lo cultivaran en sus temporadas de primavera de 1987. Se enviaron 80 viveros a colaboradores de 47 países. Las 185 líneas avanzadas y testigos incluidos en el vivero se seleccionaron entre los mejores materiales; todas las líneas fueron cultivadas y observadas por científicos en un ambiente de alto rendimiento y sometidas a la presión de las enfermedades más importantes en la estación experimental del CIANO en el valle del Yaqui, al noroeste de México. También se multiplicó allí la semilla para este vivero internacional y se limpió y trató con insecticidas y fungicidas orgánicos antes del envío.

A cada colaborador se le envió la semilla por correo, acompañada de instrucciones acerca del manejo del vivero. Se proporcionó semilla de cada línea en cantidad suficiente para sembrar un surco sencillo, sin repeticiones, de por lo menos 2 m de largo. Cada conjunto del vivero incluía un libro de campo con un formato uniforme para registrar los datos solicitados por el CIMMYT-ICARDA. Al recibir y procesar los datos enviados por los colaboradores, el CIMMYT-ICARDA dan por sentado que el vivero se manejó en forma apropiada y que se comunicaron resultados cabales; no obstante, no podemos dar fe de la rigurosidad con que se cultivaron los ensayos y se obtuvieron los resultados.

Treinta y siete de los colaboradores que recibieron el vivero devolvieron libros de campo con datos sobre el comportamiento en sus localidades, con tiempo suficiente para incluir esos datos en este informe. La elección de las variables evaluadas y de los datos comunicados depende de cada colaborador. En este resumen incluimos algunas variables sobre las cuales recibimos información. El número de observaciones difiere de una variable a otra, por lo que recomendamos al lector fijarse en el número de observaciones señalado en el encabezamiento de las columnas correspondientes a cada variable en el cuadro resumen (cuadro 2), ya que puede ser un indicador importante del grado de credibilidad que puede atribuirse a cada variable. Asimismo, el lector debe tener en cuenta que el rendimiento comunicado corresponde a una sola parcela, cultivada básicamente con fines de observación y no como un ensayo riguroso de rendimiento con repeticiones.

Presentación de los resultados. Con el fin de que los datos de este informe tengan la mayor utilidad posible, presentamos los resultados en tres formas:

1. Un resumen que enumera las localidades desde las cuales se enviaron datos, con anotaciones sobre todas las variables registradas y comunicadas.

2. Un cuadro que muestra las medias de todas las observaciones efectuadas en las localidades, con datos discretos y uniformes para cada variable evaluada en cada línea del vivero.

3. Cuadros que indican el comportamiento más sobresaliente de líneas individuales respecto a las principales variables, por lo general el 5 a 10% superior. En el índice se enumeran todas las variables incluidas en esos cuadros.

[1] Jefe del programa de cebada del ICARDA; jefe de los ensayos internacionales; ayudante de investigación.

Se pidió a los colaboradores que emplearan la metodología que se describe en el "Instructivo para el manejo y registro de resultados de los ensayos internacionales del Programa de Trigo del CIMMYT" para informar sobre el comportamiento agronómico y las enfermedades. Los datos presentados son simples medias, calculadas a partir de la información proporcionada por los colaboradores. Los datos sobre las royas, registrados mediante la escala modificada de Cobb, se convirtieron en coeficientes medios de infección (CMI), como se indica más adelante.

Participación de los colaboradores. Para la calidad de éste y otros informes del CIMMYT-ICARDA sobre ensayos internacionales, es de vital importancia la retroalimentación de dos tipos de información proporcionada por los colaboradores; en primer lugar, el rápido envío de datos cuidadosamente registrados en todos y cada uno de los sitios donde se efectuaron las pruebas y, en segundo, la identificación de factores ambientales y del manejo (por ejemplo, problemas causados por la humedad, pájaros, etc.) que pasan a formar parte de los archivos de las estaciones colaboradoras. Solicitamos información de ambos tipos.

Evaluación de las royas. Las calificaciones asignadas a las infecciones causadas por la roya lineal, del tallo y de la hoja, que se registran en la forma recomendada por el Dr. W.Q. Loegering (Vivero Internacional para la Identificación de Royas en el Trigo de Primavera, Departamento de Agricultura de los Estados Unidos de América, 1959), se convierten en un coeficiente numérico de infección (CI) antes de emplearlas en cualquier cálculo. Cada lectura original registrada en esta forma incluye calificaciones de la severidad (porcentaje de infección causada por la roya en las plantas) y de la respuesta (tipo de infección). La severidad se registra como el porcentaje de infección según la escala modificada de Cobb. Si sólo se aprecian trazas, se registra la severidad como T o TR y se le asigna un valor de 1%.

Las respuestas se pueden registrar utilizando uno de los códigos siguientes, cuyos valores numéricos se presentan a la derecha.

Respuesta	Valor numérico equivalente
VR	0.2
R	0.2
MR	0.4
M o X	0.6
MS	0.8
S	1.0
VS	1.0

La severidad y la respuesta se registran juntas, colocando la severidad en primer término (por ejemplo, 5MR). El coeficiente de infección correspondiente se calcula multiplicando los equivalentes numéricos de cada parte; por ejemplo:

Calificación de la enfermedad	Coeficiente de infección
5MR	5(0.4)= 2.0
TR	1(0.4)= 0.2
TRR	1(0.2)= 0.2
60S	60(1.0)= 60.0
0*	(0)(0)= 0.0

*Si no existe ninguna infección visible en la planta, sólo se registra un cero.

Es posible que las reacciones sean más variables de lo que se puede representar mediante una sola lectura de la severidad y la respuesta. Esta variabilidad puede

registrarse en dos formas: 1) una coma o una diagonal indica que se ha producido una segregación de las plantas en clases bien definidas y entonces se incluye en los cálculos la primera evaluación comunicada; 2) se emplea un guión cuando se registra una gama de reacciones; en estos casos, el coeficiente de infección es el promedio de todas las calificaciones. A continuación se presentan ejemplos de ambas situaciones:

Calificación de la enfermedad	Coeficiente de infección
5R,40S	La primera evaluación 5R=5(0.2)=1.0 se usa en todos los cálculos
40M/60S	La primera evaluación 40M=40(0.6)=24.0 se usa en todos los cálculos
15R-5R	[15(0.2)+5(1.0)]/2=4.0

Se puede comunicar sólo la severidad o únicamente la respuesta. En estos casos se calcula la severidad media o la respuesta media antes de multiplicar ambas; por ejemplo:

Calificación de la enfermedad	Coeficiente de infección
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

En la mayoría de los cuadros se presentan sólo los coeficientes medios de infección (CMI); no obstante, en algunos cuadros aparece la lectura más alta (HR) de la enfermedad como calificaciones de la severidad y la respuesta.

Discusión de los resultados

Roya de la hoja. Se recibieron calificaciones de nueve localidades: dos de Africa, dos de Europa, dos del Medio Oriente y una de América del Sur. En Alemania, los patógenos infectaron casi todas las entradas del IBON, excepto la #8 (calificación: 10MR). La identificación de razas efectuada en años anteriores por el Laboratorio de la Roya del Departamento de Agricultura de los Estados Unidos de América, Minnesota, señala la presencia de las razas 8, 9, 19 y 30 en México, aunque la que predomina es la raza 19. En el cuadro 3 se presentan las 15 entradas con las calificaciones más bajas.

Mildiú polvoriento. Se recibieron calificaciones del mildiú polvoriento de 13 localidades: nueve de países europeos donde la enfermedad es severa, una de Africa, dos del Medio Oriente y una de Asia. Las calificaciones relativamente bajas que se obtuvieron en casi todas las localidades señalan la presencia de materiales resistentes en las 15 entradas más sobresalientes (cuadro 4). En el sur de España, los patógenos infectaron todas las entradas del IBON. En México, donde la incidencia de la enfermedad es muy baja en las parcelas de cebada, no se selecciona para obtener resistencia al mildiú polvoriento.

Mancha foliar. Cuatro países enviaron calificaciones sobre esta enfermedad. En el cuadro 5 aparecen las 15 entradas más sobresalientes, que presentaron niveles moderados de resistencia. En México no se efectúa selección para obtener resistencia a la mancha foliar y se recomienda tener cuidado en la interpretación de la información presentada aquí, ya que una forma de *Pyrenophora teres* produce síntomas semejantes a los causados por *Cochiobolus sativus*. La identificación exacta requiere el estudio de laboratorio de las esporas y, hasta donde sabemos, los síntomas de campo que se presentan aquí no incluyen ningún análisis de laboratorio.

Mancha reticulada. En el cuadro 6 aparecen las calificaciones de la mancha reticulada de 12 localidades, todas de países diferentes. La virulencia fue elevada en Brasil, donde ninguna de las entradas del IBON resultó ser resistente. Entre las 15 entradas más sobresalientes en todas las localidades, existen entradas susceptibles a los patógenos de Africa del Sur y España. Se espera que en el futuro próximo se obtenga una mayor resistencia a la mancha reticulada, ya que se efectúa selección en condiciones de campo en la región de México más afectada por la enfermedad, donde están presentes la forma reticulada y la forma de mancha.

Roya lineal. Se recibieron datos de tres localidades de la región andina de América del Sur, donde está presente la raza 24 de *Puccinia striiformis* f. sp. *hordei*, y de Pakistán, donde no se cuenta con ninguna identificación de las razas. Las líneas hermanas derivadas de los cruzamientos de Gloria/Copal y Gloria/Come, presentaron los niveles más bajos de infección y se encuentran entre las 15 entradas más sobresalientes (cuadro 7). Asimismo, estos cruzamientos representan el primer germoplasma con resistencia múltiple a las enfermedades (posee buena resistencia a la roya lineal, escaldadura y roya de la hoja y del tallo) producido por el programa.

Escaldadura. Se recibieron calificaciones de ocho localidades: dos de Africa, tres de Europa y tres de América del Norte. En México, la selección para obtener resistencia a la escaldadura se hace en condiciones de epifitias artificales, creadas a través de dos métodos: 1) la paja infectada de un cultivo anterior se coloca entre los surcos en la fase de labranza y 2) se aplican esporas de *Rhynchosporium secalis* varias veces durante el ciclo de cultivo, por lo general, después de que llueve. La inmensa mayoría de las entradas del IBON presentaron una reacción baja a intermedia a la escaldadura. En el cuadro 8 se presentan las 15 mejores.

Roya del tallo. Al parecer, la roya del tallo no es importante en las regiones productoras de cebada donde se sometió a prueba el IBON. Los únicos datos sobre roya del tallo se obtuvieron de viveros inoculados artificialmente con *Puccinia graminis* en el valle del Yaqui, al noroeste de México. Las 15 entradas más sobresalientes, que aparecen en el cuadro 9, demostraron ser resistentes a los patógenos mexicanos.

Table 1. Locations from which data were reported.with variables included.

LOCS.	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
1	AFRICA	ETHIOPIA	SHEWA-AMBO	1 7 66 68
2	AFRICA	MOROCCO	SETTAT	3 4 50
3	AFRICA	SOUTH AFRICA	CAPE PROV.	3 7 66 69
4	AFRICA	TUNISIA	TUNIS-BEJA	61 69
5	ASIA	KOREA (SOUTH)	SUWON GYEONGGI PROV.	1 3 50
6	ASIA	P.R. OF CHINA	HEILONGJIANG	1 66 68
7	ASIA	P.R. OF CHINA	SICHUAN	1 3 50
8	ASIA	PAKISTAN	BALUCHISTAN	1 4
9	ASIA	PAKISTAN	NWFP-PIRSABAK	1 50
10	ASIA	PAKISTAN	PUNJAB-AYUB	1 3 5 50 61
11	ASIA	PAKISTAN	PUNJAB-ISLAMABAD	3 50
12	EUROPE	CZECHOSLOVAKIA	BOHEMIA-STUPICE	3 9 61
13	EUROPE	FINLAND	HYRLA	3 9 61 66 69
14	EUROPE	GERMANY, DEM. REP.	MAGDEBURG	7 61
15	EUROPE	GREECE	THESSALONIKI	1 9 61 66
16	EUROPE	ITALY	MACERATA	3 61
17	EUROPE	NORWAY	AAS	4 50 61 66
18	EUROPE	NORWAY	OSTRE TOTEN	1 3
19	EUROPE	PORTUGAL	ELVAS	7 50 61 66 69
20	EUROPE	SPAIN	GRANADA	3 50 61 66 69
21	EUROPE	SPAIN	LLEIDA	9 50
22	EUROPE	YUGOSLAVIA	BOSNIA & HERSEGOVINA	1 3 61 68
23	MIDDLE EAST	CYPRUS	NICOSIA	1 3 7 9 50 61 66 68
24	MIDDLE EAST	QATAR	DOHA	3 4 9 50 66
25	MIDDLE EAST	SYRIA	DARAA	1 3 9
26	MIDDLE EAST	TURKEY	IZMIR-EGE RARI	7 61
27	NORTH AMERICA	MEXICO	EBANO S.L.P.	4 9 77
28	NORTH AMERICA	MEXICO	EL BATAN	3 7
29	NORTH AMERICA	MEXICO	SONORA-CIANO	1 3 7 8
30	NORTH AMERICA	MEXICO	TOLUCA	3 69
31	NORTH AMERICA	U.S.A.	CALIFORNIA-WOODLAND	69 77
32	NORTH AMERICA	U.S.A.	MONTANA	66 69
33	SOUTH AMERICA	BOLIVIA	COCHABAMBA	3 5
34	SOUTH AMERICA	BRAZIL	SAO PAULO-CAPAO BONITO	1 3 66 67
35	SOUTH AMERICA	ECUADOR	PICHINCHA	5 6 7 77
36	SOUTH AMERICA	ECUADOR	QUITO-PICHINCHA	5 6 50 77
37	SOUTH AMERICA	PARAGUAY	CAACUPE	50

*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	50	CHECK	MARK	61	POW M	0-9
66	NET B	0-9	67	BAR S	0-9	68	SPT B	0-9	69	SCLD	0-9	77	BYDV	0-9

Table 2. Summary of means of all variables.

VTI NO.	VARIETY OR CROSS AND PEDIGREE	ORIGIN	YIELD KG/HA	HEAD DAYS	MAT DAYS	STRP RT.L	STRP RT.H	LEAF RUST	STEM RUST
		NUMBER OF OBSERVATIONS:	(14)	(20)	(5)	(4)	(2)	(9)	(1)
1	COLLO"S"/RPL"S"/3/CHZO"S"/MP108// BREA"S" CMB82-1631-B-3B-1Y-1B-0Y		3232.3	93.0	128.8	38.7	20.0	9.0	20.0
2	CEL/WI2269//ORE/3/ATHS NEW/4/MCU59/ MCU1//MOCH/5/RTA"S" CMB82A-1530-B-10B-1Y-1B-0Y		4172.4	91.4	127.6	44.0	20.0	22.1	0.0
3	CEL/WI2269//ORE/3/ATHS NEW/4/MCU59/ MCU1//MOCH/5/RTA"S" CMB82A-1530-B-10B-2Y-1B-0Y		3867.1	93.5	127.0	35.0	5.0	30.3	10.0
4	CEL/WI2269//ORE/3/ATHS NEW/4/MCU59/ MCU1//MOCH/5/RTA"S" CMB82A-1530-B-15B-1Y-2B-0Y		3450.6	88.5	127.0	48.0	15.0	12.2	5.0
5	LITTLE BEN//BAHTIM7/DL71/3/AIA/F3 BU K HIP//H251 CMB82A-1547-A-10B-2Y-1B-0Y		2982.9	91.9	127.4	18.5	10.0	15.8	5.0
6	APM/5106//GLDA"S"/4/NOPAL/3/API/CM67 /MZQ CMB82A-1697-A-7B-2Y-1B-0Y		3585.9	89.3	127.2	55.0	22.5	17.3	15.0
7	NOPAL//HULLESS/CQ/4/PO/3/KI/3*BA// MONTE CRISTO/5/GLORIA"S" CMB82A-1832-D-4B-2Y-1B-0Y		3891.5	89.9	128.6	54.0	45.0	10.0	0.0
8	BREA"S"/DL70//MOZDOSKY/3/NOPAL/4/ CELO"S" CMB82-818-67B-3Y-1B-0Y		3615.6	88.9	126.4	17.0	7.5	3.9	5.0
9	GLORIA"S"/COME"S" CMB81-294-5B-1Y-5M-1Y-3M-0Y		3374.9	91.2	127.8	0.5	5.5	9.8	5.0
10	GLORIA"S"/COME"S" CMB81-294-5B-6Y-1M-1Y-5M-0Y		3526.3	93.3	127.2	13.0	2.5	9.8	5.0
11	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-1Y-2M-0Y		3571.3	89.6	127.0	3.3	5.5	9.8	0.0
12	GLORIA"S"/COPAL"S" CMB81-295-18B-1Y-2M-1Y-3M-0Y		3674.6	90.2	128.2	11.5	10.0	10.0	0.0
13	GLORIA"S"/COPAL"S" CMB81-295-30B-2Y-1M-1Y-4M-0Y		3933.7	90.3	127.8	1.3	10.0	9.8	5.0
14	CACO"S"/3/API/CM67//1594 CMB81-168-6Y-2Y-18M-1Y-2M-0Y		3612.4	90.1	127.4	40.0	12.5	9.3	10.0
15	CACO"S"/3/API/CM67//1594 CMB81-168-6Y-3Y-1M-1Y-1M-0Y		3656.8	89.9	127.6	50.0	20.5	10.3	10.0
16	CACO"S"/3/API/CM67//1594 CMB81-168-6Y-3Y-1M-1Y-2M-0Y		3928.8	90.0	128.4	32.0	20.0	10.3	15.0
17	CACO"S"/3/API/CM67//1594 CMB81-168-6Y-3Y-1M-1Y-3M-0Y		3361.1	90.5	126.0	30.0	10.5	9.0	10.0
18	CON"S"/COLLO"S" CMB80A-56-2Y-1Y-2M-1Y-3M-0Y		4210.9	93.7	127.8	72.5	40.5	14.0	15.0
19	CON"S"/COLLO"S" CMB80A-56-2Y-2Y-1M-1Y-1M-0Y		3870.1	86.6	123.6	77.0	50.0	9.1	10.0
20	CON"S"/COLLO"S" CMB80A-56-2Y-2Y-8M-1Y-3M-0Y		4102.5	87.4	123.6	77.0	60.0	10.0	5.0
21	GLORIA"S"/COME"S" CMB81-294-23Y-1B-1Y-2M-1Y-0B		4106.6	93.5	129.8	45.0	20.0	11.4	5.0
22	GLORIA"S"/COME"S" CMB81-294-25Y-2B-2Y-4M-1Y-0B		3471.8	96.2	130.8	55.0	30.0	10.3	20.0
23	GLORIA"S"/CELO"S" CMB81A-614-24B-1Y-1B-0Y		3603.3	90.3	127.8	55.0	22.5	4.0	15.0

VTY	PLNT HT	CHECK MARK	POW M 0-9	NKT B 0-9	BAR S 0-9	SPT B 0-9	SCLD 0-9	BYDW 0-9
	(8)	(14)	(13)	(12)	(1)	(4)	(8)	(4)
1	79.1	21.4	5.0	4.0	8.0	4.3	3.3	3.3
2	84.6	35.7	4.5	3.5	8.0	5.7	2.0	4.7
3	86.6	7.1	4.0	3.6	8.0	3.3	2.6	4.7
4	83.4	21.4	3.3	3.8	8.0	4.7	2.9	4.7
5	79.1	7.1	5.0	4.2	8.0	6.0	2.8	7.0
6	80.9	21.4	5.4	4.4	8.0	5.0	3.0	7.0
7	80.0	28.6	5.0	4.3	8.0	6.7	3.6	7.0
8	79.8	21.4	5.0	4.0	7.0	6.0	2.5	4.7
9	73.4	21.4	3.8	3.3	8.0	5.3	1.2	4.3
10	74.6	0.0	4.7	4.3	7.0	6.0	3.2	4.8
11	73.8	7.1	5.3	3.5	9.0	6.0	3.2	6.5
12	76.4	14.3	4.4	3.0	8.0	5.3	2.9	5.5
13	76.6	0.0	4.0	3.0	8.0	5.0	2.9	5.0
14	77.9	7.1	4.7	3.4	8.0	6.0	3.0	3.8
15	77.6	21.4	4.8	4.0	9.0	5.3	2.1	5.3
16	80.9	14.3	4.5	3.8	9.0	5.8	2.2	5.3
17	76.9	7.1	4.3	3.6	9.0	6.3	2.6	6.0
18	77.3	21.4	5.1	4.1	8.0	5.3	2.2	6.0
19	78.8	14.3	5.0	3.0	8.0	4.3	2.5	5.0
20	77.1	21.4	4.3	3.5	8.0	6.0	2.1	5.0
21	78.1	35.7	4.8	4.7	8.0	5.0	2.8	4.5
22	82.5	14.3	4.5	3.4	8.0	4.3	2.8	6.5
23	73.8	14.3	5.3	3.8	8.0	4.7	2.7	6.0

Table 2. (continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	ORIGIN	YIELD KG/HA	HEAD DAYS	MAT DAYS	STRP RT.L	STRP RT.H	LEAF RUST	STEM RUST
	NUMBER OF OBSERVATIONS:		(14)	(20)	(5)	(4)	(2)	(9)	(1)
24	GLORIA"S"/CELO"S" CMB81A-614-8Y-4B-3Y-1M-0Y		3534.0	92.3	130.2	25.5	5.0	10.3	10.0
25	QLTE"S"//CP/BRA CMB82-665-11Y-3B-1Y-3M-0Y		3728.1	88.1	126.8	50.0	40.0	13.4	50.0
26	GLORIA"S"/CELO"S" CMB81A-614-20Y-2B-1Y-2M-0Y		3495.4	91.8	129.0	30.0	20.0	9.3	10.0
27	GLORIA"S"/COME"S" CMB81-294-25Y-1B-2Y-3M-0Y		3585.1	90.0	128.0	30.0	10.0	9.0	10.0
28	GLORIA"S"/COME"S" CMB81-294-25Y-3B-1Y-2M-0Y		3660.1	92.6	130.0	30.0	20.0	6.5	20.0
29	GLORIA"S"/COME"S" CMB81-294-5B-4Y-1M-1Y-1M-0Y		3648.4	92.1	129.6	13.5	10.0	3.5	5.0
30	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-2Y-1M-0Y		3769.9	89.4	129.2	9.5	5.5	8.5	0.0
31	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-2Y-2M-0Y		3694.9	88.2	129.8	1.8	10.0	10.5	0.0
32	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-1Y-1M-0Y		3714.5	91.2	129.4	14.5	7.5	10.8	0.0
33	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-1Y-2M-0Y		3812.4	90.4	129.4	7.0	5.5	10.5	0.0
34	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-1Y-3M-0Y		3947.2	91.0	129.0	4.5	5.0	10.8	0.0
35	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-1Y-4M-0Y		3346.1	91.6	128.4	12.5	7.5	10.8	0.0
36	GLORIA"S"/COPAL"S" CMB81-295-26B-4Y-2M-2Y-1M-0Y		3852.1	87.8	126.4	5.3	7.5	6.5	10.0
37	GLORIA"S"/COPAL"S" CMB81-295-30B-2Y-1M-1Y-2M-0Y		3640.1	91.4	126.2	8.0	5.0	9.3	5.0
38	GLORIA"S"/COPAL"S" CMB81-295-30B-2Y-1M-2Y-2M-0Y		4033.7	90.2	129.0	3.0	10.0	8.8	5.0
39	AGER/3/CI3909.2//M66.151/MANKER/4/ BREA"S"/CEL/5/CRZO"S" CMB81-1302-6B-2Y-1M-2Y-2M-0Y		3039.4	98.2	133.0	22.0	25.0	19.2	10.0
40	AGER/3/CI3909.2//M66.151/MANKER/4/ BREA"S"/CEL/5/CRZO"S" CMB81-1302-6B-2Y-2M-1Y-1M-0Y		3174.3	98.1	131.8	33.0	45.0	23.0	1.0
41	KY63/1794//B1 -1B-2Y-2M-1Y-3M-0Y		3827.3	92.8	129.8	39.0	12.5	9.5	5.0
42	CACO"S"/3/API/CM67//1594 CMB81-168-6Y-2Y-15M-1Y-3M-0Y		4191.1	91.8	130.0	60.0	20.5	10.3	10.0
43	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-9M-3Y-2M-0Y		4115.8	91.2	129.4	0.8	10.5	6.8	1.0
44	GLORIA"S"/COME"S" CMB81-294-20Y-3B-1Y-2M-1Y-0B		4361.4	94.5	129.6	47.5	10.0	10.6	25.0
45	GLORIA"S"/COME"S" CMB81-294-25Y-2B-2Y-3M-1Y-0B		4036.6	93.8	132.8	50.0	20.0	9.5	5.0
46	GLORIA"S"/CELO"S" CMB81A-614-7Y-1B-1Y-1M-0Y		3941.9	89.4	130.0	67.5	35.0	8.3	20.0
47	GLORIA"S"/CELO"S" CMB81A-614-35Y-2B-1Y-1M-0Y		4218.8	96.1	130.8	65.0	30.5	10.3	10.0
48	GLORIA"S"/CELO"S" CMB81A-614-36Y-3B-1Y-1M-0Y		3286.9	93.0	128.8	57.5	30.0	21.6	5.0
49	GLORIA"S"/COME"S" CMB81-294-25Y-1B-1Y-3M-0Y		3728.9	91.2	129.2	37.5	22.5	10.0	5.0
50	GLORIA"S"/COME"S" CMB81-294-5B-3Y-3M-1Y-1M-0Y		3819.9	91.3	129.8	3.0	2.5	9.5	1.0

VTY	PLNT HT	CHECK MARK	POW M 0-9	NET B 0-9	BAR S 0-9	SIT B 0-9	SCLD 0-9	BYDV 0-9
	(8)	(14)	(13)	(12)	(1)	(4)	(8)	(4)
24	75.0	7.1	4.8	3.8	7.0	3.7	2.0	4.3
25	76.8	7.1	4.8	4.1	8.0	5.0	4.2	6.5
26	76.3	7.1	6.0	3.3	8.0	4.0	1.2	7.0
27	79.1	7.1	5.1	3.6	8.0	4.0	2.5	3.3
28	77.8	7.1	5.6	3.5	9.0	4.7	2.3	3.5
29	73.6	14.3	5.5	4.0	9.0	5.7	2.4	4.0
30	71.0	14.3	5.1	4.5	9.0	5.7	2.6	4.0
31	73.4	7.1	5.4	4.3	9.0	5.8	2.6	4.0
32	75.9	14.3	4.7	3.7	9.0	5.3	2.4	3.7
33	74.4	0.0	4.8	3.6	9.0	5.3	1.6	5.0
34	76.9	7.1	4.6	3.7	8.0	5.0	3.5	6.0
35	76.9	0.0	4.0	3.6	9.0	6.0	2.6	4.3
36	78.0	7.1	4.4	3.6	7.0	5.0	3.2	4.0
37	77.4	7.1	4.0	3.4	8.0	4.7	2.6	4.0
38	79.5	21.4	4.0	3.8	9.0	6.0	1.8	4.0
39	78.9	0.0	4.4	4.2	9.0	5.0	1.9	4.0
40	79.4	7.1	4.5	4.9	9.0	5.3	1.4	4.3
41	79.6	14.3	4.8	5.0	8.0	6.0	1.4	4.3
42	82.9	0.0	4.8	5.0	8.0	5.0	1.8	7.0
43	82.5	7.1	3.8	3.7	8.0	5.0	2.2	4.5
44	85.4	35.7	4.3	3.7	7.0	5.7	2.5	5.0
45	86.4	14.3	4.3	4.1	8.0	6.3	2.6	6.0
46	81.9	14.3	4.6	2.9	7.0	5.3	1.6	7.0
47	77.6	7.1	4.8	4.9	7.0	6.3	3.5	6.0
48	80.1	14.3	4.5	4.5	8.0	6.0	1.9	5.7
49	76.8	14.3	4.9	4.1	8.0	5.3	2.9	3.7
50	77.4	14.3	4.7	3.8	8.0	6.0	2.5	4.3

Table 2. (continued)

VTI NO.	VARIETY OR CROSS AND PEDIGREE	ORIGIN	YIELD KG/HA	HEAD DAYS	MAT DAYS	STRP RT.L	STRP RT.H	LEAF RUST	STEM RUST
		NUMBER OF OBSERVATIONS:	(14)	(20)	(5)	(4)	(2)	(9)	(1)
51	GLORIA"S"/COME"S" CMB81-294-5B-3Y-3M-1Y-4M-0Y		3691.2	91.1	128.6	1.5	5.0	9.8	0.0
52	GLORIA"S"/COME"S" CMB81-294-5B-8Y-1M-1Y-4M-0Y		3790.9	92.4	128.0	3.5	2.5	8.8	0.0
53	GLORIA"S"/COME"S" CMB81-294-5B-8Y-1M-1Y-5M-0Y		3620.8	91.7	129.8	3.5	3.0	9.0	1.0
54	GLORIA"S"/COME"S" CMB81-294-7B-5Y-3M-2Y-3M-0Y		3769.7	93.8	129.2	5.5	10.0	10.0	0.0
55	GLORIA"S"/COME"S" CMB81-294-20Y-3B-1Y-1M-0Y		3789.2	95.6	129.2	35.0	20.0	10.3	5.0
56	GLORIA"S"/COME"S" CMB81-294-25Y-3B-1Y-3M-0Y		3913.3	94.4	130.2	36.0	20.0	10.3	5.0
57	GLORIA"S"/COME"S" CMB81-294-25Y-3B-1Y-4M-0Y		3703.2	92.0	130.0	55.0	22.5	11.7	10.0
58	GLORIA"S"/COME"S" CMB81-294-25Y-4B-1Y-1M-0Y		3908.9	92.9	130.0	40.5	22.5	8.8	15.0
59	GLORIA"S"/COME"S" CMB81-294-5B-4Y-1M-1Y-3M-0Y		3610.1	93.2	128.0	19.0	5.0	6.5	20.0
60	GLORIA"S"/COME"S" CMB81-294-5B-4Y-1M-1Y-5M-0Y		3702.1	92.0	128.4	24.0	7.5	10.0	20.0
61	GLORIA"S"/COME"S" CMB81-294-5B-4Y-1M-1Y-6M-0Y		3416.7	92.9	127.4	21.5	5.0	9.0	15.0
62	GLORIA"S"/COME"S" CMB81-294-5B-7Y-7M-1Y-1M-0Y		3825.7	94.3	127.8	2.5	2.5	9.0	0.0
63	GLORIA"S"/COME"S" CMB81-294-5B-8Y-1M-2Y-3M-0Y		3708.6	94.0	128.6	7.0	2.5	6.5	1.0
64	GLORIA"S"/COME"S" CMB81-294-6B-1Y-1M-1Y-2M-0Y		4187.6	94.4	130.4	2.0	5.5	9.8	1.0
65	GLORIA"S"/COME"S" CMB81-294-6B-1Y-2M-2Y-3M-0Y		4292.9	93.9	131.2	7.0	5.5	9.3	1.0
66	GLORIA"S"/COME"S" CMB81-294-7B-5Y-3M-1Y-2M-0Y		4001.2	94.8	130.4	6.0	2.5	9.0	5.0
67	GLORIA"S"/COPAL"S" CMB81-295-18B-1Y-2M-1Y-2M-0Y		3793.7	90.6	128.0	10.5	7.5	15.0	5.0
68	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-23M-1Y-1M-0Y		4110.5	93.1	129.2	22.3	3.0	10.6	1.0
69	CACO"S"/3/API/CM67//1594 CMB81-168-6Y-4Y-2M-1Y-3M-0Y		3615.4	93.6	128.0	31.5	5.5	9.0	5.0
70	GLORIA"S"/COME"S" CMB81-294-26Y-6B-1Y-2M-1Y-0B		4007.8	94.9	130.6	37.0	10.0	15.4	5.0
71	GLORIA"S"/COME"S" CMB81-294-25Y-4B-1Y-2M-0Y		3784.4	92.8	129.6	55.0	22.5	10.0	20.0
72	GLORIA"S"/COME"S" CMB81-294-25Y-3B-1Y-1M-0Y		3876.9	93.8	131.0	36.0	17.5	9.0	10.0
73	GLORIA"S"/COPAL"S" CMB81-295-6B-3Y-3M-2Y-2M-0Y		3574.9	97.8	130.6	13.0	3.0	9.3	5.0
74	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-9M-3Y-4M-0Y		3952.4	92.3	128.6	0.8	5.0	13.3	5.0
75	CACO"S"/3/API/CM67//1594 CMB81-168-6Y-2Y-1M-2Y-1M-0Y		3632.1	92.8	136.8	6.5	3.0	10.3	5.0
76	GLORIA"S"/COME"S" CMB81-294-25Y-2B-2Y-1M-1Y-0B		3971.7	95.5	132.4	40.5	12.5	9.3	5.0
77	GLORIA"S"/COME"S" CMB81-294-6B-1Y-1M-1Y-1M-0Y		3731.1	93.8	132.2	5.5	5.5	10.0	5.0
78	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-1Y-1M-0Y		3563.1	89.9	128.6	7.5	3.0	11.1	0.0

VTY	PLNT HT	CHECK MARK	POW M 0-9	NET B 0-9	BAR S 0-9	SPT B 0-9	SCLD 0-9	BYDV 0-9
	(8)	(14)	(13)	(12)	(1)	(4)	(8)	(4)
51	74.9	0.0	5.0	3.1	7.0	5.3	3.0	3.5
52	76.3	7.1	4.7	3.5	8.0	6.0	3.5	5.3
53	82.5	14.3	4.6	4.3	8.0	6.0	3.3	6.5
54	82.8	14.3	4.5	4.3	8.0	5.8	3.3	5.3
55	83.1	0.0	4.7	3.8	7.0	5.5	2.2	4.5
56	81.0	0.0	5.0	3.1	8.0	6.3	2.0	4.0
57	79.3	0.0	4.7	3.5	8.0	5.3	1.7	5.3
58	79.0	14.3	4.8	4.1	7.0	6.3	4.0	4.5
59	76.9	0.0	5.2	3.5	9.0	6.0	3.7	4.3
60	77.4	21.4	5.0	4.2	9.0	4.3	3.2	4.0
61	77.8	21.4	5.2	4.0	9.0	5.8	4.0	5.8
62	81.3	7.1	4.4	4.5	8.0	6.3	4.2	4.3
63	81.8	21.4	4.2	4.2	8.0	6.0	3.7	4.0
64	79.6	28.6	4.3	4.5	8.0	5.0	3.9	2.8
65	82.3	7.1	4.8	4.8	8.0	5.3	3.5	3.3
66	79.3	14.3	4.3	3.8	8.0	5.0	2.9	3.8
67	75.4	21.4	5.4	3.8	9.0	5.0	3.1	4.8
68	74.3	28.6	4.5	3.8	9.0	5.3	3.7	5.3
69	82.0	14.3	4.8	4.4	8.0	5.8	2.8	6.0
70	79.8	21.4	3.5	4.6	7.0	5.3	3.0	4.5
71	77.9	0.0	4.1	4.1	8.0	6.0	2.6	3.8
72	77.6	14.3	4.1	3.7	8.0	5.5	2.0	3.0
73	79.8	21.4	3.9	4.1	7.0	5.8	2.5	5.0
74	74.8	21.4	4.3	4.1	8.0	5.8	2.5	4.5
75	74.4	7.1	5.0	4.4	8.0	5.8	1.6	3.8
76	77.1	42.9	4.2	5.0	9.0	5.0	2.7	3.5
77	72.5	7.1	4.0	5.0	8.0	5.0	1.3	3.8
78	70.3	21.4	5.2	4.7	9.0	5.8	1.8	3.8

Table 2. (continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	ORIGIN	YIELD KG/HA	HEAD DAYS	MAT DAYS	STRP RT.L	STRP RT.H	LEAF RUST	STEM RUST
	NUMBER OF OBSERVATIONS:		(14)	(20)	(5)	(4)	(2)	(9)	(1)
79	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-1Y-3M-0Y		3638.5	90.0	129.0	1.8	5.5	9.5	0.0
80	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-1Y-4M-0Y		3156.4	90.1	129.6	1.8	5.5	9.4	0.0
81	GLORIA"S"/COPAL"S" CMB81-295-30B-3Y-2M-1Y-5M-0Y		3681.4	96.2	132.8	4.5	5.5	8.8	0.0
82	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-1M-1Y-2M-0Y		4230.4	93.5	133.2	0.8	10.5	9.3	0.0
83	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-9M-3Y-3M-0Y		3864.7	91.4	130.2	0.8	10.5	9.0	1.0
84	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-15M-2Y-2M-0Y		3848.4	94.2	131.6	4.5	7.5	8.8	10.0
85	CACO"S"/3/API/CM67//1594 CMB81-168-6Y-2Y-16M-1Y-2M-0Y		4140.5	92.2	128.0	10.5	2.5	10.0	0.0
86	CACO"S"/3/API/CM67//1594 CMB81-168-6Y-2Y-16M-1Y-3M-0Y		3954.0	88.8	128.4	9.5	5.5	10.9	5.0
87	CIH"S"/QLTE"S" CMB82-1280-9B-2Y-1B-0Y		3675.1	93.3	129.0	16.5	10.5	12.6	1.0
88	M66.69.1/M65.94//70.22109/3/APM/IB65 4/GLDA"S"/5/CM67/CENTENO//CAM CMB82A-1694-C-4B-1Y-1B-0Y		3860.1	93.9	129.6	60.0	10.5	9.8	0.0
89	SGDO"S"/3/API/KRISTINA//M66.85/4/ 79W40762 CMB82A-2927-I-3B-4Y-1B-0Y		4423.6	98.8	133.2	67.5	50.0	10.3	0.0
90	GLORIA"S"/CELO"S" CMB81A-614-8Y-4B-3Y-2M-0Y		4112.7	95.3	131.0	26.0	7.5	9.8	5.0
91	GLORIA"S"/COME"S" CMB81-294-25Y-4B-1Y-4M-0Y		3713.7	93.4	131.8	45.0	10.5	6.7	15.0
92	GLORIA"S"/COME"S" CMB81-294-5B-1Y-1M-2Y-3M-0Y		3873.3	96.6	131.2	8.5	10.0	9.0	1.0
93	GLORIA"S"/COPAL"S" CMB81-295-30B-2Y-2M-1Y-5M-0Y		3932.1	95.4	132.2	3.3	10.0	9.5	1.0
94	GLORIA"S"/COPAL"S" CMB81-295-30B-2Y-2M-2Y-2M-0Y		3414.3	95.6	131.6	2.0	5.0	9.5	0.0
95	GLORIA"S"/COME"S" CMB81-294-5B-5Y-4M-2Y-5M-0Y		3519.6	99.5	132.8	8.0	1.0	9.3	1.0
96	GLORIA"S"/COME"S" CMB81-294-7B-4Y-8M-2Y-4M-0Y		3632.1	98.0	132.4	23.0	2.5	9.3	1.0
97	GLORIA"S"/COPAL"S" CMB81-295-18B-1Y-2M-1Y-1M-0Y		3606.4	91.0	127.6	38.0	5.0	10.0	5.0
98	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-1M-1Y-1M-0Y		3908.8	96.9	131.2	18.0	2.5	9.0	0.0
99	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-9M-2Y-1M-0Y		3963.8	94.3	131.4	3.0	2.5	9.5	0.0
100	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-9M-2Y-2M-0Y		4118.0	94.2	131.2	3.5	5.5	7.0	0.0
101	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-9M-2Y-3M-0Y		4080.2	94.5	131.0	5.3	0.5	9.3	0.0
102	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-22M-1Y-3M-0Y		4030.4	95.4	130.8	4.5	5.0	9.3	1.0
103	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-23M-1Y-5M-0Y		3806.0	93.7	129.4	9.0	2.5	9.3	5.0
104	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-24M-1Y-1M-0Y		3759.9	95.8	131.2	1.5	2.5	9.3	1.0
105	CIH"S"/QLTE"S" CMB82-1280-9B-4Y-1B-0Y		3739.1	95.2	131.8	28.0	2.5	10.0	5.0

VTY	PLNT HT	CHECK MARK	POW M 0-9	NET B 0-9	BAR S 0-9	SPT B 0-9	SCLD 0-9	BYDV 0-9
	(8)	(14)	(13)	(12)	(1)	(4)	(8)	(4)
79	71.8	7.1	5.5	4.2	9.0	5.8	2.6	5.0
80	73.3	14.3	5.0	4.7	9.0	5.7	2.3	5.5
81	77.5	7.1	3.8	3.5	8.0	5.3	2.3	4.5
82	76.3	7.1	3.6	3.8	8.0	5.5	2.2	4.5
83	73.2	0.0	3.4	3.8	9.0	5.7	1.3	3.8
84	75.0	7.1	3.8	4.4	8.0	5.3	1.7	4.5
85	77.5	7.1	5.1	4.3	8.0	5.5	1.7	4.3
86	78.8	7.1	4.8	4.0	7.0	5.8	1.5	4.8
87	83.3	7.1	3.2	4.2	8.0	4.7	2.0	4.5
88	77.3	7.1	4.0	3.9	9.0	5.8	2.5	6.0
89	75.3	50.0	4.3	4.1	8.0	5.0	2.4	4.5
90	76.0	14.3	4.8	4.7	8.0	5.3	2.3	5.7
91	81.0	7.1	5.1	4.3	8.0	6.0	2.3	5.7
92	73.9	7.1	3.9	4.3	7.0	6.0	2.1	6.5
93	80.1	7.1	4.1	4.5	8.0	6.3	1.6	5.3
94	85.9	0.0	3.9	4.5	8.0	6.3	1.2	5.5
95	83.0	0.0	4.7	3.3	7.0	5.0	1.9	4.8
96	84.8	7.1	4.0	4.3	9.0	6.0	2.2	6.5
97	75.0	21.4	5.2	3.7	8.0	4.3	2.0	6.0
98	71.5	7.1	4.2	4.0	8.0	5.8	2.6	5.0
99	70.8	21.4	4.0	4.4	8.0	5.5	3.0	5.0
100	70.4	21.4	3.7	4.9	8.0	5.5	2.7	5.0
101	71.0	14.3	3.6	4.6	7.0	5.5	3.5	5.5
102	69.9	7.1	3.0	4.8	7.0	5.5	2.9	5.5
103	70.4	0.0	4.0	4.5	9.0	5.8	1.7	5.8
104	73.6	0.0	3.5	5.0	8.0	5.3	2.1	5.0
105	75.1	7.1	3.3	4.3	9.0	3.3	2.8	5.0

Table 2. (continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	ORIGIN	YIELD KG/HA	HEAD DAYS	MAT DAYS	STRP RT.L	STRP RT.H	LEAF RUST	STEM RUST
		NUMBER OF OBSERVATIONS:	(14)	(20)	(5)	(4)	(2)	(9)	(1)
106	COME"S"/3/CEL//MZQ/GVA/4/79W40762 CMB82A-2930-A-10B-2Y-1B-0Y		3821.9	96.8	133.2	53.0	2.5	12.3	0.0
107	QLTE"S"//CP/BRA CMB82-665-11Y-2B-1Y-1M-0Y		3366.2	95.1	129.8	24.0	5.0	8.2	5.0
108	GLORIA"S"/COME"S" CMB81-294-25Y-4B-1Y-5M-0Y		3759.9	93.2	131.0	23.0	2.5	8.8	15.0
109	GLORIA"S"/COME"S" CMB81-294-5B-3Y-8M-1Y-2M-0Y		3790.4	93.9	130.6	7.5	0.5	8.8	5.0
110	GLORIA"S"/COME"S" CMB81-294-5B-5Y-3M-1Y-5M-0Y		3555.0	98.4	132.0	11.0	2.5	9.8	10.0
111	GLORIA"S"/COME"S" CMB81-294-6B-1Y-1M-1Y-4M-0Y		4353.6	93.3	132.6	3.3	5.0	9.0	10.0
112	GLORIA"S"/COME"S" CMB81-294-6B-1Y-1M-2Y-3M-0Y		4520.6	92.5	131.6	3.8	5.5	12.8	5.0
113	GLORIA"S"/COPAL"S" CMB81-295-30B-2Y-2M-1Y-4M-0Y		4194.9	94.3	133.0	1.8	2.5	8.8	0.0
114	GLORIA"S"/COPAL"S" CMB81-295-30B-2Y-2M-2Y-1M-0Y		3784.1	93.7	131.8	1.3	1.0	8.8	5.0
115	GLORIA"S"/COPAL"S" CMB81-295-30B-3Y-2M-2Y-1M-0Y		3594.6	97.0	134.0	2.0	5.0	8.8	0.0
116	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-5M-1Y-2M-0Y		4194.8	94.4	133.6	2.0	1.0	8.8	1.0
117	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-9M-1Y-2M-0Y		4098.4	94.3	132.4	1.3	1.0	9.0	1.0
118	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-9M-1Y-4M-0Y		4085.6	95.3	131.6	0.3	5.0	12.8	0.0
119	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-15M-2Y-3M-0Y		3865.7	90.8	128.2	1.8	5.0	10.4	0.0
120	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-18M-1Y-4M-0Y		3943.4	93.7	133.0	5.5	0.5	9.0	1.0
121	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-19M-1Y-3M-0Y		3973.5	94.9	134.4	8.5	5.0	6.5	0.0
122	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-22M-1Y-1M-0Y		4172.4	96.6	133.8	3.0	3.0	9.3	1.0
123	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-22M-2Y-2M-0Y		3974.4	92.7	130.4	14.0	3.0	9.3	5.0
124	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-23M-1Y-2M-0Y		4504.2	94.1	130.8	8.0	5.0	5.0	5.0
125	GLORIA"S"/COPAL"S" CMB81-295-30B-3Y-2M-1Y-2M-0Y		3851.9	98.3	133.8	3.5	2.5	9.1	0.0
126	GLORIA"S"/COPAL"S" CMB81-295-30B-3Y-2M-2Y-2M-0Y		3995.4	95.3	133.2	1.8	2.5	5.4	0.0
127	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-1M-1Y-3M-0Y		4150.8	94.5	133.0	7.3	2.5	8.8	5.0
128	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-12M-1Y-2M-0Y		3650.6	95.1	133.4	2.5	10.0	9.1	10.0
129	GLORIA"S"/CELO"S" CMB81A-614-10Y-2B-1Y-1M-0Y		3690.2	94.2	131.4	25.3	40.0	8.9	5.0
130	GLORIA"S"/COME"S" CMB81-294-5B-5Y-2M-1Y-1M-0Y		3620.1	93.4	130.4	46.7	10.0	9.8	1.0
131	GLORIA"S"/COME"S" CMB81-294-5B-5Y-3M-1Y-3M-0Y		3417.2	98.3	134.0	26.7	1.0	6.8	10.0
132	GLORIA"S"/COME"S" CMB81-294-5B-5Y-3M-1Y-4M-0Y		3527.8	97.7	132.8	23.0	5.0	9.3	5.0
133	GLORIA"S"/COME"S" CMB81-294-6B-1Y-2M-2Y-1M-0Y		3946.1	93.9	131.2	4.3	3.0	9.3	1.0

VTY	PLNT HT	CHECK MARK	POW H 0-9	NET B 0-9	BAR S 0-9	SPT B 0-9	SCLD 0-9	BYDV 0-9
	(8)	(14)	(13)	(12)	(1)	(4)	(8)	(4)
106	76.3	14.3	3.3	4.3	8.0	5.3	1.0	4.0
107	74.9	7.1	4.0	3.9	8.0	5.5	2.4	5.0
108	79.6	0.0	4.4	4.4	8.0	5.3	1.3	4.0
109	77.4	14.3	4.7	4.4	8.0	6.0	1.8	5.0
110	76.8	7.1	4.2	4.3	7.0	5.0	2.0	5.3
111	73.6	7.1	3.6	5.0	8.0	5.0	3.2	4.8
112	73.8	7.1	4.0	5.0	8.0	5.5	2.7	3.5
113	77.9	7.1	3.6	4.9	8.0	5.0	2.4	4.7
114	75.0	7.1	4.0	4.3	7.0	4.5	1.0	5.3
115	77.6	7.1	3.6	4.4	8.0	4.0	1.7	6.0
116	77.5	14.3	4.3	4.8	8.0	3.8	2.0	5.0
117	73.0	14.3	3.8	5.3	8.0	5.5	2.2	4.7
118	76.5	14.3	3.9	4.3	8.0	5.3	1.3	5.3
119	77.7	14.3	4.1	4.5	8.0	5.7	2.0	5.5
120	79.0	21.4	4.1	4.8	8.0	5.3	2.5	5.0
121	80.3	7.1	3.6	4.5	8.0	5.7	2.5	4.5
122	79.6	21.4	2.9	4.3	7.0	5.0	2.5	4.5
123	80.9	7.1	3.9	4.2	9.0	5.5	3.0	5.0
124	76.6	7.1	3.7	4.0	9.0	5.3	3.4	4.8
125	78.5	7.1	3.5	3.8	8.0	5.3	3.1	4.0
126	82.4	21.4	3.5	4.4	8.0	4.3	3.1	4.3
127	79.0	14.3	3.6	3.6	8.0	5.0	3.0	4.3
128	82.3	28.6	3.6	4.1	8.0	5.3	3.2	4.0
129	82.5	0.0	4.2	4.2	9.0	6.0	3.7	5.3
130	79.4	0.0	4.3	4.6	9.0	5.0	2.0	4.0
131	78.9	0.0	4.3	4.3	8.0	5.5	3.9	5.0
132	82.3	7.1	3.9	4.3	8.0	5.8	3.7	4.3
133	81.5	7.1	5.0	4.6	7.0	5.5	3.4	3.0

Table 2. (continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	ORIGIN	YIELD KG/HA	HEAD DAYS	MAT DAYS	STRP RT.L	STRP RT.H	LEAF RUST	STEM RUST
	NUMBER OF OBSERVATIONS:		(14)	(20)	(5)	(4)	(2)	(9)	(1)
134	GLORIA"S"/COME"S" CMB81-294-7B-5Y-3M-2Y-4M-0Y		4356.4	93.2	129.0	3.0	2.5	7.3	1.0
135	GLORIA"S"/COPAL"S" CMB81-295-6B-2Y-1M-1Y-2M-0Y		3945.9	95.2	132.8	2.3	5.5	9.4	0.0
136	GLORIA"S"/COPAL"S" CMB81-295-30B-3Y-2M-1Y-4M-0Y		4326.9	96.0	133.2	11.3	0.5	9.5	0.0
137	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-5M-2Y-2M-0Y		3765.3	96.0	132.6	0.8	1.0	9.5	1.0
138	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-15M-2Y-1M-0Y		4256.5	95.9	133.4	5.3	2.5	7.0	0.0
139	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-18M-1Y-1M-0Y		4460.2	92.3	133.2	4.5	2.5	9.0	1.0
140	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-18M-1Y-2M-0Y		4599.6	93.1	132.6	1.5	0.5	8.8	1.0
141	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-20M-1Y-1M-0Y		4429.4	94.2	132.4	1.3	5.0	9.5	0.0
142	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-20M-1Y-2M-0Y		4186.7	94.3	133.0	3.0	2.5	8.8	0.0
143	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-24M-2Y-3M-0Y		4491.8	94.5	132.4	3.5	3.0	10.0	1.0
144	APM/DWARF21//POR/IB65/3/BAL16/4/NOPA "S"/5/QLTE"S" CMB81-922-2B-1Y-1M-1Y-1M-0Y		3887.1	91.8	130.0	20.8	5.0	18.3	10.0
145	CACO"S"/3/API/CM67//1594 CMB81-168-6Y-4Y-2M-1Y-4M-0Y		3703.9	94.8	131.4	50.5	12.5	10.3	1.0
146	GLORIA"S"/COME"S" CMB81-294-14Y-2B-1Y-1M-1Y-0B		3730.4	93.4	130.2	37.5	5.5	9.3	0.0
147	GLORIA"S"/COME"S" CMB81-294-25Y-1B-2Y-5M-0Y		3514.5	96.6	133.8	48.0	10.0	9.3	0.0
148	GLORIA"S"/COME"S" CMB81-294-25Y-6B-1Y-4M-0Y		3653.4	97.0	134.2	30.0	20.0	10.6	1.0
149	GLORIA"S"/COME"S" CMB81-294-25Y-6B-1Y-5M-0Y		3443.1	97.0	133.4	38.0	5.0	9.3	5.0
150	GLORIA"S"/COME"S" CMB81-294-5B-4Y-15M-1Y-1M-0Y		3547.4	93.3	130.6	4.0	10.5	9.0	5.0
151	GLORIA"S"/COME"S" CMB81-294-6B-1Y-1M-2Y-4M-0Y		3986.4	91.9	132.0	16.8	10.0	5.6	1.0
152	GLORIA"S"/COME"S" CMB81-294-6B-1Y-2M-1Y-4M-0Y		3852.1	93.1	132.4	1.8	1.0	9.4	1.0
153	GLORIA"S"/COME"S" CMB81-294-6B-1Y-2M-1Y-6M-0Y		3541.4	95.0	132.0	7.0	5.5	9.3	0.0
154	GLORIA"S"/COME"S" CMB81-294-7B-6Y-1M-2Y-1M-0Y		4343.4	97.6	134.4	2.0	1.0	8.8	5.0
155	GLORIA"S"/COPAL"S" CMB81-295-30B-1Y-2M-2Y-1M-0Y		4011.0	95.1	134.6	6.0	3.0	9.4	1.0
156	GLORIA"S"/COPAL"S" CMB81-295-30B-3Y-2M-1Y-1M-0Y		3679.1	95.4	133.8	4.0	5.5	9.3	1.0
157	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-19M-2Y-2M-0Y		3643.4	95.9	132.2	3.5	5.0	9.0	1.0
158	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-19M-2Y-5M-0Y		3745.1	96.5	134.4	7.8	3.0	9.0	0.0
159	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-24M-2Y-2M-0Y		3725.2	95.4	133.4	3.5	1.0	6.8	1.0
160	GLORIA"S"/COME"S" CMB81-294-26Y-1B-2Y-2M-1Y-0B		3793.4	94.8	132.6	12.0	0.0	7.1	10.0

VTY	PLNT HT	CHECK MARK	POW M 0-9	WET B 0-9	BAR S 0-9	SPT D 0-9	SCLD 0-9	BYDV 0-9
	(0)	(14)	(13)	(12)	(1)	(4)	(8)	(4)
134	81.1	35.7	4.5	4.5	7.0	5.8	3.7	4.5
135	77.4	7.1	4.3	3.4	8.0	5.8	2.3	4.3
136	76.0	7.1	3.3	3.9	8.0	4.0	2.1	5.0
137	73.5	7.1	3.5	4.2	8.0	5.3	2.1	3.8
138	75.5	0.0	4.0	4.3	8.0	5.5	2.3	5.0
139	74.5	28.6	3.6	4.3	7.0	5.5	3.0	5.3
140	76.9	21.4	3.3	4.3	8.0	5.3	2.6	4.5
141	76.6	0.0	3.5	4.3	8.0	5.5	3.2	5.3
142	76.3	0.0	3.8	4.6	7.0	3.8	2.9	3.8
143	76.0	14.3	4.1	4.1	8.0	5.5	2.4	5.8
144	75.9	21.4	4.3	5.1	9.0	5.3	3.0	5.0
145	76.0	7.1	4.7	4.7	8.0	5.3	1.3	4.5
146	81.6	0.0	3.6	4.7	9.0	4.3	1.8	6.0
147	82.3	0.0	4.4	3.5	8.0	4.7	1.0	4.7
148	82.9	14.3	4.8	4.8	8.0	5.3	2.4	4.3
149	78.8	7.1	5.3	4.7	9.0	5.8	1.2	3.7
150	81.8	7.1	5.1	5.1	9.0	5.0	1.6	4.8
151	78.4	14.3	4.9	4.9	8.0	5.3	1.8	5.3
152	80.4	0.0	4.0	4.8	8.0	5.5	2.2	4.5
153	79.6	14.3	3.5	5.0	9.0	5.5	3.2	4.5
154	81.1	28.6	4.2	4.8	8.0	5.5	2.7	3.8
155	79.5	7.1	4.5	4.6	8.0	4.8	1.8	4.5
156	73.1	0.0	3.9	4.8	7.0	4.3	2.2	5.5
157	72.0	7.1	4.1	4.7	7.0	5.5	1.8	4.5
158	73.4	14.3	4.3	4.8	7.0	5.5	2.5	5.0
159	71.1	0.0	4.3	4.5	8.0	5.3	2.9	4.3
160	78.4	14.3	3.7	5.2	8.0	5.0	2.3	4.0

Table 2. (continued)

VTT NO.	VARIETY OR CROSS AND PEDIGREE	ORIGIN	YIELD KG/HA	HEAD DAYS	MAT DAYS	STRP RT.L	STRP RT.H	LEAF RUST	STEM RUST
		NUMBER OF OBSERVATIONS:	(14)	(20)	(5)	(4)	(2)	(9)	(1)
161	SGDO"S"/3/API/KRISTINA//M66.85/4/ 79W40762 CMB82A-2927-B-4B-1Y-2B-0Y		2007.2	97.5	132.0	70.0	35.0	6.6	10.0
162	GLORIA"S"/CELO"S" CMB81A-614-5Y-7B-1Y-1M-0Y		3412.4	90.9	128.8	17.5	20.0	8.8	5.0
163	GLORIA"S"/COME"S" CMB81-294-25Y-6B-2Y-2M-0Y		3363.6	97.6	132.8	37.5	12.5	11.1	10.0
164	GLORIA"S"/COME"S" CMB81-294-5B-5Y-4M-1Y-3M-0Y		3296.9	98.9	132.4	15.5	2.5	8.8	1.0
165	GLORIA"S"/COME"S" CMB81-294-5B-5Y-4M-2Y-2M-0Y		3287.6	98.3	133.0	7.0	0.5	6.3	1.0
166	GLORIA"S"/COME"S" CMB81-294-5B-5Y-4M-2Y-4M-0Y		3692.4	97.3	132.6	18.0	2.5	9.5	5.0
167	GLORIA"S"/COPAL"S" CMB81-295-30B-3Y-1M-1Y-4M-0Y		4346.4	96.0	133.0	4.5	5.0	9.3	5.0
168	GLORIA"S"/COPAL"S" CMB81-295-30B-3Y-1M-1Y-5M-0Y		3745.0	96.0	133.0	5.0	10.5	9.1	5.0
169	GLORIA"S"/COPAL"S" CMB81-295-30B-3Y-2M-2Y-3M-0Y		3842.7	95.4	133.2	3.0	10.0	6.8	0.0
170	PISTACHO"S"/SUTTER CMB82A-1029-6B-3Y-2B-1Y-0M		4132.2	94.4	131.4	36.0	5.0	10.0	10.0
171	BORD RANQ/JONGU//DC/3/GLORIA"S" CMB82A-2001-C-1B-1Y-2B-1Y-0M		3414.6	89.6	132.6	47.5	50.0	26.8	10.0
172	BORD RANQ/JONGU//DC/3/GLORIA"S" CMB82A-2001-C-1B-1Y-2B-2Y-0M		3629.2	88.8	127.5	60.0	60.0	32.3	0.0
173	BORD RANQ/JONGU//DC/3/GLORIA"S" CMB82A-2001-C-1B-1Y-2B-3Y-0M		3280.4	88.4	132.6	65.0	50.0	11.1	1.0
174	BORD RANQ/JONGU//DC/3/GLORIA"S" CMB82A-2001-C-7B-7Y-1B-1Y-0M		3070.1	98.7	137.2	55.0	5.5	9.3	0.0
175	BORD RANQ/JONGU//DC/3/GLORIA"S" CMB82A-2001-C-7B-7Y-2B-1Y-0M		3649.4	97.8	135.4	50.0	20.0	13.9	0.0
176	BORD RANQ/JONGU//DC/3/GLORIA"S" CMB82A-2001-C-8B-1Y-1B-1Y-0M		3358.7	97.1	136.4	9.3	3.0	10.7	5.0
177	BORD RANQ/JONGU//DC/3/GLORIA"S" CMB82A-2001-C-8B-1Y-1B-2Y-0M		3148.7	97.1	136.8	6.0	3.0	22.0	0.0
178	GLORIA"S"/CELO"S" CMB81A-614-3Y-1B-2Y-1B-1Y-0M		3369.6	92.3	130.0	32.0	45.0	5.3	15.0
179	PI329037/BREA"S" CMSWB81A-329-10Y-1B-2Y-1B-1Y-0M		3588.8	102.1	135.8	32.5	0.5	16.9	1.0
180	BORD RANQ/JONGU//DC/3/GLORIA"S" CMB82A-2001-C-7B-8Y-3B-3Y-0M		3444.3	105.1	138.8	11.0	0.5	9.8	0.0
181	JACARANDA CMB82-366-1Y-2B-1Y-1B-1Y-0M		2948.2	78.2	114.8	66.7	60.0	19.0	10.0
182	M64.69/M65.211//APM/RL/3/API/CM67/4/ QLTE"S" CMB81A-357-1B-1Y-1B-1Y-1B-0Y		2221.2	77.3	112.5	66.7	60.0	30.3	20.0
183	CORI"S"//SV70.22423/B1 CMB81-1347-7B-2Y-1B-5Y-1B-0Y		2413.7	76.9	113.0	65.0	70.0	17.7	10.0
184	CORI"S"//SV70.22423/B1 CMB81-1347-7B-2Y-1B-7Y-1B-0Y		2255.4	75.9	112.8	60.0	60.0	16.6	15.0
185	B1/GUAJILLO//WI2274 CMB81A-1655-5B-1Y-1B-1Y-1B-0Y		2904.7	88.1	115.3	75.0	30.0	17.7	25.0

VTY	PLNT HT	CHECK MARK	POW M 0-9	MST B 0-9	BAR S 0-9	SPT B 0-9	SCLD 0-9	BYDV 0-9
	(8)	(14)	(13)	(12)	(1)	(4)	(8)	(4)
161	71.6	0.0	4.5	3.8	9.0	4.8	2.5	4.3
162	79.1	14.3	4.7	4.1	9.0	3.8	2.5	4.3
163	83.2	0.0	4.8	4.6	9.0	4.8	2.3	4.0
164	81.5	7.1	4.5	4.5	8.0	5.5	1.7	4.3
165	84.8	0.0	4.8	3.7	8.0	4.5	2.4	3.8
166	84.0	0.0	4.8	4.0	8.0	5.5	2.3	4.5
167	83.6	14.3	3.9	4.2	8.0	5.0	2.7	4.8
168	80.6	7.1	3.4	4.3	8.0	4.3	2.6	4.3
169	83.0	7.1	3.3	4.4	8.0	5.3	3.1	5.0
170	90.4	35.7	3.7	5.3	9.0	5.0	1.0	5.3
171	84.6	14.3	4.7	4.3	8.0	3.0	1.4	5.5
172	79.5	14.3	5.4	4.4	8.0	3.3	1.0	4.5
173	78.3	21.4	5.5	4.1	9.0	5.8	1.0	6.5
174	80.1	21.4	5.0	5.1	9.0	6.0	0.6	6.0
175	82.3	14.3	4.7	4.5	9.0	6.3	1.4	7.0
176	89.6	7.1	4.5	4.3	8.0	5.5	0.2	3.0
177	87.6	0.0	4.7	4.2	9.0	5.7	0.8	4.8
178	80.9	7.1	4.3	4.8	9.0	5.5	2.0	5.3
179	85.6	7.1	3.6	4.9	9.0	5.0	2.0	3.8
180	85.3	14.3	3.7	4.0	9.0	4.7	1.2	5.0
181	71.0	28.6	4.4	4.5	8.0	5.3	3.2	6.5
182	68.9	0.0	3.8	4.5	8.0	4.5	4.0	6.0
183	68.3	0.0	3.8	4.6	9.0	5.0	5.0	5.5
184	65.4	0.0	3.9	4.4	9.0	4.3	5.6	5.5
185	82.9	7.1	2.7	4.1	8.0	3.5	3.5	7.0

Table 3. Resistance to leaf rust.

LOCS.	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
1	AFRICA	ETHIOPIA	SHEWA, AMBO	7
3	AFRICA	SOUTH AFRICA	CAPE PROV.	7
14	EUROPE	GERMANY, DEM. REP.	MAGDEBURG	7
19	EUROPE	PORTUGAL	ELVAS	7
23	MIDDLE EAST	CYPRUS	NICOSIA	7
26	MIDDLE EAST	TURKEY	IZMIR-EGE RARI	7
28	NORTH AMERICA	MEXICO	EL BATAN	7
29	NORTH AMERICA	MEXICO	SONORA-CIANO	7
35	SOUTH AMERICA	ECUADOR	PICHINCHA	7

*VARIABLE IDENTIFICATIONS
7 LEAF RUST

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS 1	3	14	19	23	26	28	29	35	MEAN
29	GLORIA"S"/COME"S" CMB81-294-5B-4Y-1M-1Y-1M-0Y	0	0	30MS	-----	10MR	0	0	0	0	3.5
8	BREA"S"/DL70//MOZDOSKY/3/NOPAL/4/ CELO"S" CMB82-818-67B-3Y-1B-0Y	TR	5MR	10MR	20MR	5MR	10MR	5M	10MR	20MR	3.9
23	GLORIA"S"/CELO"S" CMB81A-614-24B-1Y-1B-0Y	0	0	30MS	-----	15MR	0	0	0	5MR	4.0
124	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-23M-1Y-2M-0Y	0	0	50MS	-----	TMR	0	0	0	0	5.0
178	GLORIA"S"/CELO"S" CMB81A-614-3Y-1B-2Y-1B-1Y-0M	0	0	50MS	-----	5MR	0	0	0	0	5.3
126	GLORIA"S"/COPAL"S" CMB81-295-30B-3Y-2M-2Y-2M-0Y	0	0	50MS	-----	TMR	10MR-R	0	0	0	5.4
151	GLORIA"S"/COME"S" CMB81-294-6B-1Y-1M-2Y-4M-0Y	0	0	50MS	-----	5MR	10MR-R	0	0	0	5.6
165	GLORIA"S"/COME"S" CMB81-294-5B-5Y-4M-2Y-2M-0Y	0	0	50S	-----	TMR	0	0	0	0	6.3
28	GLORIA"S"/COME"S" CMB81-294-25Y-3B-1Y-2M-0Y	0	0	50S	-----	5MR	0	0	0	TR	6.5
36	GLORIA"S"/COPAL"S" CMB81-295-26B-4Y-2M-2Y-1M-0Y	0	0	50S	-----	5MR	0	0	0	TR	6.5
59	GLORIA"S"/COME"S" CMB81-294-5B-4Y-1M-1Y-3M-0Y	0	0	50S	-----	5MR	0	0	0	TR	6.5
63	GLORIA"S"/COME"S" CMB81-294-5B-8Y-1M-2Y-3M-0Y	0	0	50S	-----	5MR	0	0	0	TR	6.5
121	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-19M-1Y-3M-0Y	0	0	50S	-----	TMR	5MR-R	0	0	0	6.5
161	SGDO"S"/3/API/KRISTINA//M66.85/4/ 79W40762 CMB82A-2927-B-4B-1Y-2B-0Y	0	0	50S	-----	TMR	10MR-R	0	0	0	6.6
43	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-9M-3Y-2M-0Y	0	0	50S	-----	10MR	0	0	0	0	6.8

Table 4. Resistance to powdery mildew.

LOCS.	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
4	AFRICA	TUNISIA	TUNIS-BEJA	61
10	ASIA	PAKISTAN	PUNJAB-AYUB	61
12	EUROPE	CZECHOSLOVAKIA	BOHEMIA-STUPICE	61
13	EUROPE	FINLAND	HYRLA	61
14	EUROPE	GERMANY, DEM. REP.	MAGDEBURG	61
15	EUROPE	GREECE	THESSALONIKI	61
16	EUROPE	ITALY	MACERATA	61
17	EUROPE	NORWAY	AAS	61
19	EUROPE	PORTUGAL	ELVAS	61
20	EUROPE	SPAIN	GRANADA	61
22	EUROPE	YUGOSLAVIA	BOSNIA & HERSEGOVINA	61
23	MIDDLE EAST	CYPRUS	NICOSIA	61
26	MIDDLE EAST	TURKEY	IZMIR-EGE RARI	61

*VARIABLE IDENTIFICATIONS
61 POW M 0-9

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS 4	10	12	13	14	15	16	17	19	20	22	23	26	MEAN
185	B1/GUAJILLO//WI2274 CMB81A-1655-5B-1Y-1B-1Y-1B-0Y	---	0	3	3	5	5	2	0	---	5	1	3	---	2.7
122	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-22M-1Y-1M-0Y	---	0	1	4	5	5	4	1	---	5	1	3	3	2.9
102	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-22M-1Y-3M-0Y	---	0	2	4	5	3	4	0	---	7	2	3	3	3.0
87	CIH"S"/QLTE"S" CMB82-1280-9B-2Y-1B-0Y	3	0	2	5	5	4	2	0	---	7	2	3	5	3.2
4	CEL/WI2269//ORE/3/ATHS NEW/4/MCU59/ MCU1//MOCH/5/RTA"S" CMB82A-1530-B-15B-1Y-2B-0Y	---	0	4	4	4	4	6	2	---	5	---	1	3	3.3
105	CIH"S"/QLTE"S" CMB82-1280-9B-4Y-1B-0Y	4	3	3	4	4	4	1	0	---	6	1	3	7	3.3
106	COME"S"/3/CEL//MZQ/GVA/4/79W40762 CMB82A-2930-A-10B-2Y-1B-0Y	4	0	2	5	4	5	3	0	---	7	1	3	5	3.3
136	GLORIA"S"/COPAL"S" CMB81-295-30B-3Y-2M-1Y-4M-0Y	4	2	4	6	4	4	3	0	3	6	1	3	3	3.3
140	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-18M-1Y-2M-0Y	---	0	4	4	5	5	4	1	---	6	1	1	5	3.3
169	GLORIA"S"/COPAL"S" CMB81-295-30B-3Y-2M-2Y-3M-0Y	---	0	4	6	5	4	1	0	---	7	3	3	---	3.3
83	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-9M-3Y-3M-0Y	6	2	4	4	5	3	4	0	---	6	1	3	3	3.4
168	GLORIA"S"/COPAL"S" CMB81-295-30B-3Y-1M-1Y-5M-0Y	---	0	5	5	5	4	3	0	---	7	2	3	3	3.4
70	GLORIA"S"/COME"S" CMB81-294-26Y-6B-1Y-2M-1Y-0B	4	1	1	4	4	5	5	0	6	6	5	2	3	3.5
104	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-24M-1Y-1M-0Y	---	0	5	4	5	4	5	0	---	6	1	4	5	3.5
125	GLORIA"S"/COPAL"S" CMB81-295-30B-3Y-2M-1Y-2M-0Y	5	2	4	5	5	5	4	0	---	5	1	3	---	3.5

Table 5. Resistance to spot blotch.

LOCS.	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
1	AFRICA	ETHIOPIA	SHEWA, AMBO	68
6	ASIA	P.R. OF CHINA	HEILONGJIANG	68
22	EUROPE	YUGOSLAVIA	BOSNIA & HERSEGOVINA	68
23	MIDDLE EAST	CYPRUS	NICOSIA	68

*VARIABLE IDENTIFICATIONS
68 SPT B 0-9

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS 1	6	22	23	MEAN
171	BORD RANQ/JONGU//DC/3/GLORIA"S" CMB82A-2001-C-1B-1Y-2B-1Y-0M	4	3	4	1	3.0
3	CEL/WI2269//ORE/3/ATHS NEW/4/MCU59/ MCU1//MOCH/5/RTA"S" CMB82A-1530-B-10B-2Y-1B-0Y	4	3	5	1	3.3
105	CIH"S"/QLTE"S" CMB82-1280-9B-4Y-1B-0Y	5	4	3	1	3.3
172	BORD RANQ/JONGU//DC/3/GLORIA"S" CMB82A-2001-C-1B-1Y-2B-2Y-0M	4	4	4	1	3.3
185	B1/GUAJILLO//WI2274 CMB81A-1655-5B-1Y-1B-1Y-1B-0Y	6	4	3	1	3.5
24	GLORIA"S"/CELO"S" CMB81A-614-8Y-4B-3Y-1M-0Y	0	4	7	---	3.7
116	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-5M-1Y-2M-0Y	9	4	1	1	3.8
142	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-20M-1Y-2M-0Y	8	4	2	1	3.8
162	GLORIA"S"/CELO"S" CMB81A-614-5Y-7B-1Y-1M-0Y	8	3	3	1	3.8
26	GLORIA"S"/CELO"S" CMB81A-614-20Y-2B-1Y-2M-0Y	5	4	3	---	4.0
27	GLORIA"S"/COME"S" CMB81-294-25Y-1B-2Y-3M-0Y	6	4	2	---	4.0
115	GLORIA"S"/COPAL"S" CMB81-295-30B-3Y-2M-2Y-1M-0Y	9	4	2	1	4.0
136	GLORIA"S"/COPAL"S" CMB81-295-30B-3Y-2M-1Y-4M-0Y	9	4	2	1	4.0
1	COLLO"S"/BFL"S"/3/CHZO"S"/NP108// BREA"S" CMB82-1631-B-3B-1Y-1B-0Y	7	5	4	1	4.3
19	CON"S"/COLLO"S" CMB80A-56-2Y-2Y-1M-1Y-1M-0Y	8	4	4	1	4.3

Table 6. Resistance to net blotch.

LOCS.	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
1	AFRICA	ETHIOPIA	SHEWA, AMBO	66
3	AFRICA	SOUTH AFRICA	CAPE PROV.	66
6	ASIA	P.R. OF CHINA	HEILONGJIANG	66
13	EUROPE	FINLAND	HYRLA	66
15	EUROPE	GREECE	THESSALONIKI	66
17	EUROPE	NORWAY	AAS	66
19	EUROPE	PORTUGAL	ELVAS	66
20	EUROPE	SPAIN	GRANADA	66
23	MIDDLE EAST	CYPRUS	NICOSIA	66
24	MIDDLE EAST	QATAR	DOHA	66
32	NORTH AMERICA	U.S.A.	MONTANA	66
34	SOUTH AMERICA	BRAZIL	SAO PAULO-CAPAO BONITO	66

*VARIABLE IDENTIFICATIONS
66 NET B 0-9

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS 1	3	6	13	15	17	19	20	23	24	32	34	MEAN
46	GLORIA"S"/CELO"S" CMB81A-614-7Y-1B-1Y-1M-0Y	2	5	4	4	0	2	1	4	1	3	2	7	2.9
12	GLORIA"S"/COPAL"S" CMB81-295-18B-1Y-2M-1Y-3M-0Y	0	5	4	4	0	2	3	6	1	0	3	8	3.0
13	GLORIA"S"/COPAL"S" CMB81-295-30B-2Y-1M-1Y-4M-0Y	0	1	5	4	0	4	6	6	1	0	2	7	3.0
19	CON"S"/COLLO"S" CMB80A-56-2Y-2Y-1M-1Y-1M-0Y	0	1	3	4	6	1	1	6	1	3	2	8	3.0
51	GLORIA"S"/COME"S" CMB81-294-5B-3Y-3M-1Y-4M-0Y	1	3	4	4	0	3	3	6	1	0	4	8	3.1
56	GLORIA"S"/COME"S" CMB81-294-25Y-3B-1Y-3M-0Y	0	7	4	4	0	1	1	7	1	1	3	8	3.1
9	GLORIA"S"/COME"S" CMB81-294-5B-1Y-5M-1Y-3M-0Y	1	8	4	4	0	1	3	6	1	0	3	9	3.3
26	GLORIA"S"/CELO"S" CMB81A-614-20Y-2B-1Y-2M-0Y	0	5	5	7	0	1	1	6	1	3	3	8	3.3
95	GLORIA"S"/COME"S" CMB81-294-5B-5Y-4M-2Y-5M-0Y	2	3	3	5	0	3	---	6	1	3	3	7	3.3
14	CACO"S"/3/API/CM67//1594 CMB81-168-6Y-2Y-18M-1Y-2M-0Y	1	1	3	5	6	3	3	7	1	0	3	8	3.4
22	GLORIA"S"/COME"S" CMB81-294-25Y-2B-2Y-4M-1Y-0B	0	5	4	5	0	2	3	7	1	3	3	8	3.4
37	GLORIA"S"/COPAL"S" CMB81-295-30B-2Y-1M-1Y-2M-0Y	0	7	4	3	0	3	6	3	5	0	2	8	3.4
135	GLORIA"S"/COPAL"S" CMB81-295-6B-2Y-1M-1Y-2M-0Y	1	7	3	4	0	5	3	5	1	1	4	7	3.4
2	CEL/WI2269//ORE/3/ATHS NEW/4/MCU59/ MCU1//MOCH/5/RTA"S" CMB82A-1530-B-10B-1Y-1B-0Y	0	9	4	3	0	1	---	7	1	3	3	7	3.5
11	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-1Y-2M-0Y	1	5	4	5	0	3	6	7	1	0	2	8	3.5

Table 7. Resistance to stripe rust.

LOCS.	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
10	ASIA	PAKISTAN	PUNJAB-AYUB	5
33	SOUTH AMERICA	BOLIVIA	COCHABAMBA	5
35	SOUTH AMERICA	ECUADOR	PICHINCHA	5
36	SOUTH AMERICA	ECUADOR	QUITO,PICHINCHA	5

*VARIABLE IDENTIFICATIONS
5 STRP RT.L

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS 10	33	35	36	MEAN
118	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-9M-1Y-4M-0Y	0	TMS	TR	0	0.3
9	GLORIA"S"/COME"S" CMB81-294-5B-1Y-5M-1Y-3M-0Y	0	2MS	0	0	0.5
43	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-9M-3Y-2M-0Y	0	T-2MS	5MR	0	0.8
74	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-9M-3Y-4M-0Y	0	TMS	5MR	TR	0.8
82	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-1M-1Y-2M-0Y	0	TMS	TR	5MR	0.8
83	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-9M-3Y-3M-0Y	0	TMS	0	5MR	0.8
137	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-5M-2Y-2M-0Y	0	TMS	0	5MR	0.8
13	GLORIA"S"/COPAL"S" CMB81-295-30B-2Y-1M-1Y-4M-0Y	0	5S	TR	0	1.3
114	GLORIA"S"/COPAL"S" CMB81-295-30B-2Y-2M-2Y-1M-0Y	0	5MS	TR	-----	1.3
117	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-9M-1Y-2M-0Y	0	5MS	TR	-----	1.3
141	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-20M-1Y-1M-0Y	0	TMS	TR	5MS	1.3
51	GLORIA"S"/COME"S" CMB81-294-5B-3Y-3M-1Y-4M-0Y	0	5MS	5MR	0	1.5
104	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-24M-1Y-1M-0Y	0	5MS	5MR	0	1.5
140	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-18M-1Y-2M-0Y	0	5MS	0	5MR	1.5
31	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-2Y-2M-0Y	0	5S	5MR	0	1.8

Table 8. Resistance to scald

LOCS.	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
3	AFRICA	SOUTH AFRICA	CAPE PROV.	69
4	AFRICA	TUNISIA	TUNIS-BEJA	69
13	EUROPE	FINLAND	HYRLA	69
19	EUROPE	PORTUGAL	ELVAS	69
20	EUROPE	SPAIN	GRANADA	69
30	NORTH AMERICA	MEXICO	TOLUCA	69
31	NORTH AMERICA	U.S.A.	CALIFORNIA-WOODLAND	69
32	NORTH AMERICA	U.S.A.	MONTANA	69

*VARIABLE IDENTIFICATIONS
69 SCLD 0-9

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS 3	4	13	19	20	30	31	32	MEAN
176	BORD RANQ/JONGU//DC/3/GLORIA"S" CMB82A-2001-C-8B-1Y-1B-1Y-0M	0	---	1	---	---	0	0	0	0.2
174	BORD RANQ/JONGU//DC/3/GLORIA"S" CMB82A-2001-C-7B-7Y-1B-1Y-0M	1	---	2	---	---	0	0	0	0.6
177	BORD RANQ/JONGU//DC/3/GLORIA"S" CMB82A-2001-C-8B-1Y-1B-2Y-0M	0	---	1	3	---	0	1	0	0.8
106	COME"S"/3/CEL//MZQ/GVA/4/79W40762 CMB82A-2930-A-10B-2Y-1B-0Y	0	1	2	---	---	2	1	0	1.0
114	GLORIA"S"/COPAL"S" CMB81-295-30B-2Y-2M-2Y-1M-0Y	0	---	1	---	4	0	1	0	1.0
170	PISTACHO"S"/SUTTER CMB82A-1029-6B-3Y-2B-1Y-0M	0	1	2	---	2	0	2	0	1.0
9	GLORIA"S"/COME"S" CMB81-294-5B-1Y-5M-1Y-3M-0Y	0	1	1	---	---	3	1	1	1.2
26	GLORIA"S"/CELO"S" CMB81A-614-20Y-2B-1Y-2M-0Y	0	1	2	---	---	2	1	1	1.2
94	GLORIA"S"/COPAL"S" CMB81-295-30B-2Y-2M-2Y-2M-0Y	0	3	1	---	---	0	1	2	1.2
149	GLORIA"S"/COME"S" CMB81-294-25Y-6B-1Y-5M-0Y	1	---	1	---	2	1	2	0	1.2
180	BORD RANQ/JONGU//DC/3/GLORIA"S" CMB82A-2001-C-7B-8Y-3B-3Y-0M	3	---	2	---	---	0	1	0	1.2
77	GLORIA"S"/COME"S" CMB81-294-6B-1Y-1M-1Y-1M-0Y	0	1	2	---	---	3	2	0	1.3
83	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-9M-3Y-3M-0Y	0	1	1	---	---	3	3	0	1.3
108	GLORIA"S"/COME"S" CMB81-294-25Y-4B-1Y-5M-0Y	0	---	1	1	4	1	2	0	1.3
118	GLORIA"S"/COPAL"S" CMB81-295-30B-4Y-9M-1Y-4M-0Y	0	---	1	1	---	3	3	0	1.3

Table 9. Resistance to stem rust.

LOCS.	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
29	NORTH AMERICA	MEXICO	SONORA-CIANO	8

*VARIABLE IDENTIFICATIONS
8 STEM RUST

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS 29	MEAN
2	CEL/WI2269//ORE/3/ATHS NEW/4/MCU59/ MCU1//MOCH/5/RTA"S" CMB82A-1530-B-10B-1Y-1B-0Y	TR	0.0
7	NOPAL//HULLESS/CQ/4/PO/3/KI/3*BA// MONTE CRISTO/5/GLORIA"S" CMB82A-1832-D-4B-2Y-1B-0Y	0	0.0
11	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-1Y-2M-0Y	TR	0.0
12	GLORIA"S"/COPAL"S" CMB81-295-18B-1Y-2M-1Y-3M-0Y	TR	0.0
30	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-2Y-1M-0Y	0	0.0
31	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-2Y-2M-0Y	0	0.0
32	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-1Y-1M-0Y	TR	0.0
33	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-1Y-2M-0Y 10	TR	0.0
34	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-1Y-3M-0Y	0	0.0
35	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-1Y-4M-0Y	TR	0.0
51	GLORIA"S"/COME"S" CMB81-294-5B-3Y-3M-1Y-4M-0Y 10	TR	0.0
52	GLORIA"S"/COME"S" CMB81-294-5B-8Y-1M-1Y-4M-0Y	TR	0.0
54	GLORIA"S"/COME"S" CMB81-294-7B-5Y-3M-2Y-3M-0Y	0	0.0
62	GLORIA"S"/COME"S" CMB81-294-5B-7Y-7M-1Y-1M-0Y	TR	0.0
78	GLORIA"S"/COPAL"S" CMB81-295-7B-3Y-2M-1Y-1M-0Y	0	0.0

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