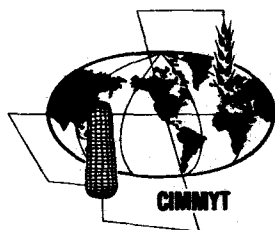


Results of the Eleventh International Barley Observation Nursery (IBON) 1983-1984



CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO
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Contents

	Page
Glossary	iv
Introduction	1
Table 1. Locations from which data were reported, with variables reported	3
Table 2. Summary of means of all variables	4
Table 3. Resistance to net blotch	18
Table 4. Resistance to scald	20
Table 5. Resistance to powdery mildew	22
Table 6. Resistance to leaf rust	24
Table 7. Resistance to stripe rust (leaf)	26
Table 8. Best entries for test weight	28
Table 9. Best entries for 1000-grain weight	29
Table 10. Best entries based on check marks	30

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 triticina</i>	Alternaria leaf blight (0-9 scale)	Tizón por alternaria (escala 0-9)	Alternaria (échelle 0-9)
ANT DMGE	—	Ant damage (percentage)	Porcentaje de daño por hormigas	Dégat du aux fourmis en pourcentage
APHD DMGE	—	Aphid damage (percentage)	Porcentaje de daño por áfidos	Dégat du aux pucerons en pourcentage
ARMY WORM	—	Army worm damage (percentage)	Porcentaje de daño por gusano cogollero	Dégat du aux noctuelles en pourcentage
BAC S	<i>Xanthomonas campestris</i>	Bacterial stripe (0-9 scale)	Rayado bacteriano y pajilla negra (escala 0-9)	Rayure bactérienne (échelle 0-9)
BAC B	<i>Pseudomonas syringae</i>	Bacterial blight (0-9 scale)	Tizón bacteriano de la hoja (escala 0-9)	Brulure bactérienne des feuilles (échelle 0-9)
BAR S	<i>Pyrenophora graminea</i> (syn. <i>Drechslera gramineum</i> , syn. <i>Helminthosporium gramineum</i>)	Barley stripe (0-9 scale)	Mancha estriada de la cebada	Taches brunes de l'orge (<i>Helminthosporium gramineum</i>) (échelle 0-9)
BIRD DMGE	—	Bird damage (percentage)	Porcentaje de daño por pájaros	Dégat du aux oiseaux en pourcentage
BW	—	Bread wheat	Trigo	Blé
BYDV	—	Barley yellow dwarf virus (0-9 scale)	Virus del enanismo amarillo de la cebada (escala 0-9)	Jaunisse nanisante de l'orge (échelle 0-9)
CHECK MARK	—	Selected for further investigation	Seleccionada para investigación adicional	Selectionnée pour recherche additionnelle
COVD SMUT	<i>Ustilago hordei (U. kofleri)</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 moño niveo (moño 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 spp.</i>	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 (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	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 cenicienta polvoriento (escala 0-9)	Oidium (échelle 0-9)
PROT %	—	Protein (percentage)	Porcentaje de proteína	Protéine en pourcentage
SCAB %	<i>Fusarium spp.</i>	Head scab (percentage)	Porcentaje de roña	Fusarium de l'épi en pourcentage
SCLD	<i>Rhynchosporium secalis</i>	Scald (0-9 scale)	Escaldadura (escala 0-9)	Rhynchosporium (échelle 0-9)
SDMT INDX	—	Sedimentation index (cc)	Índice de sedimentación (cc)	Indice de sédimentation (cc)
SEP N	<i>Leptosphaeria nodorum</i> (syn. <i>Septoria nodorum</i>)	Septoria glume blotch (0-9 scale)	Tizón de la gluma (escala 0-9)	Septoria nodorum (échelle 0-9)
SEP S	<i>Septoria spp.</i>	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 desgrane (espiga)	Egrenage en pourcentage
SL	—	Sea level	Nivel del mar	Niveau de la mer
SPT B	<i>Cochliobolus sativus</i> (syn. <i>Bipolaria sorokiniana</i> , syn. <i>Helminthosporium sativum</i>)	Spot blotch (0-9 scale)	Tizón foliar (escala 0-9)	Tache de la feuille (<i>Helminthosporium sativum</i>) (échelle 0-9)
STEM RUST	<i>Puccinia graminis</i>	Stem rust (Cobb scale)	Roya del tallo (escala de Cobb)	Rouille noire (échelle de Cobb)
STRP RT.H	<i>Puccinia striiformis</i>	Stripe rust, head (percentage)	Porcentaje de roya amarilla (espiga)	Rouille jaune sur épi en pourcentage
STRP RT.L	<i>Puccinia striiformis</i>	Stripe rust, leaf (Cobb scale)	Roya amarilla-hoja (escala de Cobb)	Rouille jaune sur feuilles (échelle de Cobb)
STRP V	—	Barley stripe mosaic virus (scale 0-9)	Virus del mosaico lineal de la cebada (escala 0-9)	Mosaïque striée de l'orge (échelle 0-9)
TAN S	<i>Pyrenophora tritici-repentis</i> (syn. <i>Helminthosporium tritici-repentis</i>)	Tan spot (0-9 scale)	Mancha foliar amarilla (escala 0-9)	Helminthosporium tritici (échelle 0-9)
Tcl	—	Triticale	Triticale	Triticale
TEST WT	—	Test weight (kg/ha)	Peso hectolítrico (kg/ha)	Poids spécifique (kg/ha)
1000 G.W.	—	1000-grain weight (g)	Peso de 1000 granos (g)	Poids de 1000 grains (g)
VAR	—	Variety	Varietad	Variété
VTY	—	Variety	Varietad	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)

Introduction to the Eleventh International Barley Observation Nursery

Methodology

The Eleventh International Barley Observation Nursery (IBON) was sent in September 1983 to be grown by cooperators in their spring season of 1984. Ninety-six nurseries went to cooperators in 55 countries. The 150 advanced lines and checks in the nursery had been chosen from among CIMMYT's best materials. All had been grown and observed by CIMMYT scientists under a high yield environment with pressure from major diseases on the CIANO Experiment Station in the Yaqui Valley in northwest Mexico. Here, too, seed for this international nursery was multiplied, cleaned and treated with insecticide and organic fungicide before shipment.

Instructions on nursery management accompanied the mailing of seeds to each cooperator. Enough seed from each line was provided for a 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 were obtained.

Thirty-six 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 rests with the individual cooperator. We have included in this summary selected variables reported to us. The number of observations differs from variable to variable. The reader is urged to note the number of observations at the head of each variable column in the summary table (Table 2); this may be an important indicator of the level of credibility that should be inferred. The reader should also bear in mind that the yield reported is from a single plot, essentially grown for observation rather than as a rigorous, replicated yield trial.

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

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

Cooperators were asked to use agronomic and disease reporting methodology as described in the "Instructions for the Management and Reporting of Results for the CIMMYT Wheat Program International Nurseries." Data

reported are simple means computed from those supplied by the cooperators. Data on rusts recorded by the modified Cobb scale were converted to average coefficients of infection (ACI) as explained below.

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

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

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

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

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

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

Table 1. Locations from which data were reported, with the variables reported.

LOCATIONS	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
1	AFRICA	CAMEROON	NGAOUNDERE	67
2	AFRICA	SOUTH AFRICA	CAPE PROVINCE-TYGERHOEK	7 50 66
3	AFRICA	SOUTH AFRICA	CAPE PROVINCE-WELDEVALLEN	3 50 66 68
4	AFRICA	ZIMBABWE	CHIREZI	1
5	AFRICA	ZIMBABWE	HARARE	3 7 50
6	ASIA	AFGHANISTAN	KABUL	3 9 50 66 68 69
7	ASIA	BANGLADESH	JOYDEBPUR-BARI	3 50 66
8	ASIA	BURMA	YE-U (SAGAIN DIV.)	1 3 7 9 13 50
9	ASIA	PAKISTAN	BALUCHISTAN	3 50
10	ASIA	PAKISTAN	PUNJAB-ISLAMABAD	3 5
11	ASIA	PAKISTAN	SIND	1 3 50
12	ASIA	REP. OF KOREA	SUMON GYEEONGGI PROV.	3 61
13	ASIA	THAILAND	NAKHON RATCHSIMA	50
14	EUROPE	GERMAN DEM. REP.	MAGDEBURG-HADMERBLEBEN	7 61
15	EUROPE	GREECE	THESSALONIKI	1 3 7 8 9 50 61
16	EUROPE	ITALY	FDOGIA	61
17	EUROPE	NORWAY		4 50 61
18	EUROPE	NORWAY	OSTRE TOTEN	2 13 50 61 69
19	EUROPE	ROMANIA	CLUJ	1 3 4 10 61
20	EUROPE	SPAIN	LERIDA	1 2 3 10 13 50 61
21	EUROPE	SPAIN	MADRID-ENCIN	50 61 77
22	EUROPE	SPAIN	VALLADOLID	3 4 9 50 61 69
23	EUROPE	SPAIN	ZARAGOZA-MONTANANA	3 50
24	MIDDLE EAST	CYPRUS	ATHALASSA	1 3 7 9 50 61 66 68 69
25	MIDDLE EAST	ISRAEL	BET DAGAN-VOLCANI CTR.	3 5 7 50 61
26	MIDDLE EAST	QATAR	BARADA	1 3 4 9 10 50 66
27	MIDDLE EAST	TURKEY	DIYARBAKIR	3 4 50
28	NORTH AMERICA	MEXICO	EL BATAN-(1ST. DATE)	69
29	NORTH AMERICA	MEXICO	HIDALGO	7 69
30	NORTH AMERICA	MEXICO	NUEVO LEON-NAVIDAD	1 9
31	NORTH AMERICA	MEXICO	TOLUCA	69
32	SOUTH AMERICA	BRAZIL	SAO PAULO-CAPAO BONITO	3 50 66
33	SOUTH AMERICA	CHILE	TEMUCO, CAUTIN	50 69
34	SOUTH AMERICA	ECUADOR	QUITO, PICHINCHA	3 5 50 69
35	SOUTH AMERICA	PERU	CUSCO-ANDENES	3 5 50
36	SOUTH AMERICA	PERU	CUSCO-TARAY	3 5 6 50 61 68

*VARIABLE IDENTIFICATIONS

1	YIELD	KG/HA	2	TEST	WT	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	%
13	1000	G. W.	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 the means of all variables.

VTY NO.	VARIETY OR CROSS AND PEDIGREE	YIELD KG/HA	TEST WT	HEAD DAYS	MAT DAYS	STRP RT. L	STRP RT. H	LEAF RUST
NUMBER OF OBSERVATIONS:		(9)	(2)	(22)	(5)	(5)	(1)	(8)
1	DL69-BAHTIM10 X H251 CMB76-765-A-7Y-1B-1Y-1B-1Y-OB	5017.9	65.3	83.6	116.6	50.0	0.0	54.0
2	NP842-APM X CM67-U. BASK1800/AVT-1101 2 CMB77-449-3Y-2B-2Y-1B-2Y-OB	3965.3	68.0	83.0	112.8	56.0	0.0	43.7
3	ALAMO"S" CMB77-1585-E-2Y-1B-1Y-1B-2Y-OB	3936.1	66.3	85.7	113.6	46.0	10.0	26.0
4	TLLD CMB77A-432-258-1Y-1B-1Y-OB	4773.4	65.8	91.8	116.2	60.0	5.0	35.8
5	BACA CMB75A-1620-E-1B-5H-2Y-2B-1Y-OB	4566.7	64.6	85.2	113.0	58.0	5.0	38.8
6	[(API-CM67 X APM-1B65/API-CM67 X II26 L2966.69)ABNJC11269/MANKER X API- CM67 CMB77A-2943-A-6B-1Y-1B-1Y-1B-0Y	4280.6	64.8	88.7	113.4	50.0	5.0	39.3
7	LIGNEE527	4253.1	65.1	95.7	120.2	11.3	0.0	11.5
8	(API-CM67 X APM-1B65/API-CM67 X II26 L2966.69)NOPAL"S" CMB78-305-4H-1Y-1B-1Y-1B-0Y	3955.1	65.5	83.9	113.0	48.0	5.0	18.7
9	(DL70 X GRUDMAN-STELLA/BREA"S")CEL- CI3909.2 CMB78-316-2Y-1B-1Y-2B-2Y-OB	4586.6	67.4	87.0	114.4	40.0	5.0	28.9
10	(CER-POR X TP/PRO)APM-5106 CMB78-500-6Y-1B-1Y-1B-1Y-OB	3794.9	66.3	88.8	115.0	32.0	5.0	20.0
11	(API-KRISTINA X M66. B5/QVA)APM-5106 CMB78-902-H-1Y-2B-2Y-1B-2Y-OB	4047.4	63.8	90.0	116.6	26.4	5.0	17.0
12	(F3 BULK HIP/API-CM67 X ORE)BREA"S"- CEL CMB78-916-C-1Y-2B-1Y-1B-1Y-OB	4960.0	63.8	89.4	116.2	37.5	5.0	15.0
13	78W40785	3550.7	62.8	94.7	120.0	59.8	5.0	17.1
14	78W40794	4553.2	62.6	95.3	118.8	73.8	5.0	13.3
15	CEL X CP-BRA CMB78A-16-4H-1Y-1B-2Y-1B-0Y	4678.0	67.6	89.9	115.8	67.8	5.0	12.0
16	EN-UC566 CMB78A-29-2B-1Y-1B-2Y-1B-0Y	4912.8	65.1	85.0	114.2	59.8	10.0	12.4
17	MZG-DC CMB78A-49-1B-1Y-1B-1Y-2B-0Y	3085.7	66.7	92.6	117.8	34.5	5.0	13.6
18	BREA"S"-CEL X GIZA120-SHIGA HAKKOKU CMB78A-279-2B-1Y-1B-5Y-1B-0Y	4394.8	67.0	86.1	117.2	33.2	10.0	19.7
19	APM-RL X ORE"S"/D-I X ASE-CM. 6S. 1W. B CMB78A-361-1H-1Y-2B-1Y-1B-0Y	3799.9	66.6	93.6	118.0	39.2	5.0	6.4
20	CEL X MZG-CVA/TLLD CMB78A-406-3H-1Y-1B-1Y-1B-0Y	3794.2	65.3	94.6	117.6	63.8	20.0	25.9
21	H272-NOPAL"S" X HOR72B CMB78A-534-8H-1Y-1B-1Y-1B-0Y	4396.8	64.3	94.6	120.2	55.8	5.0	12.4
22	H272-NOPAL"S" X HOR72B CMB78A-534-8H-1Y-1B-2Y-1B-0Y	4177.9	68.1	92.9	119.0	35.2	5.0	11.7
23	GLORIA"S" CMB78A-587-1H-2Y-1B-2Y-1B-0Y	4564.1	60.5	92.0	116.6	20.0	5.0	33.4
24	GLORIA"S" CMB78A-587-1H-2Y-1B-2Y-2B-0Y	5137.9	62.6	89.7	118.0	22.3	5.0	24.4
25	ARIMAR X 11012.2-TERN CMB79-1046-2Y-2B-1Y-1B-2Y-OB	2672.6	66.9	100.1	120.0	23.3	0.0	24.7

VTY	STEM RUST	PLNT HT	LOAD %	1000 C. W.	CHECK MARK	POW M 0-9	NET B 0-9	BAR S 0-9	SPT B 0-9	BCLD 0-9	BYDV 0-9
	(1)	(7)	(3)	(3)	(25)	(13)	(7)	(1)	(4)	(9)	(1)
1	12.0	74.4	63.3	45.1	12.0	4.1	3.3	4.0	5.3	6.3	----
2	12.0	81.7	60.0	46.3	12.0	5.5	3.6	4.0	4.3	5.7	5.0
3	12.0	82.9	56.7	49.9	8.0	4.6	3.4	3.0	5.0	5.3	----
4	8.0	80.4	43.3	36.9	8.0	4.8	3.7	6.0	5.5	3.1	----
5	12.0	80.6	45.0	48.4	12.0	5.2	3.6	6.0	4.8	6.1	----
6	12.0	76.6	46.7	41.7	12.0	5.7	3.6	6.0	6.5	5.3	----
7	8.0	76.6	35.0	44.8	28.0	3.3	3.7	3.0	5.0	3.6	----
8	8.0	66.6	30.0	44.4	12.0	3.2	5.1	4.0	5.3	6.3	5.0
9	8.0	77.4	30.0	44.5	20.0	4.7	4.3	6.0	5.0	5.3	----
10	10.0	84.3	26.7	45.5	16.0	3.6	4.9	4.0	4.3	3.4	----
11	0.0	74.3	61.7	42.0	16.0	4.8	3.9	3.0	6.0	3.4	----
12	8.0	74.9	56.7	42.4	24.0	4.2	4.7	4.0	6.5	3.8	----
13	8.0	68.3	18.3	47.3	4.0	5.8	4.1	7.0	5.3	4.2	----
14	8.0	77.0	21.7	48.7	4.0	4.5	4.9	6.0	7.7	2.4	----
15	0.0	84.3	26.7	43.6	4.0	4.5	4.3	6.0	5.5	5.0	7.0
16	0.0	87.9	51.7	40.8	16.0	4.6	3.8	7.0	6.5	5.4	----
17	8.0	83.1	48.3	41.6	8.0	6.1	3.6	6.0	4.5	2.3	----
18	6.0	80.6	58.3	41.4	0.0	5.5	4.3	6.0	6.5	4.9	----
19	6.0	79.9	61.7	35.5	0.0	5.1	3.9	6.0	6.0	4.8	7.0
20	8.0	82.4	43.3	35.5	0.0	3.8	5.0	6.0	7.5	2.3	5.0
21	8.0	84.9	56.7	47.4	16.0	4.9	5.0	7.0	5.5	6.2	----
22	0.0	79.7	65.0	43.5	16.0	4.9	4.9	6.0	5.8	6.0	----
23	4.0	76.1	68.3	35.3	24.0	5.8	4.9	6.0	6.8	4.8	----
24	4.0	76.3	68.3	36.4	24.0	5.5	4.4	6.0	6.3	4.2	----
25	12.0	59.2	15.0	34.3	4.0	5.0	5.8	7.0	4.3	3.9	5.0

Table 2. (Continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	YIELD KG/HA	TEST WT	HEAD DAYS	MAT DAYS	STRP RT. L	STRP RT. H	LEAF RUST	NUMBER OF OBSERVATIONS:										
									(9)	(2)	(22)	(5)	(5)	(1)	(8)				
26	MD-2BR X NRD-61/KIMBERLY-COMP. CR236 CMB78A-843-9B-1Y-1B-1Y-1B-OX	5671.8	61.9	91.6	118.0	57.8	5.0	27.0											
27	BCD. MR-M2G/CM67-CENTENO X CEL CMB78A-942-2H-1Y-1B-2Y-1B-OY	3396.2	61.5	90.4	117.4	65.0	10.0	20.1											
28	5472-3446/M64. 69-M65. 211 X XV2240 CMB78A-1044-6H-1Y-2B-3Y-1B-OY	4176.4	65.0	91.0	117.2	8.8	1.0	17.6											
29	QBCCO"S" CMB78A-1113-2H-1Y-1B-1Y-1B-OY	4306.9	61.9	92.4	118.2	37.0	0.0	19.6											
30	0121-BULGARIAN/API-CM67 X ORE CMB78A-1131-13B-2Y-1B-1Y-1B-OY	3791.8	64.5	91.7	118.8	55.0	5.0	30.0											
31	(UC566/SD729-PDR X BCD. MR-GVA)MAT. RA S156 CMB78A-1349-A-3B-1Y-1B-4Y-1B-OY	4966.0	66.2	93.1	118.0	67.0	10.0	26.4											
32	(PDR-U. SASK1766 X BEN/CEL-CI3909. 2) MINN M11-GVA X PDR-DWARF2 CMB78A-1498-A-1B-2Y-1B-1Y-2B-OY	4096.3	66.0	89.4	114.4	55.0	5.0	15.4											
33	OC649-MARI X HJ33. 8B-ALPHA/1638-EMIR CMB78A-1630-C-3B-1Y-2B-2Y-1B-OY	4233.3	66.8	91.0	116.0	42.6	5.0	29.6											
34	(F3 BULK HIP/CI3909. 2 X M66. 151-MANK R)2762-BC CMB78A-1653-A-1B-2Y-1B-1Y-1B-OY	4680.0	65.3	88.5	116.6	55.6	10.0	16.8											
35	(11012. 2 X APH-GVA/LUPE)CEL-CI3909. 2 CMB78A-1733-B-2B-1Y-1B-1Y-1B-OY	4022.6	62.6	91.7	115.6	65.0	5.0	24.8											
36	(BCD. MR-AS46/APAH-ATHS X GVA)SDTOL CMB78A-1780-D-2Y-1B-1Y-1B-1Y-OB	3478.6	67.6	86.6	118.8	45.0	5.0	21.8											
37	(IRIS/BCD. MR-AVT X CEL)CP-BRA CMB78A-1793-F-2B-3Y-1B-1Y-1B-OY	5119.4	70.1	84.6	116.4	62.5	10.0	28.8											
38	MANKER-ORE X LUPE/CEL-S156 X CI7773- U. ALB5040 CMB78A-1871-D-1B-1Y-1B-1Y-1B-OY	4542.3	66.3	93.1	116.8	45.8	5.0	13.4											
39	MAGNIF102-VOLLA X MW6319 CMB78A-1866-F-5B-1Y-2B-1Y-1B-OY	4291.7	71.0	84.7	118.2	57.0	20.0	26.7											
40	MANKER-ORE X LUPE/CEL-S156 X CI7773- U. ALB5040 CMB78A-1871-D-1B-1Y-1B-1Y-3B-OY	4527.3	65.3	93.9	117.4	38.4	0.0	17.7											
41	API-CM67 X I1266. L2966. 69/F3 BULK HI CMB79-37-1Y-1B-1Y-2B-2Y-OB	4241.6	63.0	91.0	116.2	63.8	5.0	21.6											
42	API-CM67 X I1266. L2966. 69/F3 BULK HI CMB79-37-3Y-1B-1Y-1B-1Y-OB	3403.6	64.2	87.9	115.4	51.9	5.0	28.4											
43	F3 BULK HIP-EN CMB79-40-2Y-1B-1Y-2B-1Y-OB	4701.4	64.9	86.5	115.6	42.6	5.0	30.1											
44	F3 BULK HIP-EN CMB79-40-2Y-1B-1Y-2B-2Y-OB	4636.9	64.5	87.3	114.6	69.8	10.0	30.4											
45	(BREA"S"/4476W-EMIR X NACKTA)SI"S" CMB79-53-7Y-1B-6Y-1B-3Y-OB	5395.1	63.2	90.1	116.4	55.2	10.0	24.8											
46	(BREA"S"/4476W-EMIR X NACKTA)CEL- CI3909. 2 X LINE257. 14 CMB79-54-4Y-2B-1Y-1B-1Y-OB	4376.3	57.0	86.9	115.2	74.8	20.0	22.5											
47	(BREA"S"/4476W-EMIR X NACKTA)CEL- CI3909. 2 X LINE257. 14 CMB79-54-8Y-1B-3Y-1B-1Y-OB	4601.0	69.8	89.9	116.2	52.8	5.0	28.0											
48	CEL-CI3909. 2 X 2762-BC(CM67-U. SASK18 2 X DS-APRO. 1Y/11012. 2-TERN) CMB79-58-3Y-1B-1Y-1B-1Y-OB	4397.8	62.8	88.0	113.4	55.2	10.0	25.4											

VTY	STEM RUST	PLNT HT	LOAD %	1000 O. W.	CHECK MARK	POM H 0-9	NET B 0-9	BAR B 0-9	SPT B 0-9	SCLD 0-9	BYDV 0-9
	(1)	(7)	(3)	(3)	(25)	(13)	(7)	(1)	(4)	(9)	(1)
26	8.0	86.4	40.0	47.9	8.0	4.8	4.6	6.0	5.5	2.1	----
27	4.0	81.7	51.7	40.3	16.0	6.5	3.6	6.0	4.0	1.8	----
28	2.0	87.0	45.0	35.7	28.0	3.0	4.3	7.0	4.3	5.4	----
29	6.0	85.9	60.0	38.3	20.0	4.4	4.1	6.0	4.3	6.6	----
30	2.0	89.6	41.7	47.1	4.0	2.7	4.4	7.0	4.0	5.2	5.0
31	2.0	84.0	36.7	40.4	28.0	3.5	3.6	6.0	4.3	4.8	3.0
32	4.0	85.6	26.7	44.6	0.0	4.5	5.4	7.0	5.8	3.4	5.0
33	0.0	82.6	61.7	41.8	24.0	5.0	5.0	7.0	5.5	6.4	----
34	0.0	82.0	68.3	42.3	12.0	5.6	5.3	7.0	6.3	6.2	----
35	0.0	89.9	50.0	45.2	20.0	4.5	4.4	8.0	6.3	4.7	7.0
36	8.0	79.6	38.3	47.5	16.0	3.0	4.7	9.0	4.8	5.7	----
37	0.0	84.3	38.3	44.0	36.0	4.3	5.3	9.0	5.5	6.1	----
38	0.0	85.6	58.3	44.4	12.0	4.5	4.4	9.0	4.5	5.6	5.0
39	8.0	90.4	31.7	42.1	8.0	2.8	5.0	9.0	5.5	5.1	----
40	4.0	85.9	63.3	44.5	8.0	4.4	4.7	8.0	4.0	5.4	3.0
41	8.0	84.0	43.3	43.8	12.0	3.8	5.0	8.0	5.8	4.4	3.0
42	0.0	84.0	65.0	37.2	4.0	5.2	4.6	8.0	5.8	4.8	7.0
43	4.0	83.9	20.0	50.9	16.0	3.6	5.3	8.0	7.0	5.8	5.0
44	0.0	85.1	20.0	47.9	24.0	3.2	4.9	8.0	7.7	5.7	----
45	0.0	91.9	33.3	45.3	24.0	4.5	4.0	8.0	7.3	3.8	3.0
46	0.0	85.0	55.0	41.2	20.0	4.8	3.4	8.0	6.7	3.1	5.0
47	0.0	80.1	41.7	36.6	12.0	5.1	4.1	7.0	7.0	6.7	----
48	8.0	89.3	20.0	46.0	8.0	5.9	4.6	8.0	5.8	5.4	3.0

Table 2. (Continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	YIELD KG/HA	TEST WT	HEAD DAYS	MAT DAYS	STRP RT. L	STRP RT. H	LEAF RUST
	NUMBER OF OBSERVATIONS:	(9)	(2)	(22)	(5)	(5)	(1)	(8)
49	CEL-CI3909 2 X 2762-BC/CAGN"S" CMB79-60-12Y-1B-1Y-1B-2Y-OB	3484.0	62.0	86.3	115.8	51.6	5.0	13.0
50	CEL-CI3909 2 X 2762-BC/CAGN"S" CMB79-60-12Y-1B-1Y-1B-3Y-OB	4141.0	60.0	86.1	116.4	41.8	5.0	11.7
51	CEL-CI3909 2 X 2762-BC/CAGN"S" CMB79-60-12Y-2B-1Y-1B-2Y-OB	4876.5	59.1	85.0	116.4	27.5	5.0	16.1
52	CEL-CI3909 2 X 2762-BC/H272-NOPAL"S" CMB79-61-3Y-1B-1Y-2B-2Y-OB	4159.1	63.1	90.6	117.6	49.6	5.0	20.4
53	(MINN1116 X APAM-1B65/BREA"S"-CEL) APM-DWARFII X MANKER/DRE"S" CMB79-66-2Y-1B-1Y-1B-1Y-OB	4021.3	63.7	89.2	115.4	13.7	5.0	18.0
54	(MINN1116 X APAM-1B65/BREA"S"-CEL) APM-DWARFII X MANKER/DRE"S" CMB79-66-2Y-1B-1Y-1B-2Y-OB	3487.6	61.5	89.0	115.2	17.0	5.0	20.0
55	(MINN1116 X APAM-1B65/BREA"S"-CEL) APM-DWARFII X MANKER/DRE"S" CMB79-66-2Y-1B-2Y-1B-1Y-OB	4167.1	67.8	90.5	115.4	21.0	5.0	23.9
56	(API-CM67 X DL71/ROW906.73)3309 CMB79-220-1Y-1B-1Y-1B-1Y-OB	3721.5	59.0	91.1	115.8	5.0	0.0	29.6
57	VIND"S"-MS2375 CMB79-284-1Y-1B-2Y-1B-1Y-OB	4114.8	68.8	90.0	114.6	46.0	5.0	16.4
58	MAN X POR-HC1903/BAL16-API CMB79-501-1Y-2B-2Y-1B-1Y-OB	4003.6	61.8	85.9	113.0	72.0	5.0	18.6
59	EN(MCU33-FZA X T1B/MCU587) CMB79-813-3Y-1B-2Y-3B-1Y-OB	4616.1	64.7	88.7	113.8	37.6	0.0	28.7
60	F1014.69[(MZ-M59.247 X MI-DS/BEN) BAHTIM10] CMB79-1107-5Y-2B-1Y-1B-1Y-OB	4609.6	65.5	91.9	116.4	44.0	5.0	25.1
61	F1014.69[(MZ-M59.247 X MI-DS/BEN) BAHTIM10] CMB79-1107-5Y-2B-1Y-1B-2Y-OB	5213.7	65.6	91.1	116.2	46.0	10.0	26.6
62	F1014.69[(MZ-M59.247 X MI-DS/BEN) BAHTIM10] CMB79-1107-5Y-2B-1Y-1B-3Y-OB	3541.4	63.5	90.6	117.2	55.8	40.0	17.3
63	F1014.69[(MZ-M59.247 X MI-DS/BEN) BAHTIM10] CMB79-1107-5Y-2B-1Y-2B-1Y-OB	3717.3	64.3	89.3	115.2	48.0	5.0	20.2
64	F1014.69[(MZ-M59.247 X MI-DS/BEN) BAHTIM10] CMB79-1107-5Y-2B-1Y-2B-2Y-OB	4293.9	65.6	90.3	114.6	53.8	5.0	26.1
65	NOPAL-CEB. MULTIFLORAL X EN CMB79-1191-B-1Y-2B-1Y-1B-1Y-OB	3129.3	61.7	90.6	118.2	70.0	10.0	20.1
66	(API-CM67 X POR-U. SASK1800/NETHERLAN S7)API-CM67 X ORE CMB79-1212-A-3Y-1B-3Y-1B-2Y-OB	4320.1	65.9	88.9	113.2	68.0	5.0	20.0
67	BREA"S"-BEN X CM72/API-CM67 X ORE CMB79-1218-B-3Y-2B-1Y-1B-1Y-OB	3664.9	64.3	87.2	115.4	28.4	0.0	22.1
68	BREA"S"-BEN X CM72/API-CM67 X ORE CMB79-1218-B-3Y-2B-1Y-2B-1Y-OB	3636.1	65.5	87.5	113.8	16.4	0.0	27.1
69	(NOPAL X PRO-U. SASK1766/PI12919)CAGN S" CMB79-1237-I-2Y-1B-4Y-1B-1Y-OB	3726.2	59.9	88.5	113.6	39.0	5.0	29.4
70	DEIR ALLA105 X BCO. MR-AS46/TEG CMB79-1278-A-1Y-1B-1Y-1B-1Y-OB	4181.6	63.9	89.9	115.8	27.2	0.0	26.6
71	DEIR ALLA105 X BCO. MR-AS46/TEG CMB79-1278-A-1Y-1B-1Y-1B-2Y-OB	4187.9	60.3	88.0	115.4	30.8	0.0	23.4

VTY	STEM RUST	PLNT HT	LOAD %	1000 G. W.	CHECK MARK	PON M 0-9	NET B 0-9	BAR B 0-9	SPT B 0-9	SCLD 0-9	BYDV 0-9
	(1)	(7)	(3)	(3)	(25)	(13)	(7)	(1)	(4)	(9)	(1)
49	4.0	80.1	26.7	50.4	8.0	5.8	4.3	8.0	5.3	2.1	3.0
50	4.0	84.6	40.0	49.9	12.0	5.8	4.3	8.0	5.8	2.3	----
51	0.0	82.6	40.0	43.6	28.0	5.4	4.6	8.0	4.0	2.9	----
52	2.0	81.9	25.0	46.6	4.0	4.5	4.0	8.0	7.8	5.2	----
53	2.0	75.9	28.3	42.0	16.0	4.8	4.6	8.0	6.0	4.4	----
54	6.8	91.8	99.9	11.9	15.0	1.8	1.1	8.8	6.8	3.7	3.0
55	0.0	78.0	36.7	38.9	20.0	4.5	5.4	8.0	7.0	3.6	----
56	4.0	79.9	31.7	36.4	12.0	4.4	4.7	7.0	5.8	4.2	3.0
57	4.0	82.4	11.7	43.3	20.0	4.9	4.9	8.0	6.0	3.8	----
58	8.0	90.7	26.7	38.2	4.0	5.4	4.4	8.0	5.8	6.7	----
59	6.0	85.1	33.3	44.9	20.0	3.9	4.3	8.0	4.3	3.7	----
60	4.0	83.9	6.7	42.6	24.0	3.5	4.9	8.0	5.8	3.8	1.0
61	4.0	77.9	10.0	42.0	20.0	3.5	4.1	7.0	5.0	4.2	----
62	4.0	82.0	25.0	41.2	20.0	4.1	4.1	6.0	5.3	3.3	----
63	0.0	76.3	25.0	39.1	24.0	4.8	4.9	8.0	5.5	3.4	3.0
64	0.0	78.9	20.0	40.7	24.0	3.8	4.7	7.0	5.5	3.4	1.0
65	4.0	82.6	23.3	51.9	4.0	3.2	4.4	6.0	5.0	5.9	5.0
66	0.0	82.1	43.3	47.7	4.0	4.3	3.1	8.0	5.8	3.9	----
67	0.0	74.9	53.3	42.3	16.0	4.0	4.9	7.0	6.3	5.2	3.0
68	0.0	71.1	56.7	41.1	8.0	4.3	4.3	8.0	6.3	5.1	----
69	0.0	73.1	61.7	44.2	8.0	5.3	5.0	8.0	7.7	5.9	3.0
70	0.0	80.1	65.0	43.2	8.0	5.4	4.0	6.0	6.5	6.4	----
71	4.0	84.3	68.3	40.5	4.0	5.8	4.6	6.0	6.5	6.4	----

Table 2. (Continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	YIELD KG/HA	TEST WT	HEAD DAYS	MAT DAYS	STRP RT. L	STRP RT. H	LEAF RUST
	NUMBER OF OBSERVATIONS:	(9)	(2)	(22)	(5)	(5)	(1)	(8)
72	DEIR ALLA105 X BCO.MR-AS46/TEG CMB79-1278-A-1Y-1B-1Y-2B-1Y-OB	3582.7	63.3	89.1	116.6	18.4	0.0	23.0
73	(DEIR ALLA105/NEPAL844-POR X CM67- U.SASK1766)API-CM67 X POR-U.SASK1766 CMB79-1279-C-1Y-1B-3Y-2B-1Y-OB	4169.0	62.4	91.6	117.2	17.6	0.0	15.5
74	(DEIR ALLA105/NEPAL844-POR X CM67- U.SASK1766)API-CM67 X POR-U.SASK1766 CMB79-1279-C-1Y-1B-3Y-2B-2Y-OB	3681.4	60.3	91.6	116.6	21.6	10.0	24.3
75	(DEIR ALLA105/NEPAL844-POR X CM67- U.SASK1766)API-CM67 X POR-U.SASK1766 CMB79-1279-C-1Y-2B-3Y-1B-1Y-OB	4182.6	62.1	90.7	116.6	34.0	5.0	16.1
76	(DEIR ALLA105/NEPAL844-POR X CM67- U.SASK1766)API-CM67 X POR-U.SASK1766 CMB79-1279-C-1Y-3B-1Y-1B-1Y-OB	3899.2	62.3	91.8	118.4	39.0	5.0	11.0
77	CI2213 X VANTAGE7-FRYA/H272 CMB79-1280-A-2Y-1B-2Y-2B-1Y-OB	3826.1	61.5	90.5	118.0	25.2	5.0	15.8
78	TCHE-C164[(MZ-M59.247 X MI-DS/BEN) BAHTIM103 CMB79-1303-E-1Y-1B-2Y-1B-1Y-OB	3476.0	59.4	90.5	117.2	63.0	60.0	33.5
79	ASSE-NACKTA X MANKER-ORE/EN CMB79-1308-B-1Y-1B-1Y-1B-1Y-OB	3802.3	59.7	87.3	116.4	64.8	60.0	21.6
80	ASSE-NACKTA X MANKER-ORE/EN CMB79-1308-B-1Y-1B-2Y-3B-1Y-OB	3838.7	57.0	83.1	113.6	59.8	60.0	20.3
81	ASSE-NACKTA X MANKER-ORE/EN CMB79-1308-B-1Y-1B-2Y-4B-1Y-OB	3383.4	58.6	83.6	112.8	58.0	40.0	13.7
82	[TROPHY(API-CM67 X APM-1B65/API-CM67 X I1266.L2966.69)]POR-U.SASK1766 CMB79-1311-A-3Y-1B-2Y-1B-2Y-OB	4098.4	61.1	84.8	116.2	44.0	30.0	26.4
83	[TROPHY(API-CM67 X APM-1B65/API-CM67 X I1266.L2966.69)]POR-U.SASK1766 CMB79-1311-A-3Y-1B-4Y-1B-2Y-OB	3730.7	56.7	88.6	116.8	41.6	20.0	29.9
84	(2762-BC/API-CM67 X CHOYA)DC"S" CMB79-1359-C-1Y-1B-1Y-1B-2Y-OB	3857.0	63.6	90.1	115.4	36.0	20.0	28.0
85	[(AS46-KRISTINA/APM-DWARF21 X POR- 1B65)CEL X DS-APRO]PRO-BEACON CMB77A-2245-A-3B-1Y-1B-2Y-1B-0Y	3315.8	64.0	93.1	116.8	36.0	10.0	11.1
86	(NP842-APH X CM67-U.SASK1800/CAL.MR DS-APRO)2762-BC CMB77A-2307-A-1B-1Y-2B-2Y-1B-0Y	2290.1	57.6	93.0	118.6	38.0	20.0	21.2
87	(BAL16-MANKER X CHOYA/BCO.MR-HZG) BDQC-GAS X HLS-CG CMB77A-2362-A-1B-1Y-1B-1Y-1B-0Y	3630.0	66.7	91.1	116.8	52.0	10.0	21.0
88	CEL-W12269 X ORE/BDQC-GAS CMB78-192-2H-1Y-1B-1Y-1B-0Y	3506.4	75.6	87.1	112.2	45.0	10.0	32.7
89	(D.PRECOZ/POR-U.SASK1766 X BEN)ORE"S" CMB78A-1301-A-1B-1Y-1B-1Y-1B-0Y	2091.8	65.3	90.6	115.3	31.0	10.0	33.0
90	(D.PRECOZ/POR-U.SASK1766 X BEN)ORE"S" CMB78A-1301-B-2B-2Y-1B-1Y-1B-0Y	2483.9	50.9	90.9	116.3	25.0	5.0	30.4
91	1B65-M66.85 X CEL/CEL-XV2240 CMB78A-1820-B-1B-2Y-1B-1Y-1B-0Y	2844.3	67.1	91.5	116.5	43.6	20.0	19.5
92	(M69.77-SHI.R.KCI.N087/CM67-U.SASK18 2 X DS-APRO.1Y)3309-ATTIKI CMB79-35-4Y-1B-2Y-1B-1Y-OB	2995.6	58.7	91.8	119.2	18.0	5.0	32.7

VTY	STEM RUST	PLNT HT	LOAD Z	1000 G. W.	CHECK MARK	POW M 0-9	NET B 0-9	BAR S 0-9	SPT B 0-9	SCLD 0-9	BYDV 0-9
	(1)	(7)	(3)	(3)	(25)	(13)	(7)	(1)	(4)	(9)	(1)
72	4.0	85.9	55.0	43.7	16.0	5.5	3.6	6.0	6.0	6.7	----
73	0.0	86.6	63.0	45.4	20.0	4.7	3.6	6.0	5.0	5.6	3.0
74	0.0	86.1	75.0	44.6	8.0	4.3	5.1	4.0	5.3	5.8	----
75	0.0	87.6	75.0	41.5	12.0	4.0	3.4	3.0	3.5	5.8	----
76	0.0	80.0	66.7	46.0	12.0	3.8	3.4	4.0	4.3	5.9	----
77	0.0	86.4	68.3	44.8	16.0	3.2	3.4	4.0	5.0	5.5	----
78	12.0	83.7	68.3	43.2	8.0	3.8	4.9	6.0	4.0	6.4	----
79	6.0	89.9	53.3	43.0	12.0	3.6	5.1	6.0	5.3	5.4	3.0
80	8.0	86.6	55.0	47.0	20.0	2.9	4.4	7.0	5.5	7.0	3.0
81	8.0	89.6	48.3	44.8	16.0	2.8	4.4	6.0	5.0	6.4	7.0
82	8.0	87.0	36.7	37.3	16.0	5.2	4.4	7.0	5.3	7.1	----
83	8.0	86.1	30.0	38.9	20.0	5.0	4.4	5.0	6.3	6.6	----
84	8.0	80.4	30.0	43.9	8.0	3.6	3.6	5.0	5.8	5.6	----
85	0.0	78.9	25.0	38.9	24.0	4.1	4.1	4.0	5.0	3.5	----
86	0.0	75.1	25.0	38.2	0.0	4.5	3.7	4.0	5.5	4.0	3.0
87	0.0	77.7	26.7	35.3	8.0	4.8	4.4	7.0	5.3	6.1	5.0
88	0.0	89.3	40.0	39.9	8.0	4.5	4.9	4.0	5.3	5.5	----
89	0.0	91.2	28.3	36.0	12.0	4.3	4.7	4.0	5.5	5.4	9.0
90	12.0	89.2	18.3	34.9	16.0	4.8	4.4	4.0	5.0	5.1	9.0
91	12.0	80.0	26.7	35.9	16.0	5.1	3.7	4.0	5.8	1.7	9.0
92	20.0	80.7	35.0	45.6	8.0	4.3	3.9	4.0	5.0	5.8	3.0

Table 2. (Continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	YIELD KG/HA	TEST WT	HEAD DAYS	MAT DAYS	STRP RT. L	STRP RT. H	LEAF RUST
NUMBER OF OBSERVATIONS:		(9)	(2)	(22)	(5)	(5)	(1)	(8)
93	(M69-77-SHI. R. KCI. NOB7/CM67-U. SASK18 2 X DS-APRO. 1Y)702B-2759 CMB79-36-4Y-1B-1Y-1B-2Y-OB	2670.2	61.0	71.0	119.5	61.8	10.0	23.6
94	(BREA"S"/4476W-EMIR X NACKTA)SI"S" CMB79-53-7Y-1B-6Y-1B-3Y-OB	3436.4	52.8	89.1	118.3	55.8	5.0	35.4
95	CEDRO"S" CMB77-1267-8-1Y-1B-1Y-1B-1Y-OB	2524.2	73.9	94.4	119.4	48.6	5.0	40.4
96	ARAMIR-COSSACK CMSWB77A-458-1H-1Y-1B-1Y-2B-OY	4953.2	66.1	92.6	118.8	3.8	0.0	42.7
97	BETZEB-COHO X PI6384-CAPUCHONA CMB78A-489-1B-2Y-2B-1Y-3B-OY	2987.0	65.2	96.5	117.6	3.5	0.0	21.9
98	BARLEY305/API-CM67 X CHOYA CMB78A-678-1H-1Y-2B-2Y-1B-OY	4367.3	68.4	91.5	116.4	6.7	0.0	20.4
99	5056-1605 X CP-BRA CMB78A-772-2B-1Y-1B-1Y-2B-OY	4030.1	70.2	85.8	116.4	55.0	10.0	25.5
100	5056-1605/PRO-GVA X 11012.2 CMB78A-773-4B-1Y-500B-500Y-OY	5698.4	70.3	93.2	116.8	30.0	0.0	32.2
101	5056-1605/PRO-GVA X 11012.2 CMB78A-773-4B-1Y-2B-2Y-1B-OY	4463.4	72.9	90.9	118.2	27.6	5.0	33.4
102	5056-1605/PRO-GVA X 11012.2 CMB78A-773-4B-1Y-2B-2Y-2B-OY	4369.1	71.2	90.3	118.0	22.8	5.0	36.5
103	5056-1605/PRO-GVA X 11012.2 CMB78A-773-4B-1Y-2B-3Y-2B-OY	4032.9	68.7	89.9	118.8	36.8	10.0	29.6
104	OC649-MARI X HJ33.8B-ALPHA/1658-EMIR CMB78A-1630-C-2B-1Y-1B-1Y-1B-OY	3532.9	63.0	86.4	116.4	21.6	5.0	26.8
105	BR. VILLA-CLIPPER X MPYT169.1Y CMB78A-1910-D-2B-1Y-1B-1Y-1B-OY	4433.7	69.3	96.7	120.0	8.8	5.0	19.1
106	MARI-COHO X ROW134.73 CMB79-72-1Y-1B-1Y-3B-3Y-OB	4197.2	67.2	89.5	117.0	7.5	0.0	26.0
107	MARI-COHO X ROW134.73 CMB79-72-5Y-2B-1Y-2B-1Y-OB	3716.9	70.8	93.0	118.2	0.2	1.0	29.6
108	MARI-COHO X ROW134.73 CMB79-72-5Y-2B-2Y-1B-1Y-OB	3855.9	66.1	93.2	118.2	0.3	5.0	43.8
109	MARI-COHO X B. VOLLA CMB79-79-1Y-1B-1Y-1B-1Y-OB	4792.8	71.3	97.1	119.6	23.4	10.0	30.3
110	IMPALA X ESP-1808 CMB79-158-1Y-1B-1Y-1B-1Y-OB	4279.2	69.8	99.6	120.6	20.0	5.0	28.6
111	IMPALA X ESP-1808 CMB79-158-1Y-1B-1Y-1B-2Y-OB	4730.0	69.3	97.7	120.2	32.5	10.0	21.8
112	MARIS DINGO X FOREZZIA-1087 CMB79-162-2Y-1B-2Y-1B-1Y-OB	4207.6	69.4	91.8	118.8	52.0	20.0	45.8
113	MAGNIF102 X 6250-1161 CMB79-166-1Y-1B-1Y-1B-1Y-OB	3971.3	67.4	93.9	120.2	54.0	10.0	47.9
114	ARAMIR(MINN M11-GVA X POR-DWARF21/ RM1508) CMB79-167-1Y-1B-2Y-1B-1Y-OB	3042.7	59.5	100.0	121.2	27.5	40.0	31.2
115	ARAMIR(MINN M11-GVA X POR-DWARF21/ RM1508) CMB79-167-1Y-1B-5Y-1B-1Y-OB	5061.0	68.2	98.8	121.0	23.6	10.0	21.9
116	GLDA"S" CMB79-376-1Y-3B-2Y-1B-1Y-OB	4438.8	68.1	91.5	117.8	32.5	10.0	16.6

VTY	STEM RUST	PLNT HT	LOAD %	1000 G. M.	CHECK MARK	POW M 0-9	NET B 0-9	BAR B 0-9	SPT B 0-9	SCLD 0-9	BYDV 0-9
	(1)	(7)	(3)	(3)	(25)	(13)	(7)	(1)	(4)	(9)	(1)
93	8.0	74.3	36.7	44.8	8.0	4.4	5.1	5.0	5.5	3.0	----
94	8.0	78.0	16.7	40.6	12.0	5.6	4.3	7.0	7.0	5.1	----
95	12.0	65.1	25.0	34.2	0.0	6.2	3.1	7.0	4.0	4.1	----
96	0.0	79.0	15.0	45.3	36.0	3.9	4.6	8.0	3.8	1.6	----
97	0.0	89.6	63.3	48.5	20.0	4.5	4.6	7.0	5.3	2.5	3.0
98	0.0	89.7	48.3	41.9	24.0	5.1	4.0	6.0	5.5	3.9	----
99	12.0	80.4	20.0	52.4	32.0	2.4	4.0	7.0	4.3	5.9	----
100	0.0	88.1	20.0	59.2	36.0	3.2	4.0	6.0	5.0	4.1	----
101	12.0	78.7	16.7	55.8	32.0	3.9	4.4	6.0	5.8	4.7	----
102	8.0	84.2	21.7	57.6	20.0	4.1	5.1	6.0	4.3	4.1	----
103	8.0	82.2	16.7	56.8	32.0	4.0	4.1	7.0	5.5	4.0	----
104	12.0	86.7	16.7	56.5	12.0	3.3	4.3	8.0	5.3	6.4	----
105	4.0	87.8	20.0	48.8	12.0	2.2	4.3	8.0	5.8	3.7	----
106	12.0	90.5	71.7	46.7	24.0	4.5	3.6	7.0	5.5	3.9	----
107	12.0	86.0	58.3	49.1	20.0	3.7	4.9	6.0	5.3	3.8	5.0
108	12.0	85.8	50.0	51.3	24.0	4.4	3.9	6.0	5.3	3.9	----
109	12.0	82.0	36.7	48.5	8.0	3.8	4.4	8.0	5.3	5.2	----
110	0.0	87.3	35.0	47.8	16.0	2.8	2.9	8.0	5.0	5.8	----
111	0.0	84.0	30.0	45.9	12.0	2.9	2.9	8.0	5.0	5.2	----
112	20.0	81.7	25.0	42.6	8.0	6.0	3.5	8.0	4.3	6.0	----
113	20.0	81.3	25.0	49.1	24.0	1.1	5.4	7.0	4.3	6.1	----
114	12.0	81.5	23.3	50.5	4.0	4.2	3.4	8.0	5.3	5.9	----
115	0.0	81.5	25.0	51.3	24.0	3.7	3.6	8.0	4.0	5.4	5.0
116	0.0	76.7	33.3	49.8	12.0	3.7	3.7	8.0	4.0	5.6	----

Table 2. (Continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	YIELD KG/HA	TEST WT	HEAD DAYS	MAT DAYS	STRP RT. L	STRP RT. H	LEAF RUST
NUMBER OF OBSERVATIONS:		(9)	(2)	(22)	(5)	(5)	(1)	(8)
117	GLDA"S" CMB79-376-1Y-3B-2Y-1B-2Y-0B	5182.1	70.2	95.6	121.0	17.6	10.0	20.9
118	GLDA"S" CMB79-376-2Y-2B-2Y-1B-1Y-0B	4584.7	61.1	87.8	116.8	18.1	20.0	12.9
119	GLDA"S" CMB79-376-2Y-2B-2Y-1B-2Y-0B	4797.2	66.4	89.5	118.0	22.8	10.0	12.9
120	GLDA"S" CMB79-376-2Y-2B-3Y-1B-1Y-0B	4577.3	62.9	90.0	119.8	50.0	10.0	15.6
121	GLDA"S" CMB79-376-2Y-2B-3Y-1B-2Y-0B	5146.4	67.1	88.3	118.6	46.1	20.0	11.1
122	GLDA"S" CMB79-376-2Y-3B-1Y-1B-1Y-0B	3933.7	63.4	86.7	117.2	42.2	50.0	11.7
123	GLDA"S" CMB79-376-3Y-2B-1Y-1B-1Y-0B	3388.9	53.5	84.9	117.8	40.0	10.0	22.3
124	GLDA"S" CMB79-376-3Y-2B-2Y-1B-2Y-0B	3915.9	68.3	85.1	118.4	12.1	10.0	12.5
125	GLDA"S" CMB79-376-3Y-4B-1Y-1B-1Y-0B	4868.8	66.0	87.3	117.2	27.6	20.0	12.4
126	GLDA"S" CMB79-376-3Y-5B-1Y-1B-1Y-0B	3604.4	63.0	90.0	117.8	21.6	10.0	7.6
127	GLDA"S" CMB79-376-3Y-5B-1Y-1B-2Y-0B	3693.6	63.6	89.5	117.0	25.0	10.0	9.7
128	GLDA"S" CMB79-376-3Y-5B-3Y-1B-1Y-0B	3597.0	67.3	88.9	116.8	22.5	5.0	13.9
129	GLDA"S" CMB79-376-3Y-5B-3Y-1B-2Y-0B	3838.4	65.1	89.2	116.8	20.0	10.0	15.9
130	GLDA"S" CMB79-376-3Y-5B-3Y-2B-1Y-0B	4577.9	64.6	89.7	116.4	27.5	10.0	13.5
131	GLDA"S" CMB79-376-3Y-5B-3Y-2B-2Y-0B	3239.0	67.9	89.9	117.0	27.5	5.0	14.0
132	GLDA"S" CMB79-376-3Y-5B-3Y-2B-3Y-0B	3551.6	70.8	89.7	116.8	31.6	10.0	18.1
133	EMIR-SHABET X CM67/ARMELLE CMB79-380-2Y-1B-2Y-1B-1Y-0B	3998.8	70.7	88.9	116.4	18.5	10.0	26.1
134	EMIR-SHABET X CM67/ARMELLE CMB79-380-2Y-1B-2Y-1B-2Y-0B	3580.3	70.3	89.6	114.2	20.8	5.0	30.8
135	EMIR-SHABET X CM67/ARMELLE CMB79-380-2Y-1B-2Y-2B-1Y-0B	4926.2	70.0	91.8	117.4	22.8	10.0	23.9
136	4367-NACKTA X MILN139/5673-1160 CMB79-1124-3Y-2B-2Y-1B-2Y-0B	2910.2	80.2	96.7	120.0	40.0	10.0	22.0
137	70.22423-B1 X CI6380 CMB79-663-1Y-1B-1Y-3B-1Y-0B	3787.7	60.5	86.6	114.0	23.6	5.0	38.4
138	C18238-C56713 X C15819 CMB79-826-1Y-1B-2Y-1B-1Y-0B	4031.0	66.2	93.9	118.8	24.8	5.0	24.4
139	C18238-C56713 X C15819 CMB79-826-1Y-1B-2Y-3B-1Y-0B	3701.8	66.1	94.2	118.8	37.6	10.0	36.9
140	PLATA-MARI X IMPALA-SV. BRIGITTA/NACK A CMB79-1257-F-1Y-1B-2Y-1B-2Y-0B	3893.1	70.2	97.0	119.4	16.4	10.0	34.0
141	W12231 X P16384-GOSPICK/P71318 CMB79-1276-B-1Y-1B-3Y-1B-1Y-0B	3109.2	61.5	90.5	114.6	46.0	10.0	39.3

VTY	STEM RUST	PLNT HT	LOAD %	1000 G. W.	CHECK MARK	POW H 0-9	NET B 0-9	BAR B 0-9	SPT B 0-9	SCLD 0-9	BYDV 0-9
	(1)	(7)	(21)	(3)	(25)	(13)	(7)	(1)	(4)	(9)	(1)
117	0.0	80.8	36.7	54.1	24.0	2.9	3.6	8.0	4.0	5.9	----
118	0.0	83.3	40.0	54.5	28.0	3.0	4.7	8.0	5.8	5.8	5.0
119	0.0	82.7	39.0	51.8	24.0	3.0	5.3	8.0	4.0	5.4	9.0
120	0.0	83.3	26.7	52.4	32.0	3.3	4.3	-----	4.3	6.0	-----
121	0.0	79.3	10.0	53.8	28.0	3.2	3.9	7.0	4.5	5.9	-----
122	0.0	80.7	23.3	53.0	20.0	3.3	4.6	6.0	6.0	5.9	3.0
123	4.0	77.0	33.3	48.7	24.0	3.0	3.9	8.0	3.8	5.8	-----
124	4.0	80.3	38.3	50.1	24.0	3.1	3.9	8.0	4.3	5.6	3.0
125	4.0	80.5	41.7	47.7	28.0	3.7	3.7	8.0	4.0	6.0	-----
126	0.0	79.7	48.3	42.9	12.0	3.7	4.0	8.0	4.3	1.1	7.0
127	0.0	83.0	45.0	44.3	12.0	3.6	4.6	8.0	4.3	1.4	9.0
128	0.0	80.5	45.0	50.3	12.0	4.1	5.0	8.0	4.8	1.2	3.0
129	0.0	80.8	45.0	50.2	8.0	3.8	4.7	8.0	5.8	1.1	7.0
130	0.0	86.3	55.0	49.5	28.0	3.8	4.9	8.0	4.3	1.2	7.0
131	0.0	82.3	46.7	44.6	12.0	4.5	4.4	8.0	4.3	1.0	-----
132	0.0	83.7	38.3	46.4	8.0	4.1	4.9	8.0	5.0	4.4	-----
133	0.0	79.5	28.3	53.1	24.0	2.8	2.9	9.0	4.3	5.4	-----
134	4.0	82.8	23.3	52.0	12.0	3.0	3.7	9.0	4.5	5.6	3.0
135	0.0	86.0	13.3	50.8	24.0	2.9	3.6	9.0	4.0	5.1	-----
136	8.0	86.3	10.0	40.4	8.0	3.3	4.4	8.0	5.0	5.3	7.0
137	8.0	84.2	31.7	52.1	32.0	4.1	4.4	8.0	6.3	5.3	3.0
138	6.0	86.5	25.0	49.4	16.0	2.7	4.4	5.0	4.3	4.0	1.0
139	8.0	93.8	38.3	50.0	12.0	2.5	4.3	4.0	4.8	4.2	5.0
140	4.0	88.7	38.3	41.6	20.0	2.2	3.9	4.0	4.5	4.9	7.0
141	10.0	88.2	51.7	51.9	12.0	3.5	4.0	4.0	5.3	1.9	-----

Table 2. (Continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	YIELD KG/HA	TEST WT	HEAD DAYS	MAT DAYS	STRP RT. L	STRP RT. H	LEAF RUST
NUMBER OF OBSERVATIONS:		(9)	(2)	(22)	(5)	(5)	(1)	(8)
142	ARUPD"S" CMB79-1312-E-3Y-1B-1Y-1B-2Y-0B	4076.8	62.5	87.8	112.0	38.1	5.0	24.9
143	ARUPD"S" CMB79-1312-E-5Y-1B-1Y-1B-1Y-0B	3277.0	61.7	94.2	115.6	40.1	10.0	29.5
144	ARUPD"S" CMB79-1312-E-7Y-1B-1Y-1B-1Y-0B	4344.7	68.1	90.1	115.8	40.0	10.0	27.0
145	ARUPD"S" CMB79-1312-F-1Y-1B-1Y-1B-1Y-0B	4000.3	62.3	94.6	116.2	45.0	10.0	35.0
146	ARUPD"S" CMB79-1312-F-1Y-1B-2Y-1B-1Y-0B	4423.7	66.1	93.1	116.2	32.8	0.0	23.9
147	ARUPD"S" CMB79-1312-F-3Y-1B-1Y-2B-1Y-0B	4785.6	66.8	93.7	116.0	42.5	10.0	21.3
148	ARUPD"S" CMB79-1312-F-3Y-1B-1Y-2B-2Y-0B	4206.0	65.3	94.3	116.2	47.5	10.0	16.8
149	ARUPD"S" CMB79-1312-F-3Y-1B-2Y-1B-1Y-0B	4007.2	62.8	93.4	116.6	45.0	10.0	16.3
150	(GAL-PI63B4/HB855-467 X ALPHA)MARI-COHO CMB79-1375-B-2Y-1B-1Y-2B-1Y-0B	4523.8	61.8	93.9	120.0	55.0	10.0	33.5

VTY	STEM RUST	PLNT HT	LOAD %	1000 O. W.	CHECK MARK	POW H 0-9	NET B 0-9	BAR B 0-9	SPT B 0-9	BCLD 0-9	BYDV 0-9
	(1)	(7)	(3)	(3)	(25)	(13)	(7)	(1)	(4)	(9)	(1)
142	0.0	87.7	55.0	48.9	12.0	3.5	4.4	6.0	5.8	5.6	----
143	0.0	69.3	21.7	46.9	8.0	4.5	5.0	6.0	3.5	5.6	----
144	4.0	79.2	30.0	51.0	20.0	3.2	4.3	6.0	5.3	5.6	3.0
145	0.0	69.5	28.3	47.0	20.0	4.2	4.6	7.0	3.5	6.6	----
146	0.0	63.3	23.3	51.2	20.0	4.3	4.3	8.0	3.8	6.0	----
147	0.0	63.8	26.7	49.0	16.0	4.1	4.1	8.0	5.3	6.1	7.0
148	0.0	64.3	33.3	47.8	20.0	3.9	4.1	8.0	5.5	6.4	----
149	0.0	60.3	25.0	49.4	20.0	4.2	3.0	7.0	4.3	6.4	----
150	8.0	78.7	21.7	55.0	20.0	4.6	4.7	6.0	5.5	1.0	3.0

Table 3. Resistance to net blotch

LOCATIONS	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
2	AFRICA	SOUTH AFRICA	CAPE PROVINCE-TYGERHDEK	66
3	AFRICA	SOUTH AFRICA	CAPE PROVINCE-WELGEOVALLEN	66
6	ASIA	AFGHANISTAN	KABUL	66
7	ASIA	BANGLADESH	JOYDEBPUR-BARI	66
24	MIDDLE EAST	CYPRUS	ATHALASSA	66
26	MIDDLE EAST	QATAR	BARADA	66
32	SOUTH AMERICA	BRAZIL	SAO PAULO-CAPA0 BONITO	66

***VARIABLE IDENTIFICATIONS**

66 NET B 0-9

Commentary

Reports on net blotch were compiled from seven locations in 6 countries. Scores in Brazil were high and no resistant entries to races present in Brazil were found in the IBON. A location in South Africa also

provided high scores (Cape Province), but some resistant entries were identified. Entry 110 shows relatively low scores across all locations, except in Brazil.

Table 3. (Continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS						MEAN	
		2	3	6	7	24	26		32
110	IMPALA X ESP-1808 CMB79-158-1Y-1B-1Y-1B-1Y-OB	2	1	3	0	5	2	7	2.9
111	IMPALA X ESP-1808 CMB79-158-1Y-1B-1Y-1B-2Y-OB	8	1	1	0	1	2	7	2.9
133	EMIR-SHABET X CM67/ARMELLE CMB79-380-2Y-1B-2Y-1B-1Y-OB	6	1	0	2	1	1	9	2.9
149	ARUPO"S" CMB79-1312-F-3Y-1B-2Y-1B-1Y-OB	8	1	0	0	1	2	9	3.0
66	(API-CM67 X POR-U. SASK1800/NETHERLAN S7)API-CM67 X ORE CMB79-1212-A-3Y-1B-3Y-1B-2Y-OB	4	1	1	1	1	5	9	3.1
95	CEDRO"S" CMB77-1267-B-1Y-1B-1Y-1B-1Y-OB	6	1	3	0	1	2	9	3.1
1	DL69-BAHTIM10 X H251 CMB76-765-A-7Y-1B-1Y-1B-1Y-OB	2	9	0	1	1	1	9	3.3
3	ALAMO"S" CMB77-1585-E-2Y-1B-1Y-1B-2Y-OB	4	9	1	0	1	2	7	3.4
76	(DEIR ALLA105/NEPAL844-POR X CM67- U. SASK1766)API-CM67 X POR-U. SASK1766 CMB79-1279-C-1Y-3B-1Y-1B-1Y-OB	4	1	0	0	7	3	9	3.4
114	ARAMIR(MINN M11-GVA X POR-DWARF21/ RM1508) CMB79-167-1Y-1B-2Y-1B-1Y-OB	2	9	0	1	1	2	9	3.4
112	MARIS DINGO X FOREZZIA-1087 CMB79-162-2Y-1B-2Y-1B-1Y-OB	6	1	---	3	1	1	9	3.5
2	NP842-APM X CM67-U. SASK1800/AVT-1101 2 CMB77-449-3Y-2B-2Y-1B-2Y-OB	2	7	1	2	1	3	9	3.6
5	BACA CMB75A-1620-E-1B-5H-2Y-2B-1Y-OB	4	9	0	0	1	2	9	3.6
17	MZQ-DC CMB78A-49-1B-1Y-1B-1Y-2B-0Y	6	4	0	2	1	3	9	3.6
72	DEIR ALLA105 X BCD. MR-AS46/TEG CMB79-1278-A-1Y-1B-1Y-2B-1Y-OB	4	9	3	0	1	1	7	3.6
73	(DEIR ALLA105/NEPAL844-POR X CM67- U. SASK1766)API-CM67 X POR-U. SASK1766 CMB79-1279-C-1Y-1B-3Y-2B-1Y-OB	4	9	0	0	1	2	9	3.6

Table 4. Resistance to scald

LOCATIONS	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
6	ASIA	AFGHANISTAN	KABUL	69
18	EUROPE	NORWAY	DSTRE TOTEN	69
22	EUROPE	SPAIN	VALLADOLID	69
24	MIDDLE EAST	CYPRUS	ATHALASSA	69
28	NORTH AMERICA	MEXICO	EL BATAN-(1ST. DATE)	69
29	NORTH AMERICA	MEXICO	HIDALGO	69
31	NORTH AMERICA	MEXICO	TOLUCA	69
33	SOUTH AMERICA	CHILE	TEMUCO, CAUTIN	69
34	SOUTH AMERICA	ECUADOR	QUITO, PICHINCHA	69

*VARIABLE IDENTIFICATIONS
 69 SCLD 0-9

Commentary

Data was reported from nine locations in seven countries. All scores reported from Mexico were obtained from artificially inoculated plots with severe scald epidemics. One location in Spain, Valladolid, should be considered as a "hot spot" for testing in the near future due to the high scores reported. Data from

Ethiopia, another site with severe scald epidemics, was not available.

We expect future IBONs to continue providing lines resistant to scald, as a result of our continuing efforts to breed germplasm resistant to this disease.

Table 4. (Continued)

VTY ND.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS									MEAN
		6	18	22	24	28	29	31	33	34	
131	GLDA"S" CMB79-376-3Y-5B-3Y-2B-2Y-0B	0	0	7	0	0	0	0	1	1	1.0
150	(GAL-PI6384/H8855-467 X ALPHA)MARI- COHD CMB79-1375-B-2Y-1B-1Y-2B-1Y-0B	0	0	7	0	0	0	0	1	1	1.0
126	GLDA"S" CMB79-376-3Y-5B-1Y-1B-1Y-0B	0	0	6	0	0	0	0	1	3	1.1
129	GLDA"S" CMB79-376-3Y-5B-3Y-1B-2Y-0B	0	0	6	0	0	0	0	2	2	1.1
128	GLDA"S" CMB79-376-3Y-5B-3Y-1B-1Y-0B	0	0	6	0	0	0	0	2	3	1.2
130	GLDA"S" CMB79-376-3Y-5B-3Y-2B-1Y-0B	0	0	7	0	0	0	0	2	2	1.2
127	GLDA"S" CMB79-376-3Y-5B-1Y-1B-2Y-0B	0	0	7	0	0	0	3	1	2	1.4
96	ARAMIR-COSSACK CMB77A-458-1H-1Y-1B-1Y-2B-0Y	1	0	3	---	5	0	3	0	1	1.6
91	IB65-M66.85 X CEL/CEL-KV2240 CMB78A-1820-B-1B-2Y-1B-1Y-1B-0Y	1	0	---	---	7	0	0	1	3	1.7
27	BCO. MR-MZG/CM67-CENTEND X CEL CMB78A-942-2H-1Y-1B-2Y-1B-0Y	0	0	6	1	3	4	0	1	1	1.8
141	W12231 X PI6384-GOSPICK/P7131B CMB79-1276-B-1Y-1B-3Y-1B-1Y-0B	0	0	4	1	5	0	0	4	3	1.9
26	MD-2BR X NRD-61/KIMBERLY-COMP. CR236 CMB78A-843-9B-1Y-1B-1Y-1B-0Y	1	0	6	4	0	4	1	3	0	2.1
49	CEL-CI3909.2 X 2762-BC/CAGN"S" CMB79-60-12Y-1B-1Y-1B-2Y-0B	0	0	6	1	3	0	7	1	1	2.1
17	MZG-DC CMB78A-49-1B-1Y-1B-1Y-2B-0Y	1	0	8	1	3	2	3	2	1	2.3
20	CEL X MZG-GVA/TLLD CMB78A-406-3H-1Y-1B-1Y-1B-0Y	1	1	3	1	5	0	5	2	3	2.3

Table 5. Resistance to powdery mildew

LOCATIONS	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
12	ASIA	REP. OF KOREA	SUMON GYEDONGGI PROV.	61
14	EUROPE	GERMAN DEM. REP.	MAGDEBURG-HADMERBLEBEN	61
15	EUROPE	GREECE	THESSALONIKI	61
16	EUROPE	ITALY	FOGGIA	61
17	EUROPE	NORWAY		61
18	EUROPE	NORWAY	OSTRE TOTEN	61
19	EUROPE	ROMANIA	CLUJ	61
20	EUROPE	SPAIN	LLEIDA-PALUAU D'ANGLEFOLA	61
21	EUROPE	SPAIN	MADRID-ENCIN	61
22	EUROPE	SPAIN	VALLADOLID	61
24	MIDDLE EAST	CYPRUS	ATHALASSA	61
25	MIDDLE EAST	ISRAEL	BET DAGAN-VOLCANI CTR.	61
36	SOUTH AMERICA	PERU	CUSCO-TARAY	61

*VARIABLE IDENTIFICATIONS
 61 POW M 0-9

Commentary

Powdery mildew scores were reported from thirteen countries, and Europe, where the disease is severe, provided nine locations in six countries. Although there

were occasional high scores from certain localities, the trend continues to be toward very low scores across all locations. Entry 113 had scores of less than 3 at all sites.

Table 5. (Continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS												MEAN	
		12	14	15	16	17	18	19	20	21	22	24	25		36
113	MAGNIF102 X 6250-1161 CMB79-166-1Y-1B-1Y-OB	3	2	2	0	0	0	0	0	1	3	2	1	0	1.1
105	BR. VILLA-CLIPPER X MPYT169. 1Y CMB78A-1910-D-2B-1Y-1B-1Y-OB	3	3	4	6	1	0	0	2	1	4	3	1	0	2.2
140	PLATA-MARI X IMPALA-SV. BRIGITTA/NACK A CMB79-1257-F-1Y-1B-2Y-1B-2Y-OB	3	2	2	5	1	0	0	4	3	4	3	1	0	2.2
99	5056-1605 X CP-BRA CMB78A-772-2B-1Y-1B-1Y-2B-OB	1	4	4	8	2	1	1	4	0	3	2	1	0	2.4
139	C18238-C56713 X C15819 CMB79-826-1Y-1B-2Y-3B-1Y-OB	3	4	2	6	2	0	0	5	1	4	5	1	0	2.5
30	9121-BULGARIAN/API-CM67 X ORE CMB78A-1131-13B-2Y-1B-1Y-1B-OB	3	3	5	1	3	0	1	4	3	7	4	1	0	2.7
39	MAGNIF102-VOLLA X MW6319 CMB78A-1866-F-3B-1Y-2B-1Y-1B-OB	5	6	2	3	3	0	1	4	5	4	3	1	0	2.8
110	IMPALA X ESP-1808 CMB79-158-1Y-1B-1Y-1B-1Y-OB	3	---	4	8	4	0	3	4	1	4	2	1	0	2.8
135	EMIR-SHABET X CM67/ARMELLE CMB79-380-2Y-1B-2Y-2B-1Y-OB	3	5	4	6	3	0	0	5	3	4	4	1	0	2.9
28	5472-3446/M64. 69-M65. 211 X XV2240 CMB78A-1044-6H-1Y-2B-3Y-1B-OB	5	---	4	8	5	0	0	3	3	4	3	1	0	3.0
36	(BCO. MR-AB46/APAM-ATHS X GVA)SOTOL CMB78A-1780-D-2Y-1B-1Y-1B-1Y-OB	5	3	4	6	2	0	1	0	5	4	3	1	5	3.0
118	OLDA"S" CMB79-376-2Y-2B-2Y-1B-1Y-OB	3	5	4	7	2	0	0	5	5	5	2	1	0	3.0
8	(API-CM67 X APM-1B65/API-CM67 X II26 . L2966. 69)NOPAL"S" CMB78-305-4H-1Y-1B-1Y-1B-OB	3	---	5	8	2	0	0	4	5	5	5	1	0	3.2
144	ARUPO"S" CMB79-1312-E-7Y-1B-1Y-1B-1Y-OB	3	3	3	8	3	0	5	5	5	3	3	1	0	3.2
31	(UC566/SD729-POR X BCO. MR-GVA)MAT. RA 8156 CMB78A-1349-A-3B-1Y-1B-4Y-1B-OB	5	2	4	1	4	0	5	5	1	6	4	5	4	3.5

Table 6. Resistance to leaf rust

LOCATIONS	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
2	AFRICA	SOUTH AFRICA	CAPE PROVINCE-TYOERHOEK	7
5	AFRICA	ZIMBABWE	HARARE	7
8	ASIA	BURMA	YE-U (SAGAIN DIV.)	7
14	EUROPE	GERMAN DEM. REP.	MAGDEBURG-HADHERSLEBEN	7
15	EUROPE	GREECE	THESSALONIKI	7
24	MIDDLE EAST	CYPRUS	ATHALASSA	7
25	MIDDLE EAST	ISRAEL	BET DAQAN-VOLCANI CTR.	7
29	NORTH AMERICA	MEXICO	HIDALGO	7

*VARIABLE IDENTIFICATIONS
7 LEAF RUST

Commentary

Scores were reported from eight locations, each representing a different country. Only two entries (19, 126) showed resistance across all locations. Some entries presented low average scores, but were

susceptible in one or two locations, indicating the presence of races characteristic to certain regions. Leaf rust screening is done in Mexico using artificially created epidemics with races present in the country.

Table 6. (Continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS							MEAN	
		2	5	8	14	15	24	25		29
19	APH-RL X ORE"S"/D-I X ASE-CM. 68. 1W. B CMB78A-361-1H-1Y-2B-1Y-1B-0Y	10S	10S-MB	10MR	5MS	10MR	15MR	10MS	----	6.4
126	GLDA"S" CMB79-376-3Y-5B-1Y-1B-1Y-0B	5B	5B-MB	----	20MS	0	20MR	20B	0	7.6
127	GLDA"S" CMB79-376-3Y-5B-1Y-1B-2Y-0B	TS	5B-MB	5MR	20MS	20MR	20MS	30B	0	9.7
76	(DEIR ALLA105/NEPAL844-POR X CM67- U. BASK1766)API-CM67 X POR-U. BASK1766 CMB79-1279-C-1Y-3B-1Y-1B-1Y-0B	0	TMB	----	20MS	0	50MS	20B	0	11.0
89	[(AS46-KRISTINA/APH-DWARF21 X POR- IB65)CEL X DS-APROJPRO-BEACON CMB77A-2245-A-3B-1Y-1B-2Y-1B-0Y	5B	5B-MB	5MR	20MS	10MR	45MS	10B	----	11.1
121	GLDA"S" CMB79-376-2Y-2B-3Y-1B-2Y-0B	TS	5B-MB	10MR	20MS	0	40MS	20B	----	11.1
7	LIGNEE527	0	0	5MR	50MS	30MR	35MS	10B	0	11.5
22	H272-NOPAL"S" X HOR72B CMB78A-534-8H-1Y-1B-2Y-1B-0Y	5B	TMB-B	10MR	50MS	10MR	10MS	20B	----	11.7
50	CEL-C13909.2 X 2762-BC/CAGN"S" CMB79-60-12Y-1B-1Y-1B-3Y-0B	TS	5B	----	50MS	10MR	35MS	5MS	TR	11.7
122	GLDA"S" CMB79-376-2Y-3B-1Y-1B-1Y-0B	TS	10MS-B	10MR	20MS	20MR	30MS	20B	----	11.7

Table 7. Resistance to stripe rust (leaf)

LOCATIONS	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
10	ASIA	PAKISTAN	PUNJAB-ISLAMABAD	5
25	MIDDLE EAST	ISRAEL	BET DAGAN-VOLCANI CTR.	5
34	SOUTH AMERICA	ECUADOR	QUITO, PICHINCHA	5
35	SOUTH AMERICA	PERU	CUSCO-ANDENES	5
36	SOUTH AMERICA	PERU	CUSCO-TARAY	5

*VARIABLE IDENTIFICATIONS
 5 STRP RT.L

Commentary

Stripe rust data was reported from five locations. Race 24 of *Puccinia striiformis* is known to have been in South America since 1976. The top five entries listed

showed a good degree of resistance across all locations, while lines such as Lignee 527, a French variety known as Jaidor, is resistant to race 24 but susceptible to the race predominant in the Middle East.

Table 7. (Continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS					MEAN
		10	25	34	35	36	
107	MARI-COHO X ROW134. 73 CMB79-72-5Y-2B-1Y-2B-1Y-0B	----	0	TR	TR	TR	0.2
108	MARI-COHO X ROW134. 73 CMB79-72-5Y-2B-2Y-1B-1Y-0B	----	0	TMS	TR	TR	0.3
97	BETZES-COHO X PI6384-CAPUCHONA CMB78A-489-1B-2Y-2B-1Y-3B-0Y	10MR	0	----	5B	5B	3.5
96	ARAMIR-COSSACK CMBMB77A-45B-1H-1Y-1B-1Y-2B-0Y	10MR	0	0	10B	5B	3.8
96	(API-CM67 X DL71/ROW906. 73)3309 CMB79-220-1Y-1B-1Y-1B-1Y-0B	----	0	0	10B	10B	5.0
106	MARI-COHO X ROW134. 73 CMB79-72-1Y-1B-1Y-3B-3Y-0B	----	0	TR	20B	10B	7.6
28	5472-3446/M64. 69-M65. 211 X XV2240 CMB78A-1044-6H-1Y-2B-3Y-1B-0Y	10MR	0	5B	5B	30B	8.8
105	BR. VILLA-CLIPPER X MPYT169. 1Y CMB78A-1910-D-2B-1Y-1B-1Y-1B-0Y	----	0	20B	10B	5B	8.8
7	LIGNEE527	----	40B	TR	0	5B	11.3

Table 8. Best entries for test weight

LOCATIONS	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
18	EUROPE	NORWAY	OSTRE TOTEN	2
20	EUROPE	SPAIN	LLEIDA-PALUAI D'ANGLEFOLA	2

*VARIABLE IDENTIFICATIONS
 2 TEST WT

Table 8. (Continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS		MEAN
		18	20	
136	4367-NACKTA X MILN139/5673-1160 CMB79-1124-5Y-2B-2Y-1B-2Y-OB	80	---	80.0
88	CEL-WI2269 X ORE/BDQC-0AS CMB78-192-2H-1Y-1B-1Y-1B-0Y	79	72	75.5
95	CEDRO"S" CMB77-1267-B-1Y-1B-1Y-1B-1Y-OB	70	78	74.0
101	5056-1605/PRO-GVA X 11012.2 CMB78A-773-4B-1Y-2B-2Y-1B-0Y	74	72	73.0
39	MAGNIF102-VOLLA X WW6319 CMB78A-1866-F-5B-1Y-2B-1Y-1B-0Y	72	70	71.0
102	5056-1605/PRO-GVA X 11012.2 CMB78A-773-4B-1Y-2B-2Y-2B-0Y	74	68	71.0
109	MARI-COHO X B. VOLLA CMB79-79-1Y-1B-1Y-1B-1Y-OB	71	71	71.0
132	GLDA"S" CMB79-376-3Y-5B-3Y-2B-3Y-OB	70	72	71.0
133	EMIR-SHABET X CM67/ARMELLE CMB79-380-2Y-1B-2Y-1B-1Y-OB	72	70	71.0
100	5056-1605/PRO-GVA X 11012.2 CMB78A-773-4B-1Y-500B-500Y-0Y	69	72	70.5
107	MARI-COHO X ROW134.73 CMB79-72-5Y-2B-1Y-2B-1Y-OB	71	70	70.5
134	EMIR-SHABET X CM67/ARMELLE CMB79-380-2Y-1B-2Y-1B-2Y-OB	73	68	70.5
37	(IRIS/BCO. MR-AVT X CEL)CP-BRA CMB78A-1795-F-2B-3Y-1B-1Y-1B-0Y	69	71	70.0
47	(BREA"S"/4476W-EMIR X NACKTA)CEL- CI3909.2 X LINE257.14 CMB79-54-8Y-1B-3Y-1B-1Y-OB	70	70	70.0
99	5056-1605 X CP-BRA CMB78A-772-2B-1Y-1B-1Y-2B-0Y	69	71	70.0

Table 9. Best entries for 1000 grain weight

LOCATIONS	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
8	ASIA	BURMA	YE-U (SAGAIN DIV.)	13
18	EUROPE	NORWAY	OSTRE TOTEN	13
20	EUROPE	SPAIN	LLEIDA-PALAUU D'ANGLEFOLA	13

*VARIABLE IDENTIFICATIONS
13 1000 G.W.

Table 9. (Continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	LOCATIONS			MEAN
		8	18	20	
100	5056-1605/PRO-GVA X 11012.2 CMB7BA-773-4B-1Y-500B-500Y-0Y	52	67	59	59.3
102	5056-1605/PRO-GVA X 11012.2 CMB7BA-773-4B-1Y-2B-2Y-2B-0Y	50	68	55	57.7
103	5056-1605/PRO-GVA X 11012.2 CMB7BA-773-4B-1Y-2B-3Y-2B-0Y	50	69	52	57.0
104	OC649-MARI X HJ33.8B-ALPHA/165B-EMIR CMB7BA-1630-C-2B-1Y-1B-1Y-1B-0Y	50	67	53	56.7
101	5056-1605/PRO-GVA X 11012.2 CMB7BA-773-4B-1Y-2B-2Y-1B-0Y	50	65	52	55.7
150	(CAL-PI63B4/HB855-467 X ALPHA)MARI- COND CMB79-1375-B-2Y-1B-1Y-2B-1Y-0B	51	71	43	55.0
118	OLDA"S" CMB79-376-2Y-2B-2Y-1B-1Y-0B	46	64	54	54.7
117	OLDA"S" CMB79-376-1Y-3B-2Y-1B-2Y-0B	48	61	53	54.0
121	OLDA"S" CMB79-376-2Y-2B-3Y-1B-2Y-0B	38	73	51	54.0
122	OLDA"S" CMB79-376-2Y-3B-1Y-1B-1Y-0B	44	63	53	53.3

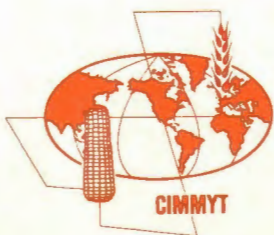
Table 10. Best entries based on check marks

LOCATIONS	CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
2	AFRICA	SOUTH AFRICA	CAPE PROVINCE-TYGERHOEK	50
3	AFRICA	SOUTH AFRICA	CAPE PROVINCE-MELOEVALLEN	50
5	AFRICA	ZIMBABWE	HARARE	50
6	ASIA	AFGHANISTAN	KABUL	50
7	ASIA	BANGLADESH	JOYDEBPUR-BARI	50
8	ASIA	BURMA	YE-U (SAGAIN DIV.)	50
9	ASIA	PAKISTAN	BALUCHISTAN	50
11	ASIA	PAKISTAN	BIND	50
13	ASIA	THAILAND	NAKHON RATCHSIMA	50
15	EUROPE	GREECE	THESSALONIKI	50
17	EUROPE	NORWAY		50
18	EUROPE	NORWAY	OSTRE TOTEN	50
20	EUROPE	SPAIN	LLEIDA-PALAU D'ANGLEFOLA	50
21	EUROPE	SPAIN	MADRID-ENCIN	50
22	EUROPE	SPAIN	VALLADOLID	50
23	EUROPE	SPAIN	ZARAGOZA-MONTANANA	50
24	MIDDLE EAST	CYPRUS	ATHALASSA	50
25	MIDDLE EAST	ISRAEL	BET DAQAN-VOLCANI CTR.	50
26	MIDDLE EAST	QATAR	BARADA	50
27	MIDDLE EAST	TURKEY	DIYARBAKIR	50
32	SOUTH AMERICA	BRAZIL	SAO PAULO-CAPAO BONITO	50
33	SOUTH AMERICA	CHILE	TEMUCO, CAUTIN	50
34	SOUTH AMERICA	ECUADOR	QUITO, PICHINCHA	50
35	SOUTH AMERICA	PERU	CUSCO-ANDENES	50
36	SOUTH AMERICA	PERU	CUSCO-TARAY	50

*VARIABLE IDENTIFICATIONS
50 CHECK MARK

Table 10. (Continued)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	MEAN
37	(IRIS/BCD.MR-AVT X CEL)CP-BRA CMB78A-1795-F-2B-3Y-1B-1Y-1B-0Y	36.0
96	ARAMIR-COSSACK CMB77A-45B-1H-1Y-1B-1Y-2B-0Y	36.0
100	5056-1605/PRD-GVA X 11012.2 CMB78A-773-4B-1Y-500B-500Y-0Y	36.0
99	5056-1605 X CP-BRA CMB78A-772-2B-1Y-1B-1Y-2B-0Y	32.0
101	5056-1605/PRD-GVA X 11012.2 CMB78A-773-4B-1Y-2B-2Y-1B-0Y	32.0
103	5056-1605/PRD-GVA X 11012.2 CMB78A-773-4B-1Y-2B-3Y-2B-0Y	32.0
120	GLDA"S" CMB79-376-2Y-2B-3Y-1B-1Y-0B	32.0
137	70.22423-B1 X CI6380 CMB79-663-1Y-1B-1Y-3B-1Y-0B	32.0
7	LIGNEE527	28.0
28	5472-3446/M64.69-M65.211 X XV2240 CMB78A-1044-6H-1Y-2B-3Y-1B-0Y	28.0
31	(UC566/SD729-PDR X BCD.MR-GVA)MAT. RA S156 CMB78A-1349-A-3B-1Y-1B-4Y-1B-0Y	28.0
31	CEL-CI3909.2 X 2762-BC/CAQN"S" CMB79-60-12Y-2B-1Y-1B-2Y-0B	28.0
118	GLDA"S" CMB79-376-2Y-2B-2Y-1B-1Y-0B	28.0
121	GLDA"S" CMB79-376-2Y-2B-3Y-1B-2Y-0B	28.0
125	GLDA"S" CMB79-376-3Y-4B-1Y-1B-1Y-0B	28.0
130	GLDA"S" CMB79-376-3Y-5B-3Y-2B-1Y-0B	28.0



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