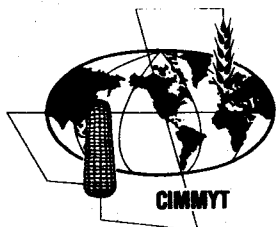




Results of the Thirteenth International Septoria Observation Nursery (ISEPTON) 1982-83



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CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO
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GLOSSARY OF VARIABLE NAMES USED IN THE TABLES
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Abbreviation	Scientific Name(s)	Variable name/scale	Nombre de la Variable/escala	Nom de la Variable/échelle
AL TOL	-	Aluminum tolerance (0-9 Scale)	Tolerancia a 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 de 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 (percentage)	Porcentaje de gusano cogollero	Noctuelle 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 (escala 0-9)	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
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	--	Check Mark (selected entries)	Entradas seleccionadas	Lignées ou variétés sélectionnées
COVD SMUT	<i>[Ustilago hordei (U.Koller)]</i>	Covered smut (percentage)	Porcentaje de carbón cubierto	Charbon couvert en pourcentage
EARS/M2	--	Ears per meter square	Espigas por metro cuadrado	Epis par M2
FALL NO	--	Falling number (seconds)	Actividad alfa amilasa (segundos)	Activité de l'alpha amyliase (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>Monographellanivalis</i>)	Fusarium leaf blotch (0-9 scale)	Mancha de la hoja y moho niveo (moho blanco) (escala 0-9)	Tache de la feuille (<i>Fusarium nivale</i>)(échelle 0-9)
GERM %	--	Germination (percentage)	Porcentaje de germinación	Germination en pourcentage
HAIL DMGE	--	Hail damage (percentage)	Porcentaje de daño por granizo	Dégat du a la grêle en pourcentage
HEAD DAYS	--	Number of days to heading	Número de días al espigamiento	Nombre de jours à l'épiaison
HEL SP	<i>Helminthosporium</i> spp.	<i>Helminthosporium</i> spp. (0-9 scale)	<i>Helminthosporium</i> sp. (escala 0-9)	<i>Helminthosporium</i> sp. (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
PLNT DENS	--	Plant density (stems/m2)	Densidad de plantas (tallos/metro cuadrado)	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)	Oidio o cenicilla polvorienta (escala 0-9)	Oidium (échelle 0-9)
PROT %	--	Protein (percentage)	Porcentaje de proteína	Protéine en pourcentage
SCAB %	<i>Fusarium</i> spp.	Head scab (percentage)	Porcentaje de roña	Fusarium de l'épi en pourcentage
SCLD	<i>Rhynchosporium secalis</i>	Scald (0-9 scale)	Escaldadura (escala 0-9)	Rhynchosporium (échelle 0-9)
SDMT INDX	--	Sedimentation index (cc)	Índice de sedimentación (cc)	Indice de sédimentation (cc)
SEP N	<i>Leptosphaeria nodorum</i> (syn. <i>Septoria nodorum</i>)	Septoria glume blotch (0-9 scale)	Tizón de la gluma (escala 0-9)	<i>Septoria nodorum</i> (échelle 0-9)
SEP S	<i>Septoria</i> spp.	Septoria glume/leaf blotch (0-9 scale)	Septoria sp. (escala 0-9)	<i>Septoria</i> spp. (échelle 0-9)
SEP T	<i>Mycosphaerella graminicola</i> (syn. <i>Septoria tritici</i>)	Septoria leaf blotch (0-9 scale)	Mancha foliar ó tizón foliar (escala 0-9)	<i>Septoria tritici</i> (échelle 0-9)
SHTR %	--	Shattering, head (percentage)	Porcentaje de desgrane (espiga)	Egrenage en pourcentage
SPT B	<i>Cochliobolus sativus</i> (syn. <i>Bipolaris sorokiniana</i> , syn. <i>Helminthosporium sativum</i>)	Spot blotch (0-9 scale)	Tizón foliar (escala 0-9)	Tache de la feuille (<i>Helminthosporium sativum</i>)(échelle 0-9)
STEM RUST	<i>Puccinia graminis</i>	Stem rust (Cobb scale)	Roya del tallo (escala de Cobb)	Rouille noire (échelle de Cobb)
STRP RT.H	<i>Puccinia striiformis</i>	Stripe rust, head (percentage)	Porcentaje de roya amarilla (espiga)	Rouille jaune sur épi en pourcentage
STRP RT.L	<i>Puccinia striiformis</i>	Stripe rust, leaf (Cobb scale)	Roya amarilla-hoja (escala de Cobb)	Rouille jaune sur feuilles (échelle de Cobb)
STRP V	--	Barley stripe mosaic virus (scale 0-9)	Virus del mosaico lineal de la cebada (escala 0-9)	Mosaïque striée de l'orge (échelle 0-9)
TAN S	<i>Pyrenophora tritici-repentis</i> (syn. <i>Helminthosporium-tritici-repentis</i>)	Tan spot (0-9 scale)	Mancha foliar amarilla (escala 0-9)	<i>Helminthosporium tritici</i> (échelle 0-9)
TEST WT	--	Test weight (kg/hl)	Peso hectolítrico (kg/hl)	Poids spécifique (kg/hl)
1000 G.W.	--	1000 grain weight (gm)	Peso de 1000 granos (gramos)	Poids de 1000 grains (grammes)
YELL BERR	--	Yellow berry (percentage)	Porcentaje de panza blanca	Mitadinage en pourcentage
YIELD KG/HA	--	Yield (kg/ha)	Rendimiento kg/ha	Rendement kg/ha

International Septoria Observation Nursery (ISEPTON)

PREFACE

Breeding for disease resistance has been a consistently high priority objective in CIMMYT's Wheat Program. Once adequate resistance was obtained for such top-ranking diseases as stem rust, other diseases moved to the forefront. In the 1960s, the recognition of leaf blotching diseases caused by *Septoria tritici* and *S. nodorum* as significant constraints to wheat yields led to greater attention to breeding for Septoria resistance.

By 1969, a suitable site for the initial screening of non-segregating CIMMYT nurseries, as well as lines supplied by cooperating scientists, had been identified near Pátzcuaro Lake, Mexico. However, a thorough evaluation of these preliminary selections called for international cooperation. Thus, in the fall of 1970 the First International Septoria Nursery was packaged and distributed from Toluca to selected cooperators located in areas where Septoria epidemics were known to occur frequently.

Beginning with its second distribution in 1971, the name of the nursery was changed to the ISEPTON, the acronym for International Septoria Observation Nursery. In the current scheme, individual plants or entire lines are selected in Pátzcuaro for having expressed superior potential for resistance to *Septoria*, and then planted immediately in the Yaqui Valley for seed increase and the evaluation of plant type and rust resistance under optimal environmental conditions. Only those lines with acceptable all-around performance are included in the ISEPTON. Nearly all ISEPTON lines are bread wheats, because local *Septoria* populations do not exert sufficient selection pressure on durum wheats.

Over the years, a growing interest among those working with *Septoria* diseases has resulted in improvements in the scale used to assess disease severity. The scale currently in use ranges from 0 to 9 and measures the upward progress of infection (0= no infection; 1-4= increasingly upward infection but restricted to the lower half of the plants; 5= infection reaching but not exceeding mid-height of the plants; 6-8= increasingly upward infection in the upper half of plants; 9= infection reaching the flag leaves and heads).

The main objective of the ISEPTON continues to be the assessment of each entry for its reaction to *S. tritici*. Similar evaluation for *S. nodorum*, rusts or other pathogens is very useful, and cooperators are encouraged to record and report reactions to other diseases whenever they occur.

The ISEPTON are used now as sources of *Septoria* resistance in various wheat breeding programs (e.g., Australia and the US) and may cycle back to CIMMYT's own crossing block. In fact, Pátzcuaro selections are used frequently as parent material in Mexico; twenty-three Pátzcuaro selections were included in the bread wheat crossing block Y 80-81 and 82 were included in the MV-81.

An additional bonus from the ISEPTON has been the finding that the nursery as a whole performs very well under the humid and acid soil conditions so common in parts of South America and in East and Central Africa. This is not surprising, however, since this environment is typical of the screening site at Pátzcuaro. As with other wheat international nurseries, any cooperating country is free to use CIMMYT-derived material included in the ISEPTON either as progenitors or as commercial varieties.

RESULTS OF THE THIRTEENTH INTERNATIONAL SEPTORIA OBSERVATION NURSERY (ISEPTON) 1982-83

The Thirteenth International Septoria Observation Nursery (ISEPTON) was sent in September 1982 to be grown by cooperators in their spring season of 1983. Sixty nurseries went to cooperators in 37 countries. The 106 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 of 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 13th ISEPTON 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 all measures of all variables reported to us. The number of observations differs from variable to variable. The reader is urged to note the "NOBS" entry at the head of each variable column in the table that reports all data for all lines—that tells how many observations went into the data reported in that column, which may be an important indicator of the level of credibility that should be conferred. 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. Any discrepancies between values in the summary table and those in the individual tables are due to the elimination of certain sites by crop program leaders.

Presentation of Results

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

1. One *international summary*, listing the sites from which data were returned, with notations of all variables recorded and reported.
2. A table reporting the *mean of all observations* 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 CIMMYT's Information Bulletin 38. 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 coefficient of infection (ACI) as explained in the yearly report of the United States Department of Agriculture International Spring Wheat Rust Nursery.

Feedback

Feedback 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 errors that become part of our cooperator's station file. We ask for feedback of both kinds.

Disease 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 a severity (percentage of rust infection on the plants) and response (kind of infection). The 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	.2
R	.2
MR	.4
M or X	.6
MS	.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. 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 reaction 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	$[(5 + 10)/2][(0.4 + 1.0)/2] = 2.25$

In most tables only average coefficients of infection (AVE.CI) are reported. However, in some tables the highest rust readings (HR) are reported as severity/response scores.

Summary of results

In general, the level of disease in the 1982-83 crop cycle was below average. However, at several locations the level of disease became severe. Of 36 locations returning reports, only one location reported *Septoria tritici* and only two locations specified *S. nodorum*. However, 20 locations indicated *Septoria* species (not specifying either *S. tritici* or *S. nodorum*) was at sufficient levels for note taking. Overall, the level of septoria disease was low and in most locations insufficient for screening purposes. The situation with the rusts was quite different with seven locations reporting good levels of stripe rust, six locations reporting leaf rust, and four locations reporting stem rust. Powdery mildew was reported at 10 locations and fusarium head scab at one location.

Table 1 presents a list of cooperators and the variables recorded. A listing (by entry number of nursery) of all data recorded is found in Table 2. Examination of the disease scores for the check varieties in the 13th ISEPTON further confirms the low severity of disease, except for the rusts.

Entry No.	Variety	Summary - Disease Scores								
		YR ¹	LR	SR	SCAB	PM	S.T.	S.N.	S.s.	Helm
1	Toropi	19.1	13.6	20.0	0.0	3.7	0.0	5.0	4.2	5.0
20	Jacui	11.5	2.8	6.7	11.0	2.3	5.0	2.5	4.6	5.0
40	Maringa	16.6	5.5	20.0	33.0	3.7	2.0	4.5	4.0	4.0
60	Encruzildada	12.3	8.4	5.3	33.0	2.9	4.0	3.0	5.0	6.0
80	Lerma Rojo	25.0	26.7	47.5	44.0	6.1	5.0	7.0	6.3	9.0
100	Toropi	19.5	7.6	22.5	0.0	3.7	1.0	4.5	3.8	6.0
106	Maringa	6.8	4.6	36.0	0.0	4.4	6.0	5.0	4.7	--

YR = Yellow or stripe rust
 LR = Leaf or brown rust
 SR = Stem or black rust
 SCAB = Fusarium head scab
 PM = Powdery mildew

ST = *Septoria tritici*
 SN = *Septoria nodorum*
 SS = *Septoria* species
 HELM = *Helminthosporium* species

Table 3 presents the best 25 entries for *S. tritici* along with their responses to *S. nodorum* and *Septoria* species. All of these entries, except the check varieties, have had at least one growing cycle at Pátzcuaro in Central Mexico where naturally occurring septoria disease levels are quite high. This additional selection pressure on the ISEPTON entries has helped in the selection of resistant germplasm.

Since most of the data returned this year was not clearly specified as to which *Septoria* species were present, it may be useful to note the best entries with respect to "*Septoria* species" (Table 4). Again, all of the best 25 entries had undergone at least one test cycle in Pátzcuaro. There were 37 entries with an aggregate score of less than 5.0, and these entries would probably be of use in a variety improvement program.

Of the 106 entries, 86 had a leaf rust reading of less than 20.0 (Table 5). The Bobwhite "S" and Sunbird "S" entries showed excellent resistance to all three rusts; one line in particular, Vpm-MOS83.11.4.8 x Torim 73, plus one durum entry, Sapi "S"-Teal, also had excellent resistance to the three rusts. There were 24 entries that scored less than 1.0 for leaf rust resistance. Thus, adequate resistance to the rusts has been maintained.

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

CONTINENT	COUNTRY	AREA	VARIABLES INCLUDED
AFRICA	ANGOLA	HUAMBO	3 4 11 50
AFRICA	CAMEROON	NGAOUNDERE	4 50 70
AFRICA	KENYA	RIFT VALLEY	5 8
AFRICA	R. S. AFRICA	CAPE PROV.	3 50 64
AFRICA	SOUTH AFRICA	CAPE PROV.	3 8 50 64
AFRICA	TANZANIA	IRINGA	3 9 36 50 61
ASIA	CHINA	GUANGDONG	4 61
EUROPE	CZECHOSLOVAKIA		4 9 63
EUROPE	EAST GERMANY	SCHWERIN	3 9 13 63
EUROPE	ENGLAND	CAMBRIDGE	3 9 50 61
EUROPE	ENGLAND	NORFOLK	50 61 64
EUROPE	FRANCE		50 64
EUROPE	FRANCE	NORD	3 5 10 50 61 64
EUROPE	GREECE	THESSALONIKI	3 4 50
EUROPE	IRELAND	KILDARE	3 61
EUROPE	NORWAY		3 50
EUROPE	PORTUGAL	ELVAS	5 7 8 62
EUROPE	SPAIN	SEVILLA	3 4 5 50 61
MIDDLE EAST	ISRAEL		3 9 64
MIDDLE EAST	SYRIA	ALEPPO	3 4 50 64
MIDDLE EAST	TURKEY	IZMIR	7 8 61
NORTH AMERICA	CANADA	P. E. I.	3 50 61 64
NORTH AMERICA	MEXICO	MICHUACAN	64
NORTH AMERICA	U. S. A.	CALIFORNIA	50 64
NORTH AMERICA	U. S. A.	NORTH DAKOTA	64
NORTH AMERICA	U. S. A.	OREGON	3 5 50 64
OCEANIA	NEW ZEALAND	SOUTHLAND	5 50 64
SOUTH AMERICA	BRAZIL	PARANA	3 4 50 64
SOUTH AMERICA	BRAZIL	PARANA	3 7 50 61 64
SOUTH AMERICA	BRAZIL	RIO GRANDE DO SUL	7 50 64
SOUTH AMERICA	BRAZIL	RIO GRANDE DO SUL	64
SOUTH AMERICA	CHILE		3 9 50 64
SOUTH AMERICA	COLOMBIA	CUNDINAMARCA	50 64
SOUTH AMERICA	ECUADOR	QUITO, PICHINCHA	5 7 50
SOUTH AMERICA	PARAGUAY	CACUPE	7 50
SOUTH AMERICA	URUGUAY	COLONIA	3 50 64

***VARIABLE IDENTIFICATIONS**

3	HEAD	DAYS	4	MAT	DAYS	5	STRP	RT. L	7	LEAF	RUST	8	STEM	RUST
9	PLNT	HT	10	LODG	%	11	SHTR	%	13	1000	G. W.	36	SCAB	%
50	CHECK	MARK	61	POW M	0-9	62	SEP T	0-9	63	SEP N	0-9	64	SEP S	0-9
70	HEL S	0-9												

Table 2. Summary of the means of all variables, in entry order

VTY NO.	VARIETY OR CROSS AND PEDIGREE	ORAIN	ORIGIN	HEAD DAYS	MAT DAYS	STRP RT. L	LEAF RUST	STEM RUST	NOBS:					
									(19)	(8)	(7)	(6)	(4)	
1	TOROPI			119.1	150.9	19.1	13.6	20.0						
2	ALONDRA"S" CM11683-A-1Y-1M-1Y-7M-0Y-1PTZ- 0Y-OPTZ			110.0	142.3	12.0	22.0	26.7						
3	BOBWHITE"S" CM33203-K-10M-7Y-3M-2Y-1M-0Y- OPTZ			111.4	140.7	3.7	0.0	0.0						
4	BOBWHITE"S" CM33203-K-9M-24Y-0M-15Y-0B-OPTZ			109.3	140.1	0.9	15.8	0.0						
5	KINGLET"S" CM33089-W-3M-11Y-0M-2PTZ-0Y-OPTZ			109.7	141.9	0.9	16.6	0.0						
6	KINGLET"S" CM33089-W-3M-11Y-0M-OPTZ			110.4	142.4	1.2	15.6	5.3						
7	PHEASANT"S" CM32418-1M-1Y-6M-1Y-1M-1Y-0M- 107B-0Y-1PTZ			108.1	139.7	5.7	23.6	8.0						
8	SUNBIRD"S" CM34630-D-3M-3Y-1M-1Y-0M-OPTZ			109.4	143.1	1.4	3.8	0.0						
9	SUNBIRD"S" CM34630-D-5M-2Y-1M-1Y-0M-OPTZ			109.4	143.0	1.3	2.4	2.7						
10	SUNBIRD"S" CM34630-D-5M-2Y-3M-3Y-0M-OPTZ			111.6	144.0	6.1	1.8	0.0						
11	SUNBIRD"S" CM34630-D-5M-5Y-3M-1Y-0M-1PTZ- 0Y-OPTZ			113.9	144.4	1.2	0.4	0.0						
12	SUNBIRD"S" CM34630-D-5M-5Y-3M-1Y-0M-2PTZ- 0Y-OPTZ			114.6	144.6	1.0	1.2	0.0						
13	SUNBIRD"S" CM34630-D-5M-5Y-6M-3Y-1M-0Y-OPTZ			113.1	143.0	1.4	0.2	0.0						
14	SUNBIRD"S" CM34630-D-5M-5Y-6M-3Y-2M-0Y-1PTZ 0Y-OPTZ			112.1	143.5	3.3	0.4	0.0						
15	SUNBIRD"S" CM34630-D-5M-2Y-3M-3Y-0M-OPTZ			112.4	145.0	2.5	0.2	0.7						
16	SUNBIRD"S" CM34630-D-5M-2Y-1M-1Y-0M-2KE-0Y- OPTZ			111.3	143.4	2.7	0.0	0.0						
17	VEERY"S" CM33027-F-1M-9Y-0M-97Y-0B-OPTZ			112.9	146.6	4.4	24.8	0.0						
18	VEERY"S" CM33027-F-7M-4Y-5M-1Y-1M-0Y-OPTZ			112.6	142.0	2.1	21.2	0.0						
19	CMT-YR70 X MON"S" CM43403-A-2Y-1M-1Y-1M-1Y-0B-4M- 0Y-OPTZ			111.3	145.3	6.1	24.0	0.0						
20	JACUI			114.8	147.0	11.5	2.8	6.7						
21	CMT-YR70 X MON"S" CM43403-A-2Y-1M-1Y-1M-1Y-0B-23M- 0Y-OPTZ			111.4	145.5	7.1	19.2	2.7						
22	CMT-YR70 X MON"S" CM43403-A-2Y-1M-1Y-1M-1Y-0B-87M- 0Y-OPTZ			110.8	144.3	5.7	24.4	0.0						
23	CMT-YR70 X MON"S" CM43403-A-2Y-1M-1Y-1M-1Y-0B-88M- 0Y-OPTZ			109.6	145.4	6.8	31.2	0.0						
24	CMT-YR70 X MON"S" CM43403-A-2Y-1M-1Y-1M-1Y-0B-89M- 0Y-OPTZ			110.6	144.9	11.4	18.8	2.7						

VTY	PLNT HT	LODG %	SHTR %	1000 G. W.	SCAB %	CHECK MARK	POW M 0-9	SEP T 0-9	SEP N 0-9	SEP S 0-9	HEL S* 0-9
	(6)	(1)	(1)	(1)	(1)	(25)	(10)	(1)	(2)	(20)	(1)
1	120.7	100.0	0.0	38.0	0.0	12.5	3.7	0.0	5.0	4.2	5.0
2	84.0	100.0	0.0	37.6	22.0	20.8	2.2	4.0	6.0	4.7	7.0
3	85.2	22.0	0.0	26.5	22.0	20.8	1.4	4.0	5.0	4.7	6.0
4	83.2	33.0	0.0	30.0	22.0	16.7	1.5	6.0	5.5	5.2	8.0
5	85.0	89.0	0.0	33.4	11.0	24.0	2.9	6.0	5.5	5.1	7.0
6	83.3	89.0	33.0	35.7	11.0	20.0	2.2	7.0	5.5	5.3	6.0
7	74.2	22.0	0.0	41.0	22.0	4.2	1.9	8.0	6.0	5.4	8.0
8	77.5	22.0	0.0	37.3	11.0	24.0	2.6	4.0	4.0	4.9	5.0
9	76.3	33.0	0.0	37.2	11.0	24.0	2.7	5.0	3.5	5.0	7.0
10	75.8	67.0	0.0	37.4	11.0	25.0	2.2	3.0	3.5	4.7	7.0
11	75.2	67.0	0.0	37.6	11.0	16.7	1.7	2.0	3.5	5.1	6.0
12	77.3	67.0	0.0	37.7	11.0	12.5	2.0	3.0	4.0	4.7	6.0
13	82.2	56.0	0.0	36.1	11.0	20.8	2.1	6.0	4.5	4.6	6.0
14	80.5	56.0	0.0	36.2	11.0	20.0	2.4	3.0	3.0	4.3	7.0
15	75.8	33.0	0.0	36.7	11.0	20.8	2.9	7.0	4.0	5.0	6.0
16	76.7	44.0	0.0	36.4	11.0	29.2	2.8	3.0	4.5	5.2	6.0
17	73.3	22.0	0.0	33.9	22.0	41.7	2.8	7.0	6.5	4.8	4.0
18	82.2	33.0	0.0	32.8	33.0	25.0	2.9	6.0	6.0	4.8	5.0
19	77.0	56.0	44.0	34.3	22.0	37.5	4.1	8.0	6.0	5.1	4.0
20	126.3	89.0	67.0	40.8	11.0	12.5	2.3	5.0	2.5	4.6	5.0
21	76.8	67.0	33.0	31.8	11.0	8.0	4.4	6.0	5.5	5.4	6.0
22	77.0	67.0	56.0	32.0	11.0	20.0	4.5	6.0	6.5	5.1	4.0
23	79.8	33.0	0.0	36.2	11.0	20.8	4.2	7.0	6.0	5.2	4.0
24	77.8	11.0	0.0	33.5	11.0	16.7	3.4	7.0	4.5	5.3	4.0

*HEL S = HEL SP = *Helminthosporium* species

Table 2 (con't.).

VTY NO.	VARIETY OR CROSS AND PEDIGREE	GRAIN	ORIGIN	HEAD	MAT	STRP	LEAF	STEM
				DAYS	DAYS	RT. L	RUST	RUST
			NOBS:	(19)	(8)	(7)	(6)	(4)
25	BUC"S"-PAVON 76"S" CM52359-12M-2Y-2B-4Y-2M-0Y-OPTZ			108.3	141.5	4.4	26.0	0.0
26	BUC"S"-CHRC"S" CM52421-11M-4Y-2Y-2M-0Y-1PTZ			106.3	137.9	6.0	12.3	0.0
27	BLT"S"-BLD"S" CM49989-22M-3Y-2Y-2M-0Y-2PTZ			106.3	143.3	4.2	0.0	26.7
28	[(FNXT-TH/CLLF(3)ANZAJT0866 SWM6139-1Y-1Y-2Y-2M-0Y-OPTZ			111.6	140.1	6.0	24.5	0.0
29	4777(2) X FKN-GB/PAVON 76"S" CM49912-40M-1Y-1Y-1M-0Y-OPTZ			109.6	141.3	3.8	1.2	33.3
30	4777(2) X FKN-GB/PAVON 76"S" CM49912-40M-1Y-2Y-1M-0Y-OPTZ			109.8	141.3	4.2	6.3	49.8
31	ALD"S"-MN72130 CM50361-8Y-3M-1Y-4Y-1M-0Y-OPTZ			111.2	143.5	11.3	4.2	20.0
32	ALD"S"-MN72130 CM50361-8Y-3M-1Y-4Y-2M-0Y-OPTZ			110.2	143.5	6.7	3.4	14.7
33	ALD"S"-MN72130 CM50361-8Y-6M-1Y-2Y-0M-OPTZ			107.9	142.0	6.5	15.2	0.0
34	PAVON 76"S"-7C66 CM45470-8M-1Y-1M-1Y-2Y-1M-0Y-OPTZ			112.8	143.0	24.4	23.2	13.3
35	PAVON 76"S"-7C66 CM45470-8M-1Y-2M-1Y-1Y-1M-0Y-OPTZ			113.2	143.6	20.9	14.4	21.3
36	YR 70-PAM"S" CM46091-16M-1Y-6M-2Y-1Y-1M-0Y-OPTZ			111.9	144.9	4.3	13.6	1.3
37	YR 70-PAM"S" CM46091-16M-1Y-6M-2Y-1Y-2M-0Y-OPTZ			110.7	144.0	3.0	15.6	0.0
38	YR 70-PAM"S" CM46091-16M-1Y-6M-3Y-1Y-2M-0Y-OPTZ			113.3	144.9	2.3	18.0	5.3
39	YR 70-PAM"S" CM46091-16M-1Y-6M-3Y-1Y-1M-0Y-OPTZ			112.9	145.4	2.2	13.8	8.0
40	MARINOA			118.4	141.7	16.6	5.5	20.0
41	FURY-CHA#2{[CNO"S"-GLL(KLRE-SON64(2) X INIA 66/CND)INSTP-Y50} CM47967-E-1M-4Y-3M-3Y-1Y-2M-0Y-OPTZ			111.8	140.7	2.3	17.7	10.7
42	FURY-CHA#2{[CNO"S"-GLL(KLRE-SON64(2) X INIA 66/CND)INSTP-Y50} CM47967-E-1M-4Y-4M-1Y-1Y-1M-0Y-OPTZ			111.1	141.0	1.0	18.1	8.0
43	FURY-CHA#2{[CNO"S"-GLL(KLRE-SON64(2) X INIA 66/CND)INSTP-Y50} CM47967-E-1M-4Y-4M-1Y-2Y-2M-0Y-OPTZ			111.1	141.0	1.1	10.9	8.0
44	FURY-CHA#2{[CNO"S"-GLL(KLRE-SON64(2) X INIA 66/CND)INSTP-Y50} CM479. E-1M-4Y-4M-3Y-1Y-1M-0Y-1PTZ			112.1	141.6	5.6	11.8	8.0
45	VPM-MOS83 11.4.8 X TORIM 73 SWM6306-4M-1Y-3M-3Y-1Y-1M-0Y-OPTZ			112.5	145.0	3.7	0.1	5.3
46	CARB53-COC75/KVZ-BUHO"S" X KAL-BB CM47556-EE-1M-1Y-5M-1Y-1Y-1M-0Y-OPTZ			110.5	142.8	1.2	3.2	1.3

VTY	PLNT HT	LOADG %	SHTR %	1000 G. W.	SCAB %	CHECK MARK	POW M 0-9	SEP T 0-9	SEP N 0-9	SEP S 0-9	HEL S 0-9
	(6)	(1)	(1)	(1)	(1)	(25)	(10)	(1)	(2)	(20)	(1)
25	84.0	89.0	0.0	35.9	11.0	32.0	3.6	6.0	4.5	5.3	5.0
26	85.3	67.0	33.0	32.5	33.0	48.0	1.8	7.0	3.5	5.5	7.0
27	92.2	100.0	67.0	37.9	44.0	16.7	3.6	6.0	3.5	6.5	6.0
28	91.0	56.0	56.0	36.4	56.0	8.3	2.3	7.0	3.0	5.4	7.0
29	86.3	89.0	0.0	33.6	33.0	16.7	3.0	6.0	4.0	5.2	8.0
30	86.5	78.0	0.0	32.1	33.0	8.3	3.6	5.0	3.5	5.4	8.0
31	77.5	67.0	11.0	34.6	22.0	16.0	3.7	6.0	5.5	4.5	4.0
32	76.7	56.0	0.0	35.5	33.0	8.0	3.2	8.0	6.0	4.7	4.0
33	73.8	22.0	0.0	32.9	67.0	16.0	3.6	8.0	6.0	5.0	7.0
34	76.8	33.0	0.0	38.3	22.0	16.0	1.6	6.0	4.0	5.3	4.0
35	79.7	67.0	44.0	39.0	0.0	12.0	1.7	7.0	5.0	5.5	4.0
36	83.5	67.0	0.0	32.4	22.0	16.7	1.8	7.0	4.0	5.3	4.0
37	79.3	67.0	22.0	31.1	22.0	36.0	1.7	7.0	4.5	4.9	4.0
38	87.7	78.0	44.0	35.6	22.0	16.7	1.7	5.0	4.0	4.8	3.0
39	87.7	78.0	0.0	33.7	33.0	20.8	2.4	8.0	4.0	4.9	4.0
40	121.7	100.0	0.0	40.3	33.0	12.5	3.7	2.0	4.5	4.0	4.0
41	84.8	56.0	0.0	39.3	0.0	4.2	2.7	7.0	5.5	5.7	8.0
42	89.7	33.0	0.0	41.0	44.0	8.3	1.6	4.0	4.5	5.5	8.0
43	86.7	22.0	0.0	37.9	44.0	16.7	1.6	5.0	5.0	5.5	8.0
44	84.8	44.0	0.0	34.6	44.0	20.8	2.4	6.0	6.0	5.2	8.0
45	91.2	100.0	0.0	32.2	44.0	29.2	3.2	7.0	6.5	5.2	3.0
46	83.3	56.0	0.0	30.0	11.0	36.0	1.8	6.0	4.0	4.9	5.0

Table 2 (con't.).

VTY NO.	VARIETY OR CROSS AND PEDIGREE	GRAIN	ORIGIN	HEAD	MAT	STRP	LEAF	STEM	
				DAYS	DAYS	RT. L.	RUST	RUST	
				NOBS:	(19)	(8)	(7)	(6)	(4)
47	JUP73-MUS"S" (CND"S"-7C X CND-INIA/ TOB) CM34601-K-3Y-3M-7Y-1M-0Y-4PTZ- 0Y-OPTZ			109.2	142.6	12.8	24.0	0.0	
48	((MY54/N10-Y50 X K.LINE)CDZJCJ71"S" PAT79 B13981-H-1Z-1Z-1A-1A-0A-1PTZ-0Y- OPTZ			112.5	140.9	21.2	32.5	8.0	
49	((MY54/N10-Y50 X K.LINE)CDZJCJ71"S" PAT79 B13981-H-1Z-1Z-1A-1A-0A-2PTZ-0Y- OPTZ			111.5	140.1	30.6	40.4	0.0	
50	GOV-AZ67 X MUS"S" CM41257-I-8M-1Y-1M-2Y-2M-0Y-OPTZ 1PTZ-0Y-OPTZ			110.7	141.4	1.1	3.7	5.3	
51	GOV-AZ67 X MUS"S" CM41257-I-8M-1Y-1M-2Y-2M-0Y-OPTZ 2PTZ-0Y-OPTZ			110.9	142.0	12.8	3.5	8.0	
52	HAHN"S" CM33682-L-1Y-1Y-1M-3Y-100B-503Y- 500B-0Y-OPTZ			114.3	146.6	10.1	9.0	8.0	
53	BON-YR70/F35.70 X KAL-BB CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B- OPTZ			110.2	144.5	4.3	0.3	10.7	
54	S. SEAFDAM X SOTY-JN(3) L489-1AP-OAP-2K-OAP-OPTZ			109.5	137.9	13.1	21.1	20.0	
55	S. SEAFDAM X SOTY-JN(3) L489-2L-1AP-OAR-1KE-0Y-OPTZ			109.8	137.4	9.0	16.2	20.0	
56	S. SEAFDAM X SOTY-JN(3) L489-2L-1AP-OAP-1KE-0Y-OPTZ			110.1	140.0	12.1	17.4	20.0	
57	S. SEAFDAM X SOTY-JN(3) L489-2L-1AP-OAP-5KE-0Y-OPTZ			109.4	138.7	7.8	20.6	20.0	
58	S. SEAFDAM X SOTY-JN(3) L489-2L-1AP-OAP-6KE-0Y-OPTZ			108.4	139.2	14.7	23.4	22.7	
59	TOB66-CND"S" X PI62(LR64(2)-BON64 X CC/SCA) L772-3L-1AP-OAP-2KE-0Y-OPTZ			108.5	139.9	24.0	5.8	26.7	
60	ENCRUZILHADA			108.8	139.9	33.4	21.6	45.0	
61	CONDOR"S"-MUS"S" CM39458-6M-2Y-2M-0Y-OPTZ			110.2	132.5	12.3	8.4	5.3	
62	MN62131-PAVON 76"S" CM42404-30Y-1M-1Y-1M-1Y-2M-0Y- 1PTZ-0Y			107.9	132.7	16.3	18.9	12.0	
63	IAS 20			112.7	141.9	9.4	0.2	42.5	
64	IAS20-H567.71 CMH76.480-13Y-5B-1Y-1B-1Y-1B-0Y- 1PTZ-0Y			112.2	133.2	27.7	20.3	60.0	
65	IAS20-H567.71 CMH76.480-13Y-5B-1Y-1B-1Y-1B-0Y- 2PTZ-0Y			111.8	134.6	5.1	2.0	55.0	
66	IAS20-H567.71 CMH76.480-13Y-5B-1Y-1B-1Y-1B-0Y- 3PTZ-0Y			112.0	133.7	3.0	0.2	52.8	
67	IAS20(5)-H567.71 CMH78.409-3Y-5B-1Y-2PTZ-0Y-OPTZ			112.5	135.3	23.7	1.0	68.8	
68	IAS20(5)-H567.71 CMH78.409-3Y-10B-1Y-2PTZ-0Y-OPTZ			113.1	142.1	26.0	0.8	64.5	
69	IAS20(3)-H567.71 CMH77.205-1Y-1B-7Y-1B-1Y-1B-0Y- OPTZ			106.8	138.5	13.7	0.0	52.7	

VTY	PLNT HT	LODG %	BHTR %	1000 G.W	SCAB %	CHECK MARK	POW M. 0-9	SEP T 0-9	SEP N 0-9	SEP S 0-9	HEL S 0-9
	(6)	(1)	(1)	(1)	(1)	(25)	(10)	(1)	(2)	(20)	(1)
47	81.1	22.0	0.0	34.8	11.0	20.0	2.4	7.0	3.0	5.4	5.0
48	95.3	89.0	0.0	36.5	11.0	36.0	4.8	6.0	5.5	5.3	6.0
49	94.8	100.0	11.0	36.9	11.0	36.0	4.7	6.0	5.5	5.2	6.0
50	77.0	22.0	0.0	29.9	22.0	16.7	1.6	6.0	4.0	4.3	8.0
51	76.2	33.0	44.0	32.0	22.0	20.8	1.6	5.0	2.5	4.4	8.0
52	77.0	33.0	0.0	32.3	33.0	25.0	1.5	6.0	3.5	5.6	8.0
53	79.5	56.0	0.0	34.6	44.0	40.0	1.7	7.0	4.5	5.3	4.0
54	80.8	78.0	0.0	36.6	22.0	12.5	2.4	8.0	6.0	5.9	8.0
55	83.3	33.0	0.0	37.8	22.0	16.7	2.9	7.0	6.5	5.3	8.0
56	80.8	56.0	0.0	36.3	22.0	8.3	3.0	7.0	6.0	5.1	8.0
57	82.5	56.0	0.0	34.9	22.0	20.8	3.0	6.0	6.0	5.5	8.0
58	81.5	67.0	11.0	35.1	22.0	20.0	3.4	5.0	6.5	5.2	7.0
59	85.5	56.0	44.0	37.8	11.0	24.0	3.1	4.0	6.0	5.4	7.0
60	118.8	89.0	22.0	34.3	33.0	16.7	2.9	4.0	3.0	5.0	6.0
61	73.0	11.0	0.0	32.8	22.0	29.2	1.6	5.0	3.0	5.2	7.0
62	81.7	56.0	0.0	31.3	11.0	28.0	1.4	7.0	5.5	4.8	7.0
63	90.2	100.0	0.0	36.5	11.0	25.0	2.3	4.0	5.0	5.2	6.0
64	110.3	100.0	0.0	19.7	0.0	12.5	3.6	0.0	6.5	5.5	6.0
65	87.2	100.0	0.0	38.8	0.0	16.0	2.7	3.0	6.5	5.3	7.0
66	86.0	100.0	0.0	38.9	0.0	32.0	3.7	5.0	6.0	5.6	6.0
67	60.8	56.0	22.0	31.7	0.0	12.5	4.5	6.0	6.0	4.8	4.0
68	95.5	100.0	0.0	40.2	0.0	32.0	3.6	3.0	5.5	5.1	3.0
69	84.3	100.0	0.0	35.8	0.0	12.0	3.8	5.0	5.5	5.7	6.0

Table 2 (con't.).

VTY NO.	VARIETY OR CROSS AND PEDIGREE	GRAIN	ORIGIN	HEAD	MAT	BTRP	LEAF	STEM	
				DAYS	DAYS	RT. L	RUST	RUST	
				NOBB:	(19)	(8)	(7)	(6)	(4)
70	IAS20(3)-H567. 71 CMH77. 205-1Y-1B-8Y-5B-1Y-1B-OY- OPTZ			105.7	137.5	16.1	0.2	47.5	
71	PEL-ARTH B13374-0A-500Y-0M-2B-OY-OPTZ			109.9	139.0	27.6	18.8	36.8	
72	H567. 71-P. ARTH(3) CMH77. 30B-1Y-4B-1Y-5B-1Y-3B-OY- 1PTZ-OY			107.0	135.6	18.1	12.8	27.7	
73	H567. 71-P. ARTH(3) CMH77. 30B-1Y-4B-1Y-5B-1Y-3B-OY- 2PTZ-OY			106.6	135.0	14.9	11.0	15.0	
74	H567. 71-P. ARTH(3) CMH77. 30B-1Y-4B-1Y-10B-2Y-1B-OY- OPTZ			106.3	135.9	16.9	9.2	16.7	
75	P. ARTH(2)-H567. 71 CMH78. 421-3Y-3B-1Y-1B-OY-1PTZ			107.1	135.0	20.9	0.2	62.5	
76	H570. 71-IAS20(2) X P. ARTH CMH76A. 977-1B-8Y-3B-OY-1PTZ			106.5	135.7	7.7	11.0	38.8	
77	H570. 71-IAS20(2) X P. ARTH CMH76A. 977-1B-8Y-3B-OY-2PTZ			105.8	136.1	6.1	11.0	28.8	
78	S. 676 -2PTZ			102.3	131.0	46.0	3.5	40.0	
79	BUCK CENCERRD			121.4	146.2	36.9	0.3	21.0	
80	LERMA ROJO			102.4	132.0	25.0	26.7	47.5	
81	BUCK MANANTIAL (AUS. 52109)			115.7	138.5	28.5	0.0	22.0	
82	AU-ROM -1B-1Y-OPTZ			109.5	130.7	13.4	0.2	25.0	
83	CEP7841			112.6	142.6	20.3	0.0	30.0	
84	{CEBECO148/ROM-CHA X BB-NOR67{MK- 3BMA(4777 X REI-Y/KT)}TUCAN"8" CM33682-L-1Y-9Y-1M-1Y-100B-OY			112.4	145.7	9.7	14.4	6.2	
85	S12-88 X PJ62/EMU"S" CM40536-3M-1Y-1M-OY			107.7	140.4	12.5	17.2	47.5	
86	FT0-TL363. 30. 6. 1 X CGN CM20917-I-3Y-1M-1Y-OY-503Y-1M- 1Y-OPTZ			108.9	140.3	5.8	8.8	0.0	
87	FT0-TL363. 30. 6. 1 X CGN CM20917-I-3Y-1M-1Y-OY-503Y-1M- 2Y-OPTZ			107.3	138.9	7.9	1.1	0.5	
88	CEBECO148(CND"S"-INIA"S" X LFN/KL. P T-RAF SMM1368-500Y-1B-501Y-1M-OY-OPTZ- OY			112.6	146.7	22.9	10.8	16.0	
89	VEERY"S" CM23027-F-1M-9Y-0M			109.7	139.1	1.4	3.0	8.0	
90	BOBWHITE"S" CM33203-K-9M-9Y-4M-4Y-0M-OPTZ			109.2	140.1	18.9	12.0	4.0	
91	TOB66-NAR59 C01108-2X-7X-0X-1M-OY-OPTZ			113.7	154.5	38.5	14.4	1.3	
92	VIREO"S" CM28235-1Y-1Y-0M-OPTZ-OY			107.1	141.3	36.6	14.8	25.0	
93	CONDOR"S"-MUSALA"S" CM39458-6M-2Y-2M-OY			100.7	132.7	19.1	8.9	11.3	
94	FT0-TL363. 30. 6. 1 X CGN CM20917-I-3Y-1M-1Y-OY-503Y-1M- OY-OPTZ			111.4	139.0	27.3	23.5	22.7	

VTY	PLNT HT	LDGC %	SHTR %	1000 G. W.	SCAB %	CHECK MARK	POW H 0-9	SEP T 0-9	SEP N 0-9	SEP S 0-9	HEL S 0-9
	(6)	(1)	(1)	(1)	(1)	(25)	(10)	(1)	(2)	(20)	(1)
70	86.2	100.0	0.0	35.9	0.0	16.0	4.0	5.0	6.5	5.1	6.0
71	113.2	100.0	0.0	39.1	0.0	8.3	4.0	2.0	5.5	5.4	6.0
72	83.2	89.0	0.0	41.7	11.0	12.0	3.4	0.0	6.0	4.5	8.0
73	80.5	89.0	0.0	44.1	11.0	20.0	4.7	6.0	5.0	4.4	8.0
74	82.5	100.0	0.0	44.1	11.0	20.0	3.6	5.0	5.5	4.4	8.0
75	82.5	100.0	0.0	38.7	11.0	36.0	5.4	3.0	5.5	5.0	8.0
76	83.7	100.0	0.0	34.4	11.0	12.5	4.0	5.0	6.0	5.2	8.0
77	85.0	100.0	0.0	33.1	11.0	12.5	4.4	3.0	6.0	5.1	8.0
78	76.8	100.0	0.0	33.5	33.0	8.3	4.1	7.0	6.0	6.8	9.0
79	89.3	44.0	-----	32.2	11.0	4.2	4.3	2.0	6.0	5.5	5.0
80	83.0	100.0	0.0	33.4	44.0	4.2	6.1	5.0	7.0	6.3	9.0
81	102.0	100.0	0.0	33.0	33.0	4.2	3.4	-----	6.5	5.1	9.0
82	89.2	78.0	0.0	34.9	33.0	20.0	2.2	7.0	4.5	4.9	8.0
83	116.3	89.0	0.0	33.7	11.0	8.3	1.7	5.0	4.0	4.6	7.0
84	72.5	22.0	0.0	30.9	33.0	29.2	1.5	4.0	6.0	5.9	6.0
85	78.3	33.0	0.0	37.6	44.0	4.2	2.7	4.0	6.0	6.5	6.0
86	77.7	22.0	0.0	34.2	33.0	16.7	2.9	6.0	6.0	5.0	7.0
87	77.2	11.0	0.0	33.3	33.0	20.0	3.2	6.0	6.5	4.5	7.0
88	81.8	100.0	22.0	37.0	11.0	20.8	4.1	6.0	6.5	5.4	5.0
89	83.8	56.0	0.0	31.9	11.0	20.8	1.8	3.0	3.5	4.3	8.0
90	83.2	22.0	0.0	34.4	11.0	16.7	1.8	5.0	4.5	4.5	8.0
91	90.4	-----	0.0	33.8	-----	0.0	2.7	5.0	7.0	6.0	7.0
92	81.5	44.0	0.0	32.7	44.0	25.0	3.6	8.0	5.5	6.2	6.0
93	72.5	-----	0.0	33.4	44.0	12.0	2.1	-----	5.0	6.1	7.0
94	91.3	56.0	0.0	-----	-----	16.7	4.4	3.0	6.0	5.8	8.0

Table 2 (con't.).

VTY NO.	VARIETY OR CROSS AND PEDIGREE	GRAIN	ORIGIN	HEAD	HAT	STRP	LEAF	STEM	
				DAYS	DAYS	RT. L	RUST	RUST	
				NOBS:	(19)	(8)	(7)	(6)	(4)
95	CEBECO148(CNO"S"-INIA"S" X LFN/KL PE -RAF SWM1368-500Y-1B-501Y-1M-0Y-OPTZ			109.1	150.5	10.1	8.0	20.0	
96	R337-90LILS 121/CNO-INIA"S" X HD832- ON SWM4585-6Y-7M-0Y-1PTZ-0Y			113.5	143.8	19.6	0.5	18.7	
97	PAT 73190			101.4	139.9	2.1	9.2	35.0	
98	PLC"S"-RUFF"S" X GTA"S"-D6715(DURUM) CMD 1790-A-3-3M-1Y-OPTZ-0Y			107.5	142.6	49.2	7.0	42.3	
99	SAPI"S"-TEAL"S" (DURUM) CD23739-11Y-2M-1Y-1Y-0M-1PTZ-0Y			115.0	155.3	9.3	0.1	20.0	
100	TOROPI			117.8	144.6	19.5	7.6	22.5	
101	SAPI"S"-TEAL (DURUM) CD23739-11Y-2M-1Y-1Y-0M-2PTZ-0Y			116.5	157.0	12.8	0.1	17.5	
102	SAPI"S"-TEAL (DURUM) CD23739-11Y-2M-1Y-0M-3PTZ-0Y			116.4	157.3	5.1	0.2	20.0	
103	(HEXI75-CHUMP 12 X FAB"S"/P66.270) GOD"S" CD27137-1M-1Y-4Y-0M-OPTZ			110.9	132.2	10.4	1.2	36.3	
104	FQ"S"-MAGH"S" L-0559-0L-2AP-0AP-1PTZ-0Y			116.8	153.7	8.8	0.1	26.0	
105	GEDIZ-FQ"S" X GTA"S" CD16706-C-3M-2Y-2M-4Y-1M-1Y-0Y- OPTZ			116.5	146.0	18.7	1.8	22.5	
106	MARINGA			117.5	152.7	6.8	4.6	36.0	

VTY	PLNT HT	LDDC %	SHTR %	1000 G. W.	SCAB %	CHECK MARK	POW M 0-9	SEP T 0-9	SEP N 0-9	SEP S 0-9	HEL S 0-9
	(6)	(1)	(1)	(1)	(1)	(25)	(10)	(1)	(2)	(20)	(1)
95	72.8	67.0	-----	-----	33.0	16.7	2.6	4.0	5.0	4.4	6.0
96	80.0	100.0	-----	-----	-----	12.5	2.6	3.0	8.0	4.5	6.0
97	86.0	-----	0.0	36.9	33.0	8.3	4.5	6.0	4.5	5.6	9.0
98	101.4	89.0	-----	41.9	44.0	4.2	3.2	2.0	5.5	6.1	6.0
99	77.2	78.0	-----	47.7	56.0	4.2	3.7	2.0	4.5	5.3	-----
100	125.5	89.0	0.0	41.5	0.0	12.5	3.7	1.0	4.5	3.8	6.0
101	76.7	33.0	-----	49.0	22.0	12.5	3.1	2.0	5.0	5.4	-----
102	73.8	-----	-----	45.3	22.0	16.7	2.2	3.0	5.5	4.6	-----
103	71.3	22.0	0.0	37.4	11.0	16.7	3.2	2.0	6.0	4.9	9.0
104	77.8	67.0	-----	36.7	44.0	16.7	3.6	4.0	5.0	5.4	-----
105	113.8	100.0	0.0	42.4	33.0	16.7	3.6	1.0	5.5	4.4	6.0
106	81.8	22.0	-----	40.2	0.0	4.3	4.4	6.0	5.0	4.7	-----

Table 3. Top 25 entries: *Septoria tritici*

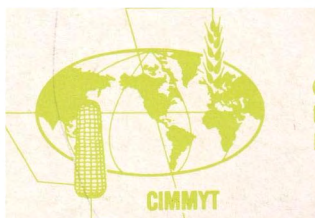
VTY NO.	VARIETY OR CROSS AND PEDIGREE	GRAIN	ORIGIN	SEP T	SEP N	SEP S
				0-9	0-9	0-9
			NOBS:	(1)	(2)	(20)
1	TOROPI			0.0	5.0	4.2
64	IAB20-H567.71 CMH76.480-13Y-5B-1Y-1B-1Y-1B-0Y-1PTZ-0Y			0.0	6.5	5.5
72	H567.71-P. ARTH(3) CMH77.308-1Y-4B-1Y-5B-1Y-3B-0Y-1PTZ-0Y			0.0	6.0	4.5
105	GEDIZ-FQ"S" X GTA"S" CD16706-C-5M-2Y-2M-4Y-1M-1Y-0Y-OPTZ			1.0	5.5	4.4
100	TOROPI			1.0	4.5	3.8
101	SAPI"S"-TEAL (DURUM) CD23739-11Y-2M-1Y-1Y-0M-2PTZ-0Y			2.0	5.0	5.4
99	SAPI"S"-TEAL"S" (DURUM) CD23739-11Y-2M-1Y-1Y-0M-1PTZ-0Y			2.0	4.5	5.3
40	MARINGA			2.0	4.5	4.0
11	SUNBIRD"S" CM34630-D-5M-5Y-3M-1Y-0M-1PTZ-0Y-OPTZ			2.0	3.5	5.1
98	PLC"B"-RUFF"B" X GTA"S"-D6715(DURUM) CMD 1790-A-3-3M-1Y-OPTZ-0Y			2.0	5.5	6.1
71	PEL-ARTH B13374-0A-500Y-0M-2B-0Y-OPTZ			2.0	5.5	5.4
103	(MEXI75-CHUMP 12 X FAB"B"/P66.270) GOD"S" CD27137-1M-1Y-4Y-0M-OPTZ			2.0	6.0	4.9
79	BUCK CENCERRO			2.0	6.0	5.5
96	R337-GOLILS 121/CND-INIA"S" X HDB32-ON BMM4585-6Y-7M-0Y-1PTZ-0Y			3.0	8.0	4.5
16	SUNBIRD"S" CM34630-D-5M-2Y-1M-1Y-0M-2KE-0Y-OPTZ			3.0	4.5	5.2
10	SUNBIRD"S" CM34630-D-5M-2Y-3M-3Y-0M-OPTZ			3.0	3.5	4.7
102	SAPI"S"-TEAL (DURUM) CD23739-11Y-2M-1Y-0M-3PTZ-0Y			3.0	5.5	4.6
94	FT0-TL363.30.6.1 X CON CM20917-1-3Y-1M-1Y-0Y-503Y-1M-0Y-OPTZ			3.0	6.0	5.8
75	P. ARTH(2)-H567.71 CMH7B.421-3Y-3B-1Y-1B-0Y-1PTZ			3.0	5.5	5.0
68	IAB20(5)-H567.71 CMH7B.409-3Y-10B-1Y-2PTZ-0Y-OPTZ			3.0	5.5	5.1
14	SUNBIRD"S" CM34630-D-5M-5Y-6M-3Y-2M-0Y-1PTZ-0Y-OPTZ			3.0	3.0	4.3
12	SUNBIRD"S" CM34630-D-5M-5Y-3M-1Y-0M-2PTZ-0Y-OPTZ			3.0	4.0	4.7
89	VEERY"S" CM23027-F-1M-9Y-0M			3.0	3.5	4.3
77	H570.71-IAB20(2) X P. ARTH CMH76A.977-1B-8Y-3B-0Y-2PTZ			3.0	6.0	5.1
65	IAB20-H567.71 CMH76.480-13Y-5B-1Y-1B-1Y-1B-0Y-2PTZ-0Y			3.0	6.5	5.3

Table 4. Top 25 entries: *Septoria* species

VTY NO.	VARIETY OR CROSS AND PEDIGREE	GRAIN	ORIGIN	SEP S	SEP T	SEP N	
				0-9	0-9	0-9	
				NOBS	(20)	(1)	(2)
100	TOROPI			3.8	1.0	4.5	
40	MARINGA			4.0	2.0	4.5	
1	TOROPI			4.2	0.0	5.0	
89	VEERY"S" CM23027-F-1M-9Y-0M			4.3	3.0	3.5	
50	GOV-AZ67 X MUS"S" CM41257-I-8M-1Y-1M-2Y-2M-0Y-OPTZ 1PTZ-0Y-OPTZ			4.3	6.0	4.0	
14	SUNBIRD"S" CM34630-D-5M-5Y-6M-3Y-2M-0Y-1PTZ 0Y-OPTZ			4.3	3.0	3.0	
74	H567.71-P. ARTH(3) CMH77.30B-1Y-4B-1Y-10B-2Y-1B-0Y- OPTZ			4.4	5.0	5.5	
51	GOV-AZ67 X MUS"S" CM41257-I-8M-1Y-1M-2Y-2M-0Y-OPTZ 2PTZ-0Y-OPTZ			4.4	5.0	2.5	
105	GEDIZ-FG"S" X GTA"S" CD16706-C-5M-2Y-2M-4Y-1M-1Y-0Y- OPTZ			4.4	1.0	5.5	
73	H567.71-P. ARTH(3) CMH77.30B-1Y-4B-1Y-5B-1Y-3B-0Y- 2PTZ-0Y			4.4	6.0	5.0	
95	CEBECO148(CND"S"-INIA"S" X LFN/KL. PE -RAF SWM1368-500Y-1B-501Y-1M-0Y-OPTZ			4.4	4.0	5.0	
96	R337-COLILS 121/CND-INIA"S" X HDB32- DN SWM4585-6Y-7M-0Y-1PTZ-0Y			4.5	3.0	8.0	
72	H567.71-P. ARTH(3) CMH77.30B-1Y-4B-1Y-5B-1Y-3B-0Y- 1PTZ-0Y			4.5	0.0	6.0	
87	FTC-TL363.30.6.1 X CGN CM20917-I-3Y-1M-1Y-0Y-503Y-1M- 2Y-OPTZ			4.5	6.0	6.5	
90	BOBWHITE"S" CM33203-K-9M-9Y-4M-4Y-0M-OPTZ			4.5	5.0	4.5	
31	ALD"S"-MN72130 CM50361-8Y-3M-1Y-4Y-1M-0Y-OPTZ			4.5	6.0	5.5	
20	JACUI			4.6	5.0	2.5	
13	SUNBIRD"S" CM34630-D-5M-5Y-6M-3Y-1M-0Y-OPTZ			4.6	6.0	4.5	
83	CEP7B41			4.6	5.0	4.0	
102	SAPI"S"-TEAL (DURUM) CD23739-11Y-2M-1Y-0M-3PTZ-0Y			4.6	3.0	5.5	
10	SUNBIRD"S" CM34630-D-5M-2Y-3M-3Y-0M-OPTZ			4.7	3.0	3.5	
2	ALONDRA"S" CM11683-A-1Y-1M-1Y-7M-0Y-1PTZ- 0Y-OPTZ			4.7	4.0	6.0	
32	ALD"S"-MN72130 CM50361-8Y-3M-1Y-4Y-2M-0Y-OPTZ			4.7	8.0	6.0	
106	MARINGA			4.7	6.0	5.0	
12	SUNBIRD"S" CM34630-D-5M-5Y-3M-1Y-0M-2PTZ- 0Y-OPTZ			4.7	3.0	4.0	

Table 5. Top 25 entries, in order of leaf rust resistance (data on stem rust and stripe rust included)

VTY NO.	VARIETY OR CROSS AND PEDIGREE	GRAIN	ORIGIN	NOBS:		
				LEAF RUST (6)	STEM RUST (4)	STRP RT L (7)
27	BLT"S"-BLD"S" CM49989-22M-3Y-2Y-2M-0Y-2PTZ			0.0	26.7	4.2
81	BUCK MANANTIAL (AUS 52109)			0.0	22.0	28.5
3	BOBWHITE"S" CM33203-K-10M-7Y-3M-2Y-1M-0Y- OPTZ			0.0	0.0	3.7
83	CEP7841			0.0	30.0	20.3
69	IAS20(3)-H567.71 CMH77.205-1Y-1B-7Y-1B-1Y-1B-0Y- OPTZ			0.0	52.7	13.7
16	SUNBIRD"S" CM34630-D-5M-2Y-1M-1Y-0M-2KE-0Y- OPTZ			0.0	0.0	2.7
104	FO"S"-MAGH"S" L-0559-OL-2AP-0AP-1PTZ-0Y			0.1	26.0	8.8
99	SAPI"S"-TEAL"S" (DURUM) CD23739-11Y-2M-1Y-1Y-0M-1PTZ-0Y			0.1	20.0	9.3
101	SAPI"S"-TEAL (DURUM) CD23739-11Y-2M-1Y-1Y-0M-2PTZ-0Y			0.1	17.5	12.8
45	VPM-MOS83.11.4.8 X TORIM 73 SWM6306-4M-1Y-3M-3Y-1Y-1M-0Y- OPTZ			0.1	5.3	3.7
13	SUNBIRD"S" CM34630-D-5M-5Y-6M-3Y-1M-0Y-OPTZ			0.2	0.0	1.4
15	SUNBIRD"S" CM34630-D-5M-2Y-3M-3Y-0M-OPTZ			0.2	0.7	2.5
102	SAPI"S"-TEAL (DURUM) CD23739-11Y-2M-1Y-0M-3PTZ-0Y			0.2	20.0	5.1
75	P. ARTH(2)-H567.71 CMH78.421-3Y-3B-1Y-1B-0Y-1PTZ			0.2	62.5	20.9
66	IAS20-H567.71 CMH76.480-13Y-5B-1Y-1B-1Y-1B-0Y- 3PTZ-0Y			0.2	52.8	3.0
82	AU-ROD -1B-1Y-OPTZ			0.2	25.0	13.4
70	IAS20(3)-H567.71 CMH77.205-1Y-1B-8Y-5B-1Y-1B-0Y- OPTZ			0.2	47.5	16.1
63	IAS 20			0.2	42.5	9.4
79	BUCK CENCERRO			0.3	21.0	36.9
53	BDN-YR70/F35.70 X KAL-BB CM41860-A-5M-2Y-3M-1Y-1M-1Y-0B- OPTZ			0.3	10.7	4.3
11	SUNBIRD"S" CM34630-D-5M-5Y-3M-1Y-0M-1PTZ- 0Y-OPTZ			0.4	0.0	1.2
14	SUNBIRD"S" CM34630-D-5M-5Y-6M-3Y-2M-0Y-1PTZ- 0Y-OPTZ			0.4	0.0	3.3
96	R337-GOLILS 121/CND-1NIA"S" X HDB32- DN SWM4585-6Y-7M-0Y-1PTZ-0Y			0.5	18.7	19.6
68	IAS20(5)-H567.71 CMH78.409-3Y-10B-1Y-2PTZ-0Y-OPTZ			0.8	64.5	26.0
67	IAS20(5)-H567.71 CMH78.409-3Y-5B-1Y-2PTZ-0Y-OPTZ			1.0	68.8	23.7



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