International Rice Testing

Program for Latin America

Report of the Second Conference

November 4-5, 1977

COOPERATION

Centro Internacional de Agricultura Tropical

THE INTERNATIONAL RICE RESEARCH INSTITUTE 1960

Second Conference of the International Rice Testing Program for Latin America

First row: Leonardo Hernández A. (Mexico), S.K. De Datta (IRRI), Francisco Andrade (Ecuador), Gustavo Benavides (CIAT), Nguyen Van Tan (Brazil), Germán Rico (Venezuela), Manuel H. Carrera (Costa Rica), César P. Martínez (Colombia), Ezequiel Espinosa (Panama), Benjamín Rivera (Colombia), Francisco Paz A. (Bolivia), Walter Ramiro Pazos (Guatemala), Manuel J. Rosero (IRRI/CIAT), José I. Murillo (Costa Rica), Manuel Rodríguez G. (Mexico), José del Rosario Concha (Panama), Eulalio García (Belize).
Second row: Paulo Sergio Carmona (Brazil), Camilo Jaramillo (CIAT), Rodolfo Moreno Gálvez (Mexico), Harold E. Kauffman (IRRI), Darío Leal Monsalve (Colombia), S.H. Ou (IRRI), José Rolando Rubí (Honduras), José M. Cordero (Dominican Republic), Derly Machado de Souza (Brazil), Wolfgang Jetter (Argentina), Mohamed J. Idoe (Surinam), Mauricio Rivera (Honduras), A.V. Chin (Guyana).
Third row: Aníbal Rodríguez (Venezuela), Luis A. Guerrero (El Salvador), Peter R. Jennings (CIAT-Costa Rica), Govert W. Hofstede (Surinam).

CONTENTS

INTERNATIONAL RICE TESTING PROGRAM FOR LATIN AMERICA

SECOND CONFERENCE

Program

Place: CIAT

Date: November 4-5, 1977

November 3, Thursday		
18:00		Cocktail dinner
November 4, Friday		
08:00 -	08:30	Registration
08:30 -	08:45	Welcome - Dr. John L. Nickel
08:45 -	09:30	Review of the International Rice Testing Program in Latin America - M.J. Rosero
09:30 -	10:00	Review of the International Rice Testing Program in the Eastern Hemisphere - H.E. Kauffman
10:00 -	10:30	Presence of Bacterial Leaf Blight (Xanthomonas oryzae) of rice in Latin America - J.C. Lozano
10:30 -	11:00	Coffee break
11:00 -	11:30	Multiregional evaluation of progenies resistant to blast in Latin America - H. Weeraratne
11:30 -	12:00	Upland rice and its relations with soil problems and water stress - S.K. De Datta
12:00 -	12:30	Results of the First Yield Nursery (VIRAL) in some countries
12:30 -	13:30	Lunch
13:30	17:00	Review and planning of the IRTP Nurseries for Latin America

Moderators: H. E. Kauffman

M. J. Rosero

Organization of the IRTP in Latin America
- Nurseries
- Monitoring tours
- Planning and review sessions

Coffee break

Nursery Operations
- Nomination of entries
- Multiplication of seed and dispatch of the nurseries
- Nursery management procedures
- Management of data and reports

Cooperative Program for Blast Resistance

November 5, Saturday

08:00	-	10:00	Visit to the experimental rice fields at CIAT - M.J. Rosero and Research Assistants
10:00	-	10:30	Coffee break
10:30	-	12:30	Visit to the experimental rice fields of ICA-CIAT - H. Weeraratne - C. Martínez - Research Assistants
12:30	-	13:30	Lunch
13:30	-	16:00	Final discussion and plans of the International Rice Testing Program in Latin America for 1978 - H. E. Kauffman - M. J. Rosero

1. INTRODUCTION

1.1 History of the International Rice Testing Program (IRTP)

At the beginning of 1975, the International Rice Research Institute (IRRI) initiated the International Rice Testing Program (IRTP) to form a team of scientists for evaluation of rice germplasm over a broad range of agroclimatic conditions and cultivation systems.

The United Nations Development Program (UNDP) provided IRRI with funds to initiate and coordinate this project with the national programs and other international centers.

In Latin America, the International Rice Testing Program was initially coordinated by IRRI through direct contact with the national programs or through other international centers. Several yield, observation, and blast nurseries with broad genetic diversity were dispatched in 1975 to various national programs. Although the material used in these nurseries had great genetic value, much of the material was inappropriate for Latin America, primarily because consumer needs and cultural systems are different from the rest of the world and, secondly, because the majority of the programs do not have the resources or the trained personnel to utilize germplasm in a hybridization and selection programs.

Bearing this in mind, in 1976, CIAT and IRRI formalized the International Rice Testing Program for Latin America. Basically, this program evaluates at CIAT the IRRI nurseries which have been formed from promising material selected from other countries. From these nurseries, appropriate material is distributed to Latin American countries.

From August 12-14, 1976, the first conference of the IRTP was held at CIAT to define the objectives of the IRTP in Latin America; to establish channels of communication and to coordinate and classify the nurseries. Thirty-five delegates participated including leaders of national programs in 14 countries, who gave information on the results of the Rice Research pro-

grains in their own countries. Later, the basis of a cooperative program for international rice tests in Latin America was discussed.

In this conference, it was agreed to select varieties with long grains, a good milling and cooking quality for the nurseries to be established. It was decided to form a yield nursery specifically for Latin America. This nursery was formed with 24 varieties nominated by 11 countries of the region. It was also agreed that CIAT would do the preliminary evaluation of some nurseries, while other nurseries would continue to be sent directly by IRRI. Also, the methods of operation for nursery management and data reporting were defined according to the schedule of activities to be developed at CIAT and in the cooperating countries.

2. OBJECTIVES OF THE SECOND CONFERENCE

The second conference of the International Rice Testing Program for Latin America was organized principally to maintain the sense of international cooperation, to correct the deficiencies in the methods of operation, to determine the need for other nurseries, to interchange ideas on the current rice problems and, to develop a chronology of activities which would efficiently and rapidly spread the results of this joint effort to the farmers of the region.

3. PROGRAM OF THE SECOND CONFERENCE

3.1 Activities of the International Rice Testing Program in Latin America during 1976-1977

Leaders of national programs, who nominated the selected varieties for VIRAL-76, sent seed from each variety to Dr. Manuel Rosero who organized the nursery. In November 1976, 28 sets were sent to 17 countries. Several countries received the seed in time for planting during the first semester of 1977 and the material was evaluated. The results were sent to CIAT and presented at this second conference (Appendix 1). Average yield in the majority of the countries, was relatively high and the performance of some varieties was excellent (Table 1).

Table 1. Yield of Varieties in VIRAL-76 obtained in some Latin American countries in 1977.

Name of the Variety	Country of origin	Countries and Yield in t/ha [1]							
		Colombia	Costa Rica [2]	Ecuador	Guyana	Mexico [3]		Peru	Venezuela [4]
CICA-4	Colombia	3.3	4.5	6.1	2.9	6.4	1.7	8.1	5.4
CICA-6	Colombia	3.9	5.3	5.5	2.7	6.7	2.5	7.2	4.8
CICA-7	Colombia	3.1	4.5	5.6	3.0	5.1	2.6	7.5	4.3
CICA-9	Colombia	4.6	5.3	6.8	2.8	5.5	2.6	8.8	5.0
P918-25-1-4-2-3-1B	Colombia	4.9	3.5	6.2	2.8	9.7	3.3	8.1	5.8
P918-25-15-2-3-2-1B	Colombia	4.6	3.4	6.1	2.9	9.5	3.6	7.7	6.4
CR 1113	Costa Rica	4.3	4.0	5.7	3.1	6.6	2.2	8.7	6.1
JUMA 57	Dominican Republic	3.8	- [5]	6.9	1.8	-	2.6	9.4	5.6
JUMA 58	Dominican Republic	2.5	-	6.1	-	-	3.0	9.4	7.2
118	Ecuador	4.5	3.6	6.3	2.1	4.9	2.8	7.2	5.2
TIKAL 2	Guatemala	4.9	4.9	3.7	2.9	4.1	2.6	8.4	5.2
N (IR1055)	Guyana	3.9	-	-	4.3	8.6	-	7.0	-
77916 (GR 22-10-6-10)	Guyana	3.7	-	-	4.6	6.6	-	6.2	-
MACUSPANA A75	Mexico	-	2.5	3.2	2.9	4.5	2.9	5.7	3.9
BAMOA A75	Mexico	-	4.1	5.4	3.8	7.2	2.8	8.2	5.3
INTI	Peru	3.0	3.1	5.9	3.5	7.2	2.7	8.4	6.1
IR2058-78-1-3-2-3	IRRI	3.5	-	-	-	8.4	-	-	-
IR2823-399-5-6	IRRI	4.1	-	-	-	-	-	-	-
IR2863-38-1-2	IRRI	4.3	-	-	-	10.8	-	-	-
IR1529-430-3	IRRI	4.4	-	-	-	-	-	-	-
BG 90-2	Sri-Lanka	4.4	2.6	5.1	4.6	1.0	2.0	9.0	6.0
Ciwini SML	Surinam	4.3	3.3	5.2	3.1	1.9	2.2	6.9	3.4
Camponi SML	Surinam	4.6	5.6	4.1	3.7	-	2.0	6.8	5.1
Ceysvoni SML	Surinam	4.3	3.8	4.2	3.5	-	2.3	6.3	4.2

1/ Irrigated, except in Costa Rica and in two places in Mexico.
2/ Upland, with good distribution of rain.
3/ Upland, average of two locations with drought problems.
4/ Average of two locations.
5/ (-) indicates that varieties were not planted.

Table 2. Nurseries of the International Rice Testing Program for Latin America distributed in 1977.

Country	Nursery / Number*						
	VIRAL-P	VIRAL-T	VIRAL-S	VIRAL-F	VIAVAL	VIOSAL	Total
Argentina	1	1			1		3
Bolivia	1	1	2				4
Brazil	5	5	3	1	2		16
Colombia	1	1	1				3
Costa Rica	1	1	1				3
Ecuador	2	2	1	1	1	1	8
El Salvador	1	1	1				3
Guatemala	1	1	2				4
Guyana	1	1	1	1	1	1	6
Honduras	2	2	2				6
Jamaica				1			1
Mexico	4	4	2				10
Nicaragua	2	2					4
Panama	2	2	2				6
Paraguay			1				1
Peru			2		2	1	5
Dominican Republic	1	1	1	1	1	1	6
Surinam	1	1			1		3
Venezuela	2	2					4
Total	28	28	22	5	9	4	96

* VIRAL = International Rice Yield Nursery for Latin America.
P = Early-maturing varieties
T = Medium-maturing varieties
S = Upland varieties
F = Deep-water varieties
VIAVAL = International Sheath Blight Nursery for Latin America
VIOSAL = International Salinity Observational Nursery for Latin America

In the second semester of 1976, six nurseries from IRRI were seeded at CIAT, to multiply seed and evaluate the material for plant type and initial vigor, growth duration, grain yield and quality, resistance to Sogatodes and to blast. The best lines and/or varieties were selected and six nurseries were distributed in 1977 to countries interested in this material in Latin America (Table 2 and Figure 1).

Figure 1. Preparation of nurseries of the International Rice Testing Program for Latin America.

These nurseries are being evaluated in some countries and in others they will be planted in later November and December of 1977. The material in these nurseries, especially the yield of the early and medium-maturing, and deep-water varieties, has good potential to increase rice production in various countries of the region.

In addition, the manual "Standard Evaluation System for Rice" published by IRRI was translated into Spanish. In the translation, the manual was adapted to the problems of rice culture in Latin America but the symbols used in the English language version were retained.

3.2 Activities of the International Rice Testing Program in the Eastern Hemisphere

Dr. Harold Kauffman, coordinator of the IRTP at IRRI, delineated some of the highlights of the IRTP.

He emphasized that the impact of the IRTP cannot be measured by the number of nurseries dispatched or the percentage of the results received. He said that more important is the use of genetic material in hybridization, national varietal testing programs and eventually the growing of the best performing entries by the rice farmers of the world.

The following were the highlights of the IRTP in the Eastern Hemisphere:

1. The proportion of genetic material nominated by the national programs increased from 35 percent in 1975 to 65 percent in 1977.

2. Development and evaluation of germplasm for specific agro-ecological systems (rainfed rice, rice from arid regions and nurseries for Latin America) has notably increased.

3. The monitoring tours of the IRTP are effectively involving scientists of national programs in the analysis and solution of research and production problems.

4. Results obtained from the IRTP nurseries published in working documents and final reports are providing valuable information that permits to scientists:

   a) to identify donor parents for specific problems

   b) to know the performance and yield of the varieties nominated by each cooperating country

   c) to determine the interaction between genotype and the environment

   d) to identify races and biotypes of diseases and insects.

5. The cooperative IRTP network is an effective technology transfer system; many national programs are increasing and extending their national tests.

6. The personnel trained in the Genetic Evaluation and Utilization Program (GEU) are effectively participating in the development of national breeding programs and cooperating efficiently with the IRTP activities.

7. Data management and processing through a computer will provide the cooperating countries with selected information relevant to all the programs. The response of the Latin American technical personnel has been very satisfactory; however, the number of nurseries being dispatched by IRRI has been reduced since IRRI and CIAT are highly involved in the evaluation and more effective utilization of the genetic material adapted to Latin American ecological conditions.

3.3 Presence of bacterial leaf blight on rice in Latin America

Dr. J.C. Lozano, phytopathologist for the Cassava Program at CIAT, discussed the observations and results of his research on the presence of bacterial leaf blight in Latin America.

The disease symptoms have been observed in Mexico, Costa Rica, Honduras, El Salvador, Panama, Colombia, Venezuela and Bolivia. Pure culture of the bacterial agent were isolated and identified as Xanthomonas oryzae using symptomatological, physiological and pathogenical tests.

Many Asiatic varieties and genetic material from CIAT have shown resistance to this disease. The resistance to bacterial leaf blight in Latin America seems to behave similarly to that observed in Asia. The broad occurrence of the disease suggests that it has been present in Latin America for some time; however, it has not produced economic losses in the areas where it has been observed. In comparison with Asia, it appears that the

environmental conditions and the cultural practices in Latin America do not favor the disease development. The environment is generally dry with low temperatures. In addition, much of the Latin American rice production is done by direct seeding, so the disease has not become a serious problem as in Asia, where rice is transplanted. In order to have a better knowledgement of the disease and its economical importance, Dr. Lozano recommended to conduct the following researchs:

1. To determine the distribution and intensity of the disease in all Latin American countries.
2. To study the pathogenic variability in the different regions.
3. To determine the genetic resistance of the current rice varieties and promising lines.
4. To incorporate resistance in the improved varieties.

3.4 Strategies for the development of resistant varieties to blast in Latin America

Dr. H. Weeraratne, breeder for the CIAT Rice Program, discussed about the projects he is planning along with his colleagues for developing resistance to blast— the most important disease in Latin America. In the past, all efforts to obtain resistant varieties were concentrated in the use of individual resistant donors.

The present CIAT strategy is to produce resistance through genetic diversity using three methods:

1. Combination of multiple resistance (pyramidal)
2. Multiline varieties
3. Varietal diversification

The different resistance sources used are: Colombia 1, Dissi Hatiff, C46-15, Tetep and Carreon.

This breeding program is based on the establishment of segregating populations of multiregional and advanced lines in many localities of Latin America.

The importance of international cooperation was discussed and the localities and appropriate methodologies to carry out the evaluation were defined.

3.5 Drought problems and weed control in upland rice

Dr. S.K. De Datta, head of the IRRI Agronomy Department, discussed two production problems of upland rice: a) drought tolerance and b) weed control.

Drought is the most limiting factor in over 50 percent of the upland rice production. Drought can be described in terms of the annual quantity of rain, distribution of rain and number of days without rain during critical periods of growth. The tolerance and recuperation from the drought are important factors in the evaluation of material. The following 3 factors should be taken into account when evaluating drought tolerance and recuperation:

1. Drought intensity
2. Drought duration
3. Growing stage of rice

To determine drought tolerance, several techniques should be utilized. The germplasm and genetic material can be evaluated for tolerance to drought in the field and in the greenhouse. In the field, two weeks without rain are sufficient to determine tolerance in the vegetative stage. In the reproductive and maturation stages at least one week without rain is needed to determine the drought effect which can be evaluated using the Standard Evaluation System for Rice.

Many varieties/lines can be evaluated for drought tolerance under field conditions and very few in the greenhouse. Over the past three years at IRRI,

With respect to weed control, Dr. De Datta stated that IRRI has already found several herbicides superior to Propanil, such as Dinitramine (Cobex), Borax and Butachlor (Machete). IRRI could supply the best herbicide material to Latin American programs through CIAT or by sending it directly to the co-operating programs to be evaluated against Propanil.

4. DISCUSSION AND RECOMMENDATIONS

4.1 Request of nurseries

In order to organize the dispatch of IRTP nurseries in Latin America, the delegates were asked for their opinion on the most convenient way to send them the germplasm; either receiving it directly from IRRI or through CIAT after an evaluation and selection of material. The following opinions were made:

1. Mexico requested that all nurseries be shipped directly from IRRI and also those from CIAT to compare the results with those of other Latin American countries.

2. The Costa Rica delegate indicated his interest in the observational nurseries from IRRI and CIAT.

3. In Panama, the scientists prefer to receive the observational nurseries directly from IRRI and the yield nurseries from CIAT.

4. The delegates from Paraguay and Uruguay wanted to evaluate all the nurseries from CIAT and the segregating material either from IRRI or from CIAT. In addition, the delegate from Uruguay was interested in the yield nurseries from IRRI with early maturing varieties and resistant to cold.

5. Belize, Bolivia, Brazil, Ecuador, El Salvador, Guatemala, Guyana, Honduras, the Dominican Republic, Surinam and Venezuela prefer to receive the nurseries directly from CIAT. In specific cases, Brazil will request nurseries directly from IRRI.

4.2 Type of nurseries

The following nurseries were relevant for Latin America:

1. Irrigated rice yield nursery
   a) Early-maturing varieties
   b) Medium-maturing varieties
2. Upland rice yield nursery
3. Irrigated rice observational nursery
4. Upland rice observational nursery
5. Disease nurseries
   a) Blast (Pyricularia oryzae)
   b) Sheath blight (Thanatephorus cucumeris)
6. Environmental and soil problem nurseries
   a) Salinity
   b) Low temperature
   c) Deep water.

Delegates indicated the need for other nurseries in the future such as brown spot and leaf scald nurseries, as well as for soils with aluminum toxicity or alkalinity problems.

4.3 Number of nurseries for 1978

Of the 10 nurseries established for Latin America, the delegates solicited 186 sets for 1978. In Table 4 are indicated the type of nurseries and number of sets solicited by delegates.

4.4 Planting dates

In order to dispatch the nurseries on time, delegates were asked to review the planting dates established during the first IRTP conference in

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Héctor Weeraratne (CIAT) answers some questions made by the conference participants on the performance of the varieties from Sri-Lanka at CIAT.

Conference participants observe the reaction of the varieties from VIRAL-P to blast in the infection beds. M.J. Rosero (IRRI/CIAT) points out the susceptible and resistant varieties.

TOUR

E PLOT

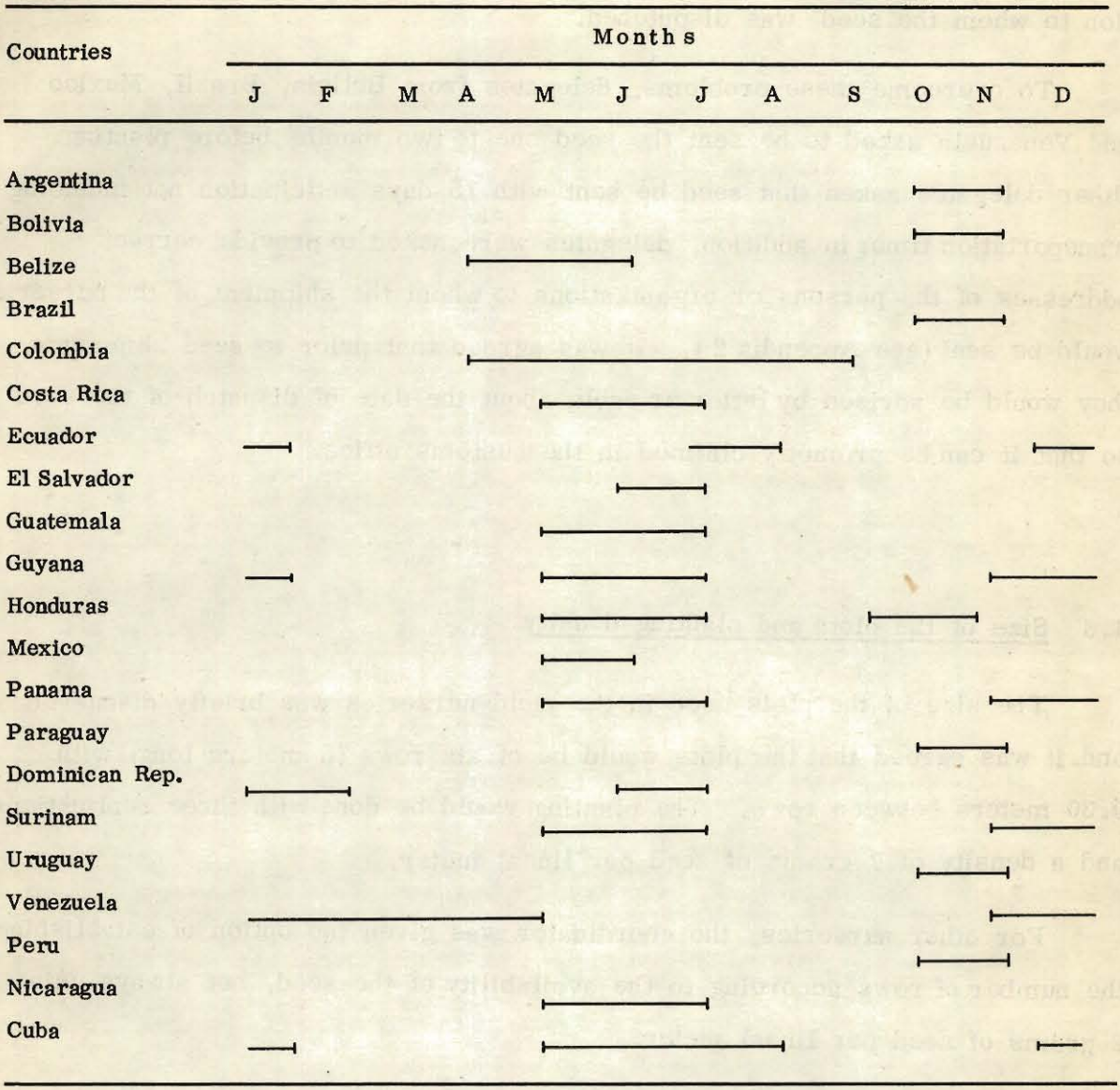
Conference participants observe the varieties planted in demonstration plots.

From upland nursery, M.J. Rosero (IRRI/CIAT) gives to some conference participants, panicles of the variety Salumpikit which is resistant to drought.

Table 4. Nurseries of the International Rice Testing Program for Latin America, 1978.

IRTP Nurseries		Argentina	Belize	Bolivia	Brazil	Colombia	Costa Rica	Cuba	Ecuador	El Salvador	Guatemala	Guyana	Honduras	Mexico	Nicaragua	Panama	Paraguay	Peru	Dominican Rep.	Surinam	Uruguay	Venezuela	TOTAL
Yield	IRYN-Early	1	1	1	6	2	1	1	1	1	1	1	2	3	1	2	1	1	1	1	1	2	32
	IRYN-Medium	1			4	3	1	1	1	1	1	1	2		1	2	1	1	1			2	24
	IURYN		1	2	2	2	1		1	1	1	1	2	6	1	2	1	2				2	28
Observational	IRON	1	2		3			1				1	2		1	1		1				2	15
	IURON		2	2	5		1				1	1	2	6		2		1				2	25
Diseases	IRBN		2	1	6	1	2	1	1	1	1	1	2	6	1	1		1	2		1	2	33
	IRSHBN				1		2	1	1			1			1	1		1				2	11
Environmental and soil problems	IRSATON				1			1	1			1		1				1	1				7
	IRCTN				2			1										1			1		5
	IRDWON				1	2	1		1			1											6
Total		3	8	6	31	10	9	7	7	4	5	9	12	22	6	11	3	10	5	1	3	14	186

Table 5. Planting seasons of rice in the Latin American countries.



August 1976. In Table 5, the planting dates are indicated as revised by the delegates from cooperating countries.

4.5 Dispatch of nurseries

Problems with receipt of seed were discussed. Delegates indicated that they were not receiving seed in time to distribute it for planting due to prob-

lems with customs, time required in each country to distribute the seed to planting sites and/or errors in the mailing address of the person or organization to whom the seed was dispatched.

To overcome these problems, delegates from Bolivia, Brazil, Mexico and Venezuela asked to be sent the seed one to two months before planting. Other delegates asked that seed be sent with 15 days anticipation not including transportation time; in addition, delegates were asked to provide correct addresses of the persons or organizations to whom the shipment of the nurseries would be sent (see Appendix 2). It was agreed that prior to seed shipments, they would be advised by letter or cable about the date of dispatch of the seed so that it can be promptly claimed in the customs office.

4.6 Size of the plots and planting density

The size of the plots used in the yield nurseries was briefly discussed and it was agreed that the plots would be of six rows (5 meters long) with 0.30 meters between rows. The planting would be done with three replications and a density of 2 grams of seed per lineal meter.

For other nurseries, the coordinator was given the option of establishing the number of rows according to the availability of the seed, but always using 2 grams of seed per lineal meter.

4.7 Nomination of varieties for Latin American nurseries

Participants were asked to nominate promising varieties and/or lines to be included in the yield nurseries. In Table 6 are shown the varieties nominated by the delegates for the yield nurseries in 1978. Delegates who nominated the varieties will send five kg of seed per variety to the IRTP coordinator at CIAT.

Table 6. Varieties nominated for the IRTP nurseries in Latin America for 1978.

Countries	Name or number of the variety	Nurseries, 1978
Guyana	Rustic	IRYN-Early and IURYN
	75704	IRYN-Medium
	75708	IRYN-Medium
	T	IRSATON
	BG 60-203	IRSATON
Mexico	Two	IRYN-Irrigated
	Two	IRBN
Colombia	CICA 8	IRYN-Medium
Brazil	Three	IRYN-Irrigated
Panama	Two	IRYN-Medium
Venezuela	Araure 1	IRYN-Medium
Surinam	Diwani	IRYN-Medium
	Ciwini	IRYN-Early
	Camponi	IRYN-Medium
	Ceysvoni	IRYN-Early

4.8 Monitoring tours

Delegates were informed that one of the activities of the IRTP is related with monitoring tours that are organized with the participation of the scientists of the national programs. These monitoring tours have the following objectives:

1. To observe the performance of the germplasm from the international nurseries and material from the national programs.

2. To get acquainted with the cultural system in the region and the research being conducted by the national programs.

3. To determine specific problems in the regions such as blast, sheath blight; bacterial leaf blight; leaf scald; drought, etc., which can be overcome with improved varieties.

The following monitoring tours were planned for 1977 and 1978:

a) Central America and Mexico

b) Southern region of South America

c) Northern region of South America

At the same time they were informed that these monitoring tours would be subject to the funds available in the budget of the IRTP.

4.9 Meetings of IRTP in Latin America

Several delegates were of the opinion that these meetings are very important and should be held annually; however, it was agreed to hold them every two years because it gives the opportunity to present the results obtained from the various nurseries, which cannot be presented annually due to different planting seasons in most of the Latin American countries.

List of participants to the Second Conference of the International Rice Testing Program for Latin America
IRRI/CIAT, November 4-5, 1977

1. Francisco Andrade
   Ecuador

2. Paulo Sergio Carmona
   Brazil

3. Derly Machado de Souza
   Brazil

4. Nguyen Van Tan
   Brazil

5. A.V. Chin
   Guyana

6. Luis Alberto Guerrero
   El Salvador

7. Leonardo Hernández A.
   Mexico

8. Mohamed Joesoef Idoe
   Surinam

9. José I. Murillo
   Costa Rica

10. Manuel H. Carrera
    Costa Rica

11. Walter Ramiro Pazos
    Guatemala

12. Hernando A. Suárez
    Colombia

13. Germán Rico
    Venezuela

14. Aníbal Rodríguez
    Venezuela

15. Wolfgang Jetter
    Argentina

16. Jorge E. Rodas
    Paraguay

17. N. Chebataroff
    Uruguay

18. Mauricio Rivera
    Honduras

19. José Rolando Rubi
    Honduras

20. Francisco Paz A.
    Bolivia

21. Rolando Lasso
    Panama

22. Darío Leal Monsalve
    Colombia

23. Elías García
    Colombia

24. Loyd Johnson
    Colombia

25. Eulalio García
    Belize

26. Carlos Vaca Díez
    Bolivia

27. Peter R. Jennings
CIAT/Costa Rica

28. Héctor Weeraratne
CIAT/Colombia

29. César Martínez
ICA/Colombia

30. Ezequiel Espinosa
Panama

31. José del Rosario Concha
Panama

32. Carlos Franco
Colombia

33. Alicia Pineda
CIAT/Colombia

34. José M. Cordero M.
Dominican Republic

35. Govert Willem Hofstede
Surinam

36. Harold E. Kauffman
IRRI/Filipinas

37. S.K. De Datta
IRRI/Filipinas

38. Shu-Huang Ou
IRRI/Filipinas

39. Manuel J. Rosero
IRRI/CIAT-Colombia

40. Manuel Rodríguez G.
Mexico

41. Rodolfo Moreno Gálvez
Mexico

42. Benjamín Rivera
Colombia

Appendix 1. First International Rice Yield Nursery for Latin America: VIRAL-76

Country:	Mexico	Elevation:	137 m.a.s.l.	Soil pH:	5.3
Locality:	Chiapas	Max. temperature:		No of rainy days:	Without information
Latitude:	14°55' N	Min. temperature:	Ave. 25.5°C	Date seeded:	27 December 1976
Longitude:	92°18' W	Soil texture:	Silty clay	Fertilization (Kg/ha):	80N - 40P - 0K
		Amount of rain:	Without information	Insect protection:	None

Entry N°	Designation	Country of origin	Days Fl	Days Mat	Height cm	Lodging	Yield t/ha	Diseases and insects B1	BB	ShB	LSc	Hb	Sog
1	CICA-4	Colombia	106	128	-	1	1.7	-	-	-	-	-	-
2	CICA-6	Colombia	102	125	-	1	2.0	-	-	-	-	-	-
3	CICA-7	Colombia	96	120	-	1	2.1	-	-	-	-	-	-
4	CICA-9	Colombia	115	135	-	3	1.5	-	-	-	-	-	-
5	P918-25-1-4-2-3-1B	Colombia	110	132	-	1	3.2	-	-	-	-	-	-
6	P918-25-15-2-3-2-1B	Colombia	112	133	-	1	4.6	-	-	-	-	-	-
7	CR 1113	Costa Rica	120	138	-	1	2.2	-	-	-	-	-	-
8	JUMA 57	Dominican Rep.	130	147	-	1	2.9	-	-	-	-	-	-
9	JUMA 58	Dominican Rep.	128	145	-	1	3.3	-	-	-	-	-	-
10	118	Ecuador	110	135	-	1	3.7	-	-	-	-	-	-
11	TIKAL 2	Guatemala	110	133	-	1	2.4	-	-	-	-	-	-
12	N (IR1055)	Guyana	-	-	-	-	-	-	-	-	-	-	-
13	77916 (GR22-10-6-10)	Guyana	-	-	-	-	-	-	-	-	-	-	-
14	MACUSPANA A75	Mexico	115	136	-	3	3.2	-	-	-	-	-	-
15	BAMOA A75	Mexico	112	132	-	1	2.2	-	-	-	-	-	-
16	INTI	Peru	113	132	-	1	1.3	-	-	-	-	-	-
17	IR2058-78-1-3-2-3	IRRI	-	-	-	-	-	-	-	-	-	-	-
18	IR2823-399-5-6	IRRI	-	-	-	-	-	-	-	-	-	-	-
19	IR2863-38-1-2	IRRI	-	-	-	-	-	-	-	-	-	-	-
20	IR1529-430-680-3-2	IRRI	-	-	-	-	-	-	-	-	-	-	-
21	BG 90-2	Sri-Lanka	115	136	-	1	1.5	-	-	-	-	-	-
22	Ciwini SML	Surinam	98	128	-	1	-	-	-	-	-	-	-
23	Camponi SML	Surinam	112	135	-	1	1.4	-	-	-	-	-	-
24	Ceysvoni SML	Surinam	95	120	-	1	3.0	-	-	-	-	-	-

Note: (-)indicates without information.

Appendix 1. First International Rice Yield Nursery for Latin America: VIRAL 76

Country:	Mexico	Elevation:	13 m.a.s.l.	Soil pH:	7.8
Locality:	Cotaxtla	Max. temperature:		No. of rainy days:	Without information
Latitude:	18°50' N	Min. temperature:	Ave. 25°C	Date seeded:	27 December 1976
Longitude:	96°21' W	Soil texture:	Silty clay	Fertilization (Kg/ha):	160N - 0P - 0K
		Amount of rain:	Without information	Insect protection:	None

Entry N°	Designation	Country of origin	Days		Height cm	Lodging	Yield t/ha	Diseases and insects					
			Fl	Mat				Bl	BB	ShB	LSc	Hb	Sog
1	CICA-4	Colombia	117	138	-	1	1.6	-	-	-	-	-	-
2	CICA-6	Colombia	115	136	-	1	2.9	-	-	-	-	-	-
3	CICA-7	Colombia	100	120	-	1	3.2	-	-	-	-	-	-
4	CICA-9	Colombia	118	140	-	3	3.6	-	-	-	-	-	-
5	P918-25-1-4-2-3-1B	Colombia	116	138	-	1	3.5	-	-	-	-	-	-
6	P918-25-15-2-3-2-1B	Colombia	115	135	-	1	2.6	-	-	-	-	-	-
7	CR 1113	Costa Rica	120	140	-	1	2.1	-	-	-	-	-	-
8	JUMA 57	Dominican Rep.	123	140	-	1	2.3	-	-	-	-	-	-
9	JUMA 58	Dominican Rep.	128	145	-	1	2.8	-	-	-	-	-	-
10	118	Ecuador	114	136	-	1	2.0	-	-	-	-	-	-
11	TIKAL 2	Guatemala	112	135	-	1	3.0	-	-	-	-	-	-
12	N (IR1055)	Guyana	-	-	-	-	-	-	-	-	-	-	-
13	77916 (GR22-10-6-10)	Guyana	-	-	-	-	-	-	-	-	-	-	-
14	MACUSPANA A75	Mexico	115	137	-	3	2.5	-	-	-	-	-	-
15	BAMOA A75	Mexico	112	137	-	1	3.3	-	-	-	-	-	-
16	INTI	Peru	113	135	-	1	4.1	-	-	-	-	-	-
17	IR2058-78-1-3-2-3	IRRI	-	-	-	-	-	-	-	-	-	-	-
18	IR2823-399-5-6	IRRI	-	-	-	-	-	-	-	-	-	-	-
19	IR2863-38-1-2	IRRI	-	-	-	-	-	-	-	-	-	-	-
20	IR1529-430-680-3-2	IRRI	-	-	-	-	-	-	-	-	-	-	-
21	BG 90-2	Sri-Lanka	118	138	-	1	2.5	-	-	-	-	-	-
22	Ciwini SML	Surinam	112	125	-	1	2.2	-	-	-	-	-	-
23	Camponi SML	Surinam	113	132	-	1	2.5	-	-	-	-	-	-
24	Ceysvoni SML	Surinam	96	123	-	1	1.7	-	-	-	-	-	-

Note: (-) indicates without information.

Appendix 1. First International Rice Yield Nursery for Latin America: VIRAL 76

Country:	Mexico	Elevation:	18 m.a.s.l.	Soil pH:	7.1
Locality:	Juchitán	Max. temperature:		N° of rainy days:	Without information
Latitude:	15°01' N	Min temperature:	Ave. 27°C	Date seeded:	21 December 1976
Longitude:	16°26' W	Soil texture:	Clay	Fertilization (Kg/ha):	150N - 40P - 0K
		Amount of rain:	Without information	Insect protection:	None

Entry N°	Designation	Country of origin	Days		Height	Lodging	Yield	Diseases and insects					
			FI	Mat	cm		t/ha	Bl	BB	ShB	LSc	Hb	Sog
1	CICA-4	Colombia	109	130	-	1	6.3	-	-	-	-	-	-
2	CICA-6	Colombia	105	129	-	1	6.7	-	-	-	-	-	-
3	CICA-7	Colombia	95	114	-	1	5.2	-	-	-	-	-	-
4	CICA-9	Colombia	114	133	-	3	5.5	-	-	-	-	-	-
5	P918-25-1-4-2-3-1B	Colombia	111	132	-	1	9.7	-	-	-	-	-	-
6	P918-25-15-2-3-2-1B	Colombia	110	129	-	1	9.5	-	-	-	-	-	-
7	CR 1113	Costa Rica	118	134	-	1	6.6	-	-	-	-	-	-
8	JUMA 57	Dominican Rep.	128	144	-	1	3.6	-	-	-	-	-	-
9	JUMA 58	Dominican Rep.	126	141	-	1	3.9	-	-	-	-	-	-
10	118	Ecuador	109	133	-	1	5.0	-	-	-	-	-	-
11	TIKAL 2	Guatemala	108	131	-	1	4.1	-	-	-	-	-	-
12	N (IR1055)	Guyana	-	-	-	-	-	-	-	-	-	-	-
13	77916 (GR22-10-6-10)	Guyana	-	-	-	-	-	-	-	-	-	-	-
14	MACUSPANA A75	Mexico	114	137	-	3	4.6	-	-	-	-	-	-
15	BAMOA A75	Mexico	111	137	-	1	7.2	-	-	-	-	-	-
16	INTI	Peru	114	135	-	1	7.2	-	-	-	-	-	-
17	IR2058-78-1-3-2-3	IRRI	-	-	-	-	8.4	-	-	-	-	-	-
18	IR2823-399-5-6	IRRI	-	-	-	-	-	-	-	-	-	-	-
19	IR2863-38-1-2	IRRI	-	-	-	-	10.8	-	-	-	-	-	-
20	IR1529-430-680-3-2	IRRI	-	-	-	-	-	-	-	-	-	-	-
21	BG 90-2	Sri-Lanka	116	136	-	1	1.0	-	-	-	-	-	-
22	Ciwini SML	Surinam	96	130	-	1	1.9	-	-	-	-	-	-
23	Camponi SML	Surinam	109	130	-	1	2.0	-	-	-	-	-	-
24	Ceysvoni SML	Surinam	95	122	-	1	1.9	-	-	-	-	-	-

Note: (-) indicates without information.

Appendix 1. First International Rice Yield Nursery for Latin America: VIRAL-76

Country:	Ecuador	Elevation:	Without information	Soil pH:	7.1
Locality:	Boliche	Max. temperature:	31.8°C	No. of rainy days:	40
Latitude:	Without information	Min. temperature:	25.2°C	Date seeded:	9 February 1977
Longitude:	Without information	Soil texture:	Clay loam	Fertilization (Kg/ha):	120N - 0P - 0K
		Amount of rain:	788 mm	Insect protection:	As needed

Entry N°	Designation	Country of origin	Days		Height	Lodging	Yield	Enfermedades e insectos					
			FI	Mat	cm		t/ha	Bl	BB	ShB	LSc	Hb	Sog
1	CICA-4	Colombia	96	138	102	-	6.1	-	-	-	-	3	-
2	CICA-6	Colombia	96	126	103	-	5.5	-	-	-	-	2	-
3	CICA-7	Colombia	94	125	107	-	5.7	-	-	-	-	3	-
4	CICA-9	Colombia	97	131	119	-	6.9	-	-	-	-	3	-
5	P918-25-1-4-2-3-1B	Colombia	102	141	106	-	6.2	-	-	-	-	4	-
6	P918-25-15-2-3-2-1B	Colombia	104	138	108	-	6.1	-	-	-	-	3	-
7	CR 1113	Costa Rica	103	140	101	-	5.1	-	-	-	-	3	-
8	JUMA 57	Dominican Rep.	107	138	98	-	6.9	-	-	-	-	3	-
9	JUMA 58	Dominican Rep.	108	145	116	-	6.1	-	-	-	-	4	-
10	118	Ecuador	98	131	125	-	6.3	-	-	-	-	2	-
11	TIKAL 2	Guatemala	93	131	110	-	3.8	-	-	-	-	3	-
12	N (IR1055)	Guyana	-	-	-	-	-	-	-	-	-	-	-
13	77916 (GR22-10-6-10)	Guyana	-	-	-	-	-	-	-	-	-	-	-
14	MACUSPANA A75	Mexico	98	133	123	-	3.2	-	-	-	-	4	-
15	BAMOA A75	Mexico	90	132	103	-	5.4	-	-	-	-	3	-
16	INTI	Peru	101	141	106	-	5.9	-	-	-	-	3	-
17	IR2058-78-1-3-2-3	IRRI	-	-	-	-	-	-	-	-	-	-	-
18	IR2823-399-5-6	IRRI	-	-	-	-	-	-	-	-	-	-	-
19	IR2863-38-1-2	IRRI	-	-	-	-	-	-	-	-	-	-	-
20	IR1529-430-680-3-2	IRRI	-	-	-	-	-	-	-	-	-	-	-
21	BG 90-2	Sri-Lanka	98	140	106	-	5.1	-	-	-	-	4	-
22	Ciwini SML	Surinam	94	126	111	-	5.2	-	-	-	-	3	-
23	Camponi SML	Surinam	94	125	89	-	4.1	-	-	-	-	3	-
24	Ceysvoni SML	Surinam	89	124	88	-	4.2	-	-	-	-	2	-

Note: (-) indicates without information.

Appendix 1. First International Rice Yield Nursery for Latin America: VIRAL 76

Country:	Guyana	Elevation:	Without information	Soil pH:	5.2
Locality:	Demerara	Max. temperature:	28.9°C	No. of rainy days:	67
Latitude:	Without information	Min. temperature:	24°C	Date seeded:	1 February 1977
Longitude:	Without information	Soil texture:	Clay	Fertilization (Kg/ha):	80N - 30P - 0K
		Amount of rain:	101.5 mm	Insect protection:	None

Entry N°	Designation	Country of origin	Days		Height cm	Lodging	Yield t/ha	Diseases and insects					
			FI	Mat				Bl	BB	ShB	LSc	Hb	Sog
1	CICA-4	Colombia	92	127	88	1	2.9	-	-	-	-	-	-
2	CICA-6	Colombia	79	127	89	1	2.7	-	-	-	-	-	-
3	CICA-7	Colombia	85	127	88	1	3.0	-	-	-	-	-	-
4	CICA-9	Colombia	87	127	101	2	2.8	-	-	-	-	-	-
5	P918-25-1-4-2-3-1B	Colombia	92	127	94	1	2.8	-	-	-	-	-	-
6	P918-25-15-2-3-2-1B	Colombia	92	127	93	1	2.9	-	-	-	-	-	-
7	CR 1113	Costa Rica	88	127	93	1	3.1	-	-	-	-	-	-
8	JUMA 57	Dominican Rep.	101	133	87	1	1.8	-	-	-	-	-	-
9	JUMA 58	Dominican Rep.	107	133	99	1	-	-	-	-	-	-	-
10	118	Ecuador	89	127	107	1	2.1	-	-	-	-	-	-
11	TIKAL 2	Guatemala	84	127	96	3	2.9	-	-	-	-	-	-
12	N (IR1055)	Guyana	74	109	70	1	4.3	-	-	-	-	-	-
13	77916 (GR22-10-6-10)	Guyana	89	127	110	1	4.6	-	-	-	-	-	-
14	MACUSPANA A75	Mexico	94	127	126	1	2.9	-	-	-	-	-	-
15	BAMOA A75	Mexico	84	127	91	1	3.8	-	-	-	-	-	-
16	INTI	Peru	88	127	93	1	3.5	-	-	-	-	-	-
17	IR2058-78-1-3-2-3	IRRI	-	-	-	-	-	-	-	-	-	-	-
18	IR2823-399-5-6	IRRI	-	-	-	-	-	-	-	-	-	-	-
19	IR2863-38-1-2	IRRI	-	-	-	-	-	-	-	-	-	-	-
20	IR1529-430-680-3-2	IRRI	-	-	-	-	-	-	-	-	-	-	-
21	BG 90-2	Sri-Lanka	93	127	96	1	4.6	-	-	-	-	-	-
22	Ciwini SML	Surinam	81	127	111	1	3.1	-	-	-	-	-	-
23	Camponi SML	Surinam	90	127	89	1	3.7	-	-	-	-	-	-
24	Ceysvoni SML	Surinam	81	127	91	1	3.5	-	-	-	-	-	-

Note: (-) indicates without information.

Appendix 1. First International Rice Yield Nursery for Latin America: VIRAL-76

Country:	Peru	Elevation:	Without information	Soil pH:	7.2
Locality:	Chiclayo	Max. temperature:	23.2°C	No. of rainy days:	20
Latitude:	Without information	Min. temperature:	20.4°C	Date seeded:	15 December 1976
Longitude:	Without information	Soil texture:	Clay loam	Fertilization (Kg/ha):	300N - 0P - 0K
		Amount of rain:	32 mm	Insect protection:	None

Entry N°	Designation	Country of origin	Days		Height cm	Lodging %	Yield t/ha	Diseases and insects					
			Fl	Mat				Bl	BB	ShB	LSc	Hb	Sog
1	CICA-4	Colombia	110	150	93	0	8.11	-	-	-	-	-	-
2	CICA-6	Colombia	106	144	93	0	7.25	-	-	-	-	-	-
3	CICA-7	Colombia	108	144	107	0	7.49	-	-	-	-	-	-
4	CICA-9	Colombia	108	145	110	20	8.76	-	-	-	-	-	-
5	P918-25-1-4-2-3-1B	Colombia	115	158	95	100	8.14	-	-	-	-	-	-
6	P918-25-15-2-3-2-1B	Colombia	118	162	92	100	7.75	-	-	-	-	-	-
7	CR 1113	Costa Rica	113	161	96	0	8.66	-	-	-	-	-	-
8	JUMA 57	Dominican Rep.	124	166	91	0	9.45	-	-	-	-	-	-
9	JUMA 58	Dominican Rep.	124	168	107	0	9.38	-	-	-	-	-	-
10	118	Ecuador	110	150	110	60	7.20	-	-	-	-	-	-
11	TIKAL 2	Guatemala	105	144	95	10	8.42	-	-	-	-	-	-
12	N (IR1055)	Guyana	103	142	81	40	7.01	-	-	-	-	-	-
13	77916 (GR22-10-6-10)	Guyana	97	129	107	100	6.19	-	-	-	-	-	-
14	MACUSPANA A75	Mexico	111	160	134	80	5.67	-	-	-	-	-	-
15	BAMOA A75	Mexico	119	156	93	0	8.16	-	-	-	-	-	-
16	INTI	Peru	115	161	94	20	8.36	-	-	-	-	-	-
17	IR2058-78-1-3-2-3	IRRI	-	-	-	0	-	-	-	-	-	-	-
18	IR2823-399-5-6	IRRI	-	-	-	0	-	-	-	-	-	-	-
19	IR2863-38-1-2	IRRI	-	-	-	0	-	-	-	-	-	-	-
20	IR1529-430-680-3-2	IRRI	-	-	-	0	-	-	-	-	-	-	-
21	BG 90-2	Sri-Lanka	114	164	94	40	9.02	-	-	-	-	-	-
22	Ciwini SML	Surinam	111	142	113	80	6.89	-	-	-	-	-	-
23	Camponi SML	Surinam	110	146	86	10	6.85	-	-	-	-	-	-
24	Ceysvoni SML	Surinam	104	140	87	50	6.29	-	-	-	-	-	-

Note: (-) indicates without information.

Appendix 1. First International Rice Yield Nursery for Latin America: VIRAL-76

Country:	Venezuela	Elevation:	Without information	Soil pH:	Without information
Locality:	Araure	Max. temperature:	Without information	No. of rainy days:	Without information
Latitude:	Without information	Min. temperature:	Without information	Date seeded:	Without information
Longitude:	Without information	Soil texture:	Without information	Fertilization (Kg/ha):	Without information
		Amount of rain:	Without information	Insect protection:	Without information

Entry N°	Designation	Country of origin	Days		Height cm	Lodging %	Yield t/ha	Diseases and insects					
			Fl	Mat				Bl	BB	ShB	LSc	Hb	Sog
1	CICA-4	Colombia	85	110	-	0	3.9	2	-	-	3	-	-
2	CICA-6	Colombia	83	107	-	-	3.4	3	-	-	3	-	-
3	CICA-7	Colombia	84	106	-	0	4.3	4	-	-	5	-	-
4	CICA-9	Colombia	83	109	-	50	3.9	5	-	-	5	-	-
5	P918-25-1-4-2-3-1B	Colombia	86	115	-	50	4.9	2	-	-	3	-	-
6	P918-25-15-2-3-2-1B	Colombia	90	120	-	50	5.1	3	-	-	3	-	-
7	CR 1113	Costa Rica	85	111	-	0	4.2	4	-	-	1	-	-
8	JUMA 57	Dominican Rep.	83	113	-	0	3.4	3	-	-	1	-	-
9	JUMA 58	Dominican Rep.	90	-	-	0	-	3	-	-	1	-	-
10	118	Ecuador	82	107	-	50	3.6	7	-	-	5	-	-
11	TIKAL 2	Guatemala	85	110	-	75	3.8	7	-	-	7	-	-
12	N (IR1055)	Guyana	-	-	-	0	-	-	-	-	-	-	-
13	77916 (GR22-10-6-10)	Guyana	-	-	-	0	-	-	-	-	-	-	-
14	MACUSPANA A75	Mexico	84	110	-	0	4.0	5	-	-	3	-	-
15	BAMOA A75	Mexico	84	110	-	0	3.9	5	-	-	3	-	-
16	INTI	Peru	83	111	-	0	4.3	3	-	-	3	-	-
17	IR2058-78-1-3-2-3	IRRI	-	-	-	0	-	-	-	-	-	-	-
18	IR2823-399-5-6	IRRI	-	-	-	0	-	-	-	-	-	-	-
19	IR2863-38-1-2	IRRI	-	-	-	0	-	-	-	-	-	-	-
20	IR1529-430-680-3-2	IRRI	-	-	-	0	-	-	-	-	-	-	-
21	BG 90-2	Sri-Lanka	85	116	-	0	4.0	5	-	-	5	-	-
22	Ciwini SML	Surinam	84	114	-	0	3.7	5	-	-	3	-	-
23	Camponi SML	Surinam	84	110	-	0	3.3	7	-	-	5	-	-
24	Ceysvoni SML	Surinam	80	106	-	0	2.7	7	-	-	7	-	-

Note: (-) indicates without information.

Appendix 1. First International Rice Yield Nursery for Latin America: VIRAL-76

Country:	Venezuela	Elevation:	Without information	Soil pH:	5.8
Locality:	Calabozo	Max. temperature:	33.6°C	No. of rainy days:	18
Latitude:	Without information	Min. temperature:	22.8°C	Date seeded:	1 April 1977
Longitude:	Without information	Soil texture:	Clay loam	Fertilization (Kg/ha):	136N - 45P - 45K
		Amount of rain:	208.9 mm	Insect protection:	None

Entry N°	Designation	Country of origin	Days		Height	Lodging	Yield	Enfermedades e insectos					
			Fl	Mat	cm		t/ha	Bl	BB	ShB	LSc	Hb	Sog
1	CICA-4	Colombia	96	130	85	-	6.9	-	-	-	3	3	-
2	CICA-6	Colombia	89	127	85	-	6.2	-	-	-	3	2	-
3	CICA-7	Colombia	82	120	80	-	4.2	-	-	-	1	1	-
4	CICA-9	Colombia	96	130	100	-	7.2	-	-	-	3	2	-
5	P918-25-1-4-2-3-1B	Colombia	98	138	100	-	6.8	-	-	-	3	3	-
6	P918-25-15-2-3-2-1B	Colombia	100	140	95	-	7.6	-	-	-	3	2	-
7	CR 1113	Costa Rica	89	127	85	-	7.9	-	-	-	1	1	-
8	JUMA 57	Dominican Rep.	100	140	90	-	7.9	-	-	-	1	2	-
9	JUMA 58	Dominican Rep.	98	140	100	-	7.2	-	-	-	1	1	-
10	118	Ecuador	96	138	100	-	6.7	-	-	-	3	1	-
11	TIKAL 2	Guatemala	100	127	85	-	6.6	-	-	-	3	2	-
12	N (IR1055)	Guyana	-	-	-	-	-	-	-	-	-	-	-
13	77916 (GR22-10-6-10)	Guyana	-	-	-	-	-	-	-	-	-	-	-
14	MACUSPANA A75	Mexico	89	138	130	-	3.8	-	-	-	3	3	-
15	BAMOA A75	Mexico	96	127	90	-	6.5	-	-	-	3	2	-
16	INTI	Peru	-	-	85	-	7.8	-	-	-	3	3	-
17	IR2058-78-1-3-2-3	IRRI	-	-	-	-	-	-	-	-	-	-	-
18	IR2823-399-5-6	IRRI	-	-	-	-	-	-	-	-	-	-	-
19	IR2863-38-1-2	IRRI	-	-	-	-	-	-	-	-	-	-	-
20	IR1529-430-680-3-2	IRRI	-	-	-	-	-	-	-	-	-	-	-
21	BG 90-2	Sri-Lanka	100	138	95	-	8.0	-	-	-	3	2	-
22	Ciwini SML	Surinam	82	120	90	-	2.9	-	-	-	5	1	-
23	Camponi SML	Surinam	89	127	80	-	6.8	-	-	-	7	3	-
24	Ceysvoni SML	Surinam	82	120	75	-	5.8	-	-	-	2	3	-

Note: (-) indicates without information.

Appendix 1. First International Rice Yield Nursery for Latin America: VIRAL-76*

Country:	Colombia	Elevation:	1000 m.a.s.l.	Soil pH:	7.5
Locality:	CIAT-Palmira	Max. temperature:	29.6°C	No. of rainy days:	22
Latitude:	3°31' N	Min. temperature:	19.0°C	Date seeded:	10 December 1976
Longitude:	76°20' W	Soil texture:	Clay	Fertilization (Kg/ha):	50N -0P - 0K
		Amount of rain:	272 mm	Insect protection:	As needed

Entry N°	Designation	Country of origin	Días		Height	Lodging	Yield	Diseases and insects						Grain quality		
			Fl	Mat	cm		t/ha**	Bl	BB	ShB	LSc	Hb	Sog	GrL	C.B.	T.G.
1	CICA-4	Colombia	105	138	76	-	3.3	7	2	1	-	-	1.5	6.8	0.2	I
2	CICA-6	Colombia	102	133	80	-	3.9	6	2	2	-	-	1.5	6.8	0.4	B
3	CICA-7	Colombia	95	127	81	-	3.1	4	3	2	-	-	2.0	7.0	0.4	B
4	CICA-9	Colombia	102	135	91	-	4.6	5	2	1	-	-	2.0	7.0	0.6	B
5	P918-25-1-4-2-3-1B	Colombia	108	138	89	-	4.9	2	3	1	-	-	2.0	7.0	0.6	IB
6	P918-25-15-2-3-2-1B	Colombia	111	138	89	-	4.6	0	4	1	-	-	1.5	7.0	-	I
7	CR 1113	Costa Rica	107	138	86	-	4.3	3	2	1	-	-	3.0	6.8	0.4	B
8	JUMA 57	Dominican Rep.	118	144	77	-	3.8	7	3	1	-	-	2.5	6.8	0.2	B
9	JUMA 58	Dominican Rep.	119	144	86	-	2.5	9	3	1	-	-	2.0	7.0	-	B
10	118	Ecuador	108	138	96	-	4.5	2	3	1	-	-	2.5	7.0	0.2	B
11	TIKAL 2	Guatemala	100	135	84	-	4.9	3	4	2	-	-	2.0	7.0	1.2	B
12	N (IR1055)	Guyana	97	133	73	-	3.9	9	4	1	-	-	2.0	7.0	0.6	B
13	77916 (GR22-10-6-10)	Guyana	99	139	108	-	3.7	4	1	1	-	-	2.5	8.0	-	A
14	MACUSPANA A75	Mexico	117	145	112	-	-	7	2	1	-	-	5.0	7.0	0.4	IB
15	BAMOA A75	Mexico	107	145	72	-	-	9	2	2	-	-	2.0	7.0	0.2	I
16	INTI	Peru	110	142	90	-	3.0	7	2	2	-	-	2.0	6.8	0.2	B
17	IR2058-78-1-3-2-3	IRRI	114	142	96	-	3.5	4	2	1	-	-	2.5	6.2	0.2	IB
18	IR2823-399-5-6	IRRI	106	140	101	-	4.1	2	3	1	-	-	2.0	6.0	0.4	IB
19	IR2863-38-1-2	IRRI	110	140	86	-	4.3	3	2	1	-	-	1.5	6.2	0.4	B
20	IR1529-430-680-3-2	IRRI	103	136	81	-	4.4	6	3	1	-	-	2.0	6.8	0.4	B
21	BG 90-2	Sri-Lanka	103	136	95	-	4.4	9	1	1	-	-	1.5	6.2	2.0	I
22	Ciwini SML	Surinam	93	125	105	-	4.3	6	1	3	-	-	3.0	8.0	0.6	IA
23	Camponi SML	Surinam	97	129	85	-	4.6	3	2	3	-	-	2.5	8.0	0.6	IA
24	Ceysvoni SML	Surinam	91	124	85	-	4.3	2	2	4	-	-	1.5	8.5	0.4	B

Note: (-) indicates there was no incidence.

* Average of two replications.

** Yields are not representative due to bird damage.

Appendix 2. Addresses of the persons or organizations in Latin America to whom nurseries will be dispatched in 1978.

1. Francisco Andrade
   INIAP
   Apartado 7069
   Guayaquil, Ecuador

2. Paulo Sergio Carmona
   Estación Experimental IRGA
   Caixa Postal 1149
   Porto Alegre, Rio Grande do Sul
   Brazil

3. Derly Machado de Souza
   Instituto Agronómico
   Caixa Postal 28
   13.100 Campinas, Sao Paulo
   Brazil

4. Nguyen Van Tan
   Mejoramiento
   EMBRAPA
   Caixa Postal 179
   74.000 Goiania, Goiás
   Brazil

5. A.V. Chin
   Guyana Rice Board
   117 Cowan Street
   Kingston, Georgetown
   Guyana

6. Luis Alberto Guerrero
   Centro Nacional de Tecnología Agropecuaria, CENTA
   Final 1a. Ave. Norte
   Santa Tecla, El Salvador

7. Leonardo Hernández Aragón
   Instituto Nacional de Investigaciones Agrícolas, INIA
   Apartado Postal 6-882
   Mexico 6, D.F., Mexico

8. Mohamed Joesoef Idoe
   Foundation for the Development of Mechanized Agriculture in Surinam, S.M.L.
   P.O. Box 26
   Wageningen, Surinam

9. José I. Murillo
   Ministerio de Agricultura y Ganadería
   Apartado 10094
   San José, Costa Rica

10. Walter Ramiro Pazos
    Instituto de Ciencias y Tecnología Agrícolas - ICTA
    5a. Ave. 12-31, Zona 9
    Guatemala, Guatemala

11. Germán Rico
    Estación Experimental Calabozo
    Apartado 14
    Calabozo, Estado Guarico
    Venezuela

12. Aníbal Rodríguez H.
    Carretera Nacional Araure
    Barquisimeto, Km 7
    Acarigua, Estado Portuguesa
    Venezuela

13. Wolfgang Jetter
    Estación Experimental INTA
    Casilla de Correo 244
    Corrientes, Argentina

14. Jorge E. Rodas
    Ministerio de Agricultura
    Estación Experimental
    Caacupé, Paraguay

15. N. Chebataroff
Centro de Investigaciones
Agrícolas "Alberto Boerger"
Estación Experimental del Este
33 Ute 23
Uruguay

16. Mauricio Rivera
Proyecto de Arroz
Estación Experimental Guaymas
Dirección Agrícola Reg. No. 3
San Pedro Sula, Honduras

17. Francisco Paz Antelo
CIAT
Casilla 247
Santa Cruz, Bolivia

18. Rolando Lasso
Instituto de Investigaciones
Agropecuarias de Panama
IDIAP
Apartado 58
Santiago de Veraguas, Panama

19. Loyd Johnson
INIAP
Apartado 7069
Guayaquil, Ecuador

20. Eulalio García
Ministry of Agriculture and Lands
Belmopan
Belize, C.A.

21. Carlos Vaca Díez
CIAT
Casilla 247
Santa Cruz, Bolivia

22. Peter R. Jennings
Ministerio de Agricultura
y Ganadería
Departamento de Agronomía
San José, Costa Rica

23. Director General CIAT
Apartado Aéreo 6713
c/o. Dr. Héctor Weeraratne
Cali, Colombia

24. César P. Martínez R.
ICA
Apartado Aéreo 233
Palmira, Colombia

25. Universidad de Panamá
Facultad de Agronomía
Estafeta Universitaria
c/o. Profesor Ezequiel Espinosa
Panama, Panama

26. Ministerio de Desarrollo Agropecuario - MIDA, Central
c/o. Ing. José del Rosario
Concha
Santiago de Veraguas,
Panama

27. José M. Cordero M.
Programa Nacional de Arroz
Secretaría de Estado de
Agricultura
Santo Domingo,
Dominican Republic

28. Govert Willem Hofstede
Landbouwprofestation
P.O. Box 160
Paramaribo, Surinam

29. Director General CIAT
Apartado Aéreo 6713
c/o. Dr. Manuel J. Rosero
Cali, Colombia

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