

# RESEARCH PROJECT REVIEW WORKING PAPER: INTERNATIONAL MELOIDOGYNE PROJECT

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## I. The Research Project

- a) Title: Research on Integrated Systems with Emphasis on Rootknot Nematode (*Meloidogyne* spp.) affecting Economic Food Crops (International *Meloidogyne* Project) (Contract No. AID/ta-c-1234).
- b) Date Started: January, 1976
- c) Objective of the Study:
  1. To determine the species and biotypes of root-knot nematodes present in the Philippines;
  2. To gather information on the relationship of ecological factors to the distribution and survival of *Meloidogyne* spp.

## II. The Participants

- a) Regional Investigator:  
Cesar P. Madamba
- b) Country Cooperators:  
Rodrigo B. Valdez  
Tiburcio T. Reyes

## III. Highlights of Accomplishment During the Year 1977

The work under the International *Meloidogyne* Project (IMP) program has been concentrated on the following activities:

- a) Collection and maintenance of root-knot nematode populations and gathering information relative to the relationships of ecological factors to distribution and survival of the nematode.

Three additional survey/collection trips were undertaken during the year under review. With the survey, a total of 89 root-knot nematode isolates were collected. Previous number of local isolates under the IMP program is 49. The total collection of Philippine isolates now maintained in the UPLB greenhouses consist of 225 populations representing a good cross section of the country and its crops (Table 1).

Twenty-one new root-knot nematode isolates from Indonesia and Japan were also added to a previous foreign collection of 58 isolates. The foreign collection now constitutes 79

root-knot nematode populations from five Southeast Asian countries.

All together, the root-knot nematode isolates; both local and foreign, now maintained at UPLB greenhouses total 304. Most of these isolates are in single-egg mass cultures (Table 2).

Duplicates of 14 local isolates were sent to the Central Unit at Raleigh, N.C.

- b) Preparation and mounting of perineal patterns of female root-knot nematodes and making of tentative identifications on the basis of these patterns.

Tentative identifications were made from 95 of the total Philippine isolates maintained. Only three species were identified, i.e., *Meloidogyne incognita*, *M. javanica* and *M. arenaria*. Sixty isolates were identified as *Meloidogyne incognita*, 30 were *M. javanica* and 5, *M. arenaria*. A total of 130 isolates remains to be identified. The distribution of Philippine root-knot nematode species maintained at the UPLB greenhouse is shown in Table 3 and those from Southeast Asian countries in Table 4. The geographical distribution of Philippine root-knot nematode isolates, their host and identification are shown in Tables 5 and 6.

- c) Host differential studies.

We were unable to get results primarily due to loss of viability of seeds of differential host plants used in the tests. Current activity, is limited to propagating and maintaining strawberry and sweet potato cuttings.

- d) Thesis work by graduate students.

Token support was given to 4 graduate students pursuing graduate degree at UPLB, namely, Vicha Sukit, Edgardo T. Ong, Edna Pableo and Miss Corazon Reantazo. Vicha Sukit, a SEARCA scholar of Thailand has worked on root-knot nematodes and has completed all the requirements for Ph.D. degree. Miss Reantazo has started on a comprehensive study of root-knot nematodes in the Bicol region of the Philippines. Mr. Ong

**Table 1.** Geographical distribution of Philippine root-knot nematode isolates currently maintained at UPLB greenhouses, February, 1978.

Region/Province	Root-knot nematode collection		Total
	Pre-IMP	IMP	
<b>Northern Luzon (6)</b>			
Cagayan	2	-	2
Isabela	9	6	15
Nueva Viscaya	4	2	6
Benguet	10	5	15
La Union	-	1	1
Pangasinan	2	1	3
			<hr/> 42
<b>Central Luzon (3)</b>			
Nueva Ecija	2	1	3
Tarlac	-	2	2
Bulacan	-	3	3
			<hr/> 8
<b>Southern Luzon (7)</b>			
Laguna	9	3	12
Batangas	10	-	10
Quezon	3	-	3
Camarines Norte	-	30	30
Camarines Sur	1	7	8
Albay	-	21	21
Sorsogon	-	27	27
			<hr/> 111
<b>Visayas (6)</b>			
Negros Occidental	7	4	11
Iloilo	1	-	1
Cebu	2	4	6
Leyte	3	-	3
Samar	1	-	1
Bohol	2	-	2
			<hr/> 24
<b>Mindanao (7)</b>			
Davao	5	8	13
Bukidnon	4	-	4
Misamis Oriental	1	-	1
North Cotabato	5	-	5
South Cotabato	5	2	7
Basilan	-	4	4
Zamboanga del Sur	-	6	6
			<hr/> 40
<b>Grand Total</b>	<b>88</b>	<b>137</b>	<b>225</b>

and Miss Pableo are doing preliminary work on ultra-structures and immunology studies, respectively.

e) Arrangements for the visit and observation trip with Dr. A.C. Triantaphyllou on

regional set-up of cooperating countries in Southeast Asia.

f) Arrangements for the Second Regional Conference in Bangkok, Thailand from February 13 to 18, 1978.

**Table 2.** Geographical distribution of root-knot nematode isolates maintained at the UPLB greenhouses. February, 1978.

Country	Root-knot nematode collection		Total
	Pre-IMP*	IMP	
Philippines	88	137	225
Thailand	18	8	26
Taiwan	18	-	18
Malaysia	16	-	16
Indonesia	6	8	14
Japan	-	5	5
<b>Total</b>	<b>146</b>	<b>158</b>	<b>304</b>

\*Collections obtained through SEATO Research Grant.

**Table 3.** Species distribution of Philippine root-knot nematodes maintained at the UPLB greenhouse, February, 1978.

Region/Province	<i>Meloidogyne</i> species			Unidentified	Total
	<i>incognita</i>	<i>javanica</i>	<i>arenaria</i>		
<b>Northern Luzon</b>					
Cagayan	2	-	-	-	2
Isabela	4	1	1	9	15
Nueva Viscaya	1	2	1	2	6
Benguet	7	3	-	5	15
La Union	-	-	-	1	1
Pangasinan	-	-	1	2	3
	<u>14</u>	<u>6</u>	<u>3</u>	<u>19</u>	
<b>Central Luzon</b>					
Nueva Ecija	1	1	-	1	3
Tarlac	-	1	-	1	2
Bulacan	-	-	-	3	3
	<u>1</u>	<u>2</u>	<u>0</u>	<u>5</u>	
<b>Southern Luzon</b>					
Laguna	5	1	-	5	11
Batangas	4	2	1	4	11
Quezon	-	2	-	1	3
Camarines Norte	2	1	-	27	30
Camarines Sur	-	2	-	6	8
Albay	2	-	-	19	21
Sorsogon	3	-	-	24	27
	<u>16</u>	<u>8</u>	<u>1</u>	<u>86</u>	
<b>Visayas</b>					
Negros Occidental	4	4	-	3	11
Iloilo	-	1	-	-	1
Cebu	2	1	-	3	6
Leyte	1	1	-	1	3
Samar	1	-	-	-	1
Bohol	2	-	-	-	2
	<u>10</u>	<u>7</u>	<u>0</u>	<u>7</u>	

Table 3. Continued

Mindanao					
Davao	4	3	-	6	13
Bukidnon	2	2	-	-	4
Misamis Occ.	-	1	-	-	1
North Cotobato	4	1	-	-	5
South Cotobato	5	-	-	2	7
Basilan	1	-	1	2	4
Zamb. del Sur	3	-	-	3	6
	<u>19</u>	<u>7</u>	<u>1</u>	<u>13</u>	
Total	60	30	5	130	225

Table 4. Species distribution of root-knot nematode isolates from Southeast Asian countries maintained at UPLB greenhouse, February, 1978.

Country	<i>Meloidogyne</i> species				Unidentified	Total
	<i>incognita</i>	<i>arenaria</i>	<i>javanica</i>	<i>hapla</i>		
Philippines	60	5	30	0	130	225
Thailand	11	0	8	0	7	26
Taiwan	13	2	2	0	1	18
Malaysia	5	0	4	0	7	16
Indonesia	3	0	3	0	8	14
Japan	2	0	1	2	0	5
Total	94	7	48	2	153	304
%	30.9	2.3	15.8	0.7	50.3	100.0

**Table 5.** Geographical distribution of philippine root-knot nematode isolates, their host and identification.

Province/Region		Town/City	Original host	Date collected	Identification	
<b>Northern Luzon:</b>						
Cagayan	Isolate	124	Tuguegarao	Sweet Potato	9/28/71	Incognita
		66	Tuguegarao	Tomato	8/27/71	Incognita
Isabela	Isolate	1	Ilagan	Corn soil	9/11-14/73	
		2	Reina Mercedes	Sugarcane	9/11-14/73	Incognita
		3	San Ramon	(Okra Lady Finger)	9/11-14/73	Incognita
		4	CVIT, Cabagan	Pepper	9/11-14/73	Incognita
		5	BPI, San Mateo	Bush Sitao	9/11-14/73	Arenaria
		9	(Field) Isabela	Corn soil	9/11-14/73	
		61	Ilagan	Mustard	9/2/71	
		65	Ilagan	Sweet Potato	9/2/71	Incognita
		72	Alicia	Mustard	9/11/73	Javanica
		95	Cordon	Weeds	1/7/77	
		96	Bo. Maligaya, Santiago	(Okra Lady Finger)	1/7/77	
		97	Bo. Maligaya, Santiago	Pole beans	1/7/77	
		98	Bo. Maligaya, Santiago	Mungbeans	1/7/77	
99	Gamu	Mungbeans	1/7/77			
100	BPI, Ilagan	Tomato	1/7/77			
La Union	Isolate	106	Rosario	Weeds	1/9/77	
Nueva Viscaya	Isolate	4	Dupax	Eggplant	8/11-14/73	Javanica
		27	Dupax	Sweet Potato	8/27/71	Arenaria
		47	Gabuc, Dupax	Pechay	8/26/71	Javanica
		59	Bagabag, N.V.	Sorghum	8/16/71	Incognita

	93	Gabut, Dupax del Sur	Mungbeans	1/7/77	
	94	Gabut, Dupax del Sur	Eggplant	1/7/77	
Nueva Ecija					
Isolate	57	Munoz	Mustard	10/27/71	Incognita
	83	Nueva Ecija	Pechay	10/27/71	Javanica
Pangasinan					
Isolate	14	Binalonan	Sugarcane	9/11-24/73	Arenaria
	107	Pozzorubio	Okra	1/9/77	
		Manaoag	Cotton	11/3/77	
Benguet					
Isolate	6	La Trinidad	Beans	7/31/73	Javanica
	7	La Trinidad	Onion	7/31/73	Javanica
	13	La Trinidad	Strawberry	7/31/73	Javanica
	17	Camp 7, Baguio City	Chayote	12/13/71	Incognita
	34	Camp 7, Baguio City	Gladiolus root	12/13/71	Incognita
	40	La Trinidad	Pechay	1/26/71	Incognita
	42	Camp 7, Baguio City	Tomato	10/1/71	Incognita
	49	Camp 7, Baguio City	Tomato	7/30/71	Incognita
	78	BPI, Baguio City	Peas	1/26/71	Incognita
	79	Baguio City	Mungbeans	1/26/71	Incognita
	101	La Trinidad	Tomato	1/8/77	
	102	La Trinidad	Cabbage	1/8/77	
Isolate	103	La Trinidad	Sweet Pea	1/8/77	
	104	La Trinidad	Strawberry	1/8/77	
	105	La Trinidad	Weeds	1/8/77	
Tarlac					
Isolate	108	Bo. Legaspi, San Manuel	Tobacco	1/9/77	
		San Miguel	Sugarcane	2/8/76	Incognita
Bulacan					
Isolate	89	Bo. Longos, Pulilan	Tomato	1/6/77	
	90	Bo. Safangan, San Miguel	Bitter Gourd	1/6/77	
	91	Bo. Salangan, San Miguel	Water Melon	1/6/77	

**Southern Luzon:**

## Laguna

Isolate	11	Soro-soro, Binan	Okra	10/13/73	Javanica
	17	Soro-soro, Binan	Eggplant	10/13/73	Incognita
	25	Soro-soro, Binan	Sugarcane	10/24/73	
	16	Pulo, Cabuyao	Sugarcane	10/13/73	Arenaria
	26	Calamba, Laguna	Mungbeans	10/24/73	Incognita
	18	Calauan	Pole beans	10/13/73	Incognita
	20	Calauan	Okra	10/13/73	Incognita
	10	CES, Los Banos, Lag.	Eggplant	10/13/73	Incognita
	64	U.P. College, Laguna	<i>Impatiens balsamina</i>	11/19/71	
		U.P. College, Laguna	<i>Ficus</i> sp.	6/2/76	
		U.P. College, Laguna	<i>Mikania cordata</i>	6/2/76	
		U.P. College, Laguna	<i>Hedyotis corymbosa</i>	6/2/76	

## Batangas

Isolate	8	Inosloban, Lipa	Coffee	10/24/73	Javanica
	22	Halang, Lipa	Okra (Lady Finger)	10/24/73	
	23	Inosloban, Lipa	Sugarcane	10/24/73	Incognita
	24	Inosloban, Lipa	Coconut	10/13/73	Incognita
	27	Halang, Lipa	Banana	10/24/73	
	28	Inosloban, Lipa	Sugarcane	10/24/73	
	29	Halang, Lipa	Cassava	10/24/73	Incognita
	30	Inosloban, Lipa	Sugarcane	10/24/73	Javanica
	62	Nasugbu	Mustard	8/31/71	
	63	Kalaway, Nasugbu	Pechay	8/31/71	Incognita

## Quezon

Isolate	50	Salvacion, Agdangan	Cucurbit	11/2/71	Javanica
	51	Palsabangon, Pagbilao	Weeds	11/2/71	
	56	Salvacion, Agdangan	Cucurbit	11/2/71	Javanica

## Camarines Norte

Isolate	36	Naga, Bicol (APC)	Corn soil	11/2/71	Javanica
	40	Sta. Cruz, Talisay	Tomato	4/27/76	
	41	Sta. Cruz, Talisay	Bitter Gourd	4/27/76	Javanica
	42	Sta. Cruz, Talisay	Mungbean (C-55)	4/27/76	
	43	Sta. Cruz, Talisay	Papaya	4/27/76	Incognita
	44	Sta. Cruz, Talisay	Squash	4/27/76	

	45	Abaca Expt. Station, Daet	Okra (Lady Finger)	4/28/76	
	46	Abaca Expt. Station, Daet	Tomato	4/28/76	
	47	Abaca Expt. Station, Daet	Squash	4/28/76	Incognita
	48	Abaca Expt. Station, Daet	Eggplant	4/28/76	
	M 41	Abaca Expt. Station, Daet	Tomato	10/28/77	
	M 42	Abaca Expt. Station, Daet	Squash	10/28/77	
	M 43	Abaca Expt. Station, Daet	Tomato	10/28/77	
	M 44	Abaca Expt. Station, Daet	Eggplant	10/28/77	
	M 45	Abaca Expt. Station, Daet	Songe Gourd	10/28/77	
	M 46	Talisay, C.NN	Melon	10/28/77	
	M 47	Talisay, C.N.	Bitter Gourd	10/28/77	
Isolate	M 48	Talisay, C.N.	Squash	10/28/77	
	M 49	Talisay, C.N.	Pigeon pea	10/28/77	
	M 50	Talisay, C.N'	Mungbeans	10/28/77	
	49	Talisay, C.N.	Okra (Lady Finger)	4/27/76	
	M 51	Labo, C.N.	Eggplant	10/28/77	
	M 52	Labo, C.N.	Songe gourd	10/28/77	
	M 53	Labo, C.N.	Breadfruit	10/28/77	
	M 54	Labo, C.N.	Okra (Lady Finger)	10/28/77	
	M 55	Basud, C.N.	Songe gourd	10/29/77	
	M 56	Basud, C.N.	Green Mungbean	10/29/77	
	M 57	Basud, N.C.	Mustard	10/29/77	
	M 58	Basud, N.C.	Eggplant	10/29/77	
	M 59	Basud, N.C.	Tomato	10/29/77	
	M 60	Basud, C.N.	Weed	10/29/77	
Camarines Sur					
Isolate	M37	Ayungan, Ocampo	Banana	10/27/77	
	M38	Ayungan, Ocampo	Okra (Lady Finger)	10/27/77	
	M39	Ayungan, Ocampo	Mustard	10/27/77	
	M40	Ayungan, Ocampo	Cassava	10/27/77	
	50	Bicol Rice & Corn Expt. Sta. Pili, C.S.	Mungbeans	4/29/76	
	51	Manpower Station, Pili	Eggplant	4/29/76	Javanica
	52	C.S. Agriculture School, Pili	Mungbeans	4/29/76	Javanica
	19	Naga City, C.S.	Corn soil	4/29/76	

Albay Isolate	M 21	Lawood, Guinobatan	Hot pepper	10/20/77	
	M 22	Lawood, Guinobatan	Cabbage	10/20/77	
	M 23	Lawood, Guinobatan	Winged bean	10/20/77	
	M 24	Lawood, Guinobatan	Tomato	10/20/77	
	M 25	Lawood, Guinobatan	Tomato	10/21/77	
	M 26	Lawood, Guinobatan	Bitter Gourd	10/21/77	
	M 27	Masarawag, Guinobatan	Eggplant	10/22/77	
	M 28	Masarawag, Guinobatan	<i>Dolichos lablab</i>	10/22/77	
	M 29	Masarawag, Guinobatan	Bogainvilla	10/22/77	
	M 30	Masarawag, Guinobatan	Radish	10/22/77	
	M 31	Masarawag, Guinobatan	Gumamela	10/22/77	
	M 32	Masarawag, Guinobatan	Chayote	10/22/77	
	M 33	Masarawag, Guinobatan	Chinese Pechay	10/22/77	
	M 34	Masarawag, Guinobatan	Cadios	10/22/77	
	M 35	Masarawag, Guinobatan	Dahlia	10/22/77	
	M 36	Masarawag, Guinobatan	Lima bean	10/22/77	
	53	Bicol Univ., Guinobatan	Tomato	4/30/76	
	54	BPI Expt. Sta., Guinobatan	Bush Sitao	4/30/76	Incognita
	55	BPI Expt. Sta., Guinobatan	Rose	4/30/76	Incognita
56	BPI Expt. Sta., Guinobatan	Bitter Gourd	4/30/76		
57	BPI Expt. Sta., Guinobatan	Weeds	4/30/76		
Sorsogon Isolate	58	BPI Expt. Sta., Sorsogon	Tomato	5/01/76	Incognita
	59	BPI Expt. Sta., Sorsogon	Pechay	5/01/76	
	60	BPI Expt. Sta., Sorsogon	Tomato	5/01/76	
	62	Buenavista, Gubat	Tomato	5/01/76	Incognita
	63	Barcelona, Sorsogon	Okra (Lady Finger)	5/01/76	Incognita
	M 1	Castilla	Weed	10/18/77	
M 2	Castilla	Papaya	10/18/77		
M 3	Castilla	Crysanthemum	10/18/77		
M 4	San Isidro	Mungbean	10/19/77		
M 5	San Isidro	Squash	10/19/77		
M 6	San Isidro	Ginger	10/19/77		
M 7	San Isidro, Sorsogon	Kadlum	10/19/77		
M 8	San Isidro, Sorsogon	Pechay	10/19/77		
M 9	San Isidro, Sorsogon	Bitter Gourd	10/19/77		

M10	BPI Expt. Station	African Daisy	10/19/77
M11	BPI Expt. Station	Okra (Lady Finger)	10/19/77
M12	BPI Expt. Station	Gabi	10/19/77
M13	BPI Expt. Station	Papaya	10/19/77
M14	BPI Expt. Station	Breadfruit	10/19/77
M15	BPI Expt. Station	Pomelo	10/19/77
M16	BPI Expt. Station	Sweet Potato	10/19/77
M17	BPI Expt. Station	Cassava	10/19/77
M18	BPI Expt. Station	Eggplant	10/19/77
M19	Bacolod, Juban	Weed	10/20/77
M20	Bacolod, Juban	Squash	10/20/77

**Visayas:**

## Negros Occidental

Isolate	37	La Granja, Negros Occ.	Tomato	12/13/71	Javanica
	45	La Granja	Sugarcane	12/13/71	Javanica
	46	La Granja	Peanut	11/13/71	Javanica
	53	La Granja	Tomato	10/25/71	Javanica
	67	La Granja	Soybean	7/27/71	Incognita
	74	Victorias	Sugarcane	12/13/71	Incognita
	80	La Granja	Sorghum	12/13/71	Incognita
	85	La Granja	Sugarcane	5/22/76	
	86	La Granja	Sugarcane	5/22/76	
		Biralbagan	Sugarcane	5/3/76	Javanica
		Victorias	<i>Basella rubra</i>	6/30/77	

## Iloilo

Isolate	32	Iloilo City #1 Lincoln College	Tomato	1/17/71	Javanica
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## Leyte

Isolate	2	Tacloban City	Tomato	9/11-14/73	Incognita
	5	Tacloban City	Pechay	9/11-14/73	Javanica
	87	Tacloban City	Tomato	2/9/75	

## Bohol

Isolate	39	Mabanga	<i>Coleus blumei</i>	10/25/71	Incognita
	43	Clarín	Yam	10/01/71	Incognita

Samar					
Isolate	7	Samar	Pepper	9/11-14/73	Incognita
Cebu					
Isolate	31	Cebu City	Tomato	1/17/71	Javanica
	52	Yati, Lilo-an, Cebu City	Corn soil	1/17/71	
	81	Guinsay, Danao City	Tomato	5/20/76	Incognita
	82	Guinsay, Danao City	Grapes	5/20/76	Incognita
	83	Guinsay, Danao City	Tomato	5/20/76	
	84	Guinsay, Danao City	Songe gourd	5/20/76	
<b>Mindanao:</b>					
Davao					
Isolate	35	Philcorin, Davao City	Eggplant	10/1/71	Incognita
	54	Philcorin, Davao City	Tomato	8/9/71	Javanica
	70	Tagrua, Tuazon, Davao del Norte	Banana	11/8/71	Incognita
	71	Bago Aplaya, Torril Dist.	Mungbean	5/14/76	
	72	Bago Aplaya, Torril Dist.	Okra (Lady Finger)	5/14/76	
	73	Bago Aplaya, Torril Dist.	Bitter Gourd	5/14/76	Incognita
	74	Maa, Riverside, Matina Dist.	Tomato	5/13/76	Incognita
	75	Highway, Matina Dist.	Lettuce	5/13/76	
	76	Bago Aplaya, Torril Dist.	Weed	5/14/76	Javanica
		Lapanday, Davao City	Papaya	7/14/77	
		Padada, Davao del Norte	Banana	11/24/77	
Bukidnon					
Isolate	38	Canayan, Malaybalay	Tomato	2/9/72	Javanica
	44	Canavan, Malaybalay	Corn soil	2/9/72	Incognita
	55	Malaybalay	Cabbage	7/14/71	Incognita
	60	Malaybalay	Tobacco	7/14/71	Javanica
Misamis Oriental					
Isolate	41	Mabatangan, Mis. Or.	Corn soil	10/25/71	Javanica
South Cotobato					
Isolate	68	Dole, Polomolok	Pineapple	11/9/71	Incognita
	69	Dole, Polomolok	Corn soil	11/9/71	Incognita
	75	Dole, Polomolok	Pineapple	11/9/71	Incognita

	82	Dole, Polomolok	Corn soil	11/9/71	Incognita
	84	Dole, Polomolok	Corn soil	11/9/71	Incognita
	87	Dole, Polomolok	Pineapple	5/15/76	
	88	Dole, Polomolok	Weed	5/15/76	
North Cotobato					
Isolate	71	Kenram, North Cotobato	Ramie	11/9/71	Incognita
	76	MIT, Kabacan	Sugarcane	11/9/71	Incognita
	81	MIT, Kabacan	Eggplant	11/9/71	Incognita
	85	MIT, Cabaon	Corn soil	11/9/71	Javanica
	86	MIT, Cabaon	Mungbean	11/9/71	Incognita
Zamboanga					
Isolate	64	Sta. Maria, Zamb. City	Tomato	5/17/76	
	65	BPI, Zamb. City	Cabbage	5/17/76	Incognita
	66	BPI, Zamb. City	Lettuce	5/17/76	Incognita
	67	Sta. Maria	Tomato	5/17/76	
	68	Sta. Maria	Eggplant	5/17/76	Incognita
	69	Sta. Maria	Eggplant	5/17/76	
	70	Sta. Maria	Papaya	5/17/76	
Basilan					
Isolate	77	Menzi Plantation	Blackpepper	5/18/76	Arenaria
	78	Menzi Plantation	Weed	5/18/76	
	79	Menzi Plantation	Blackpepper	5/18/76	
	80	Menzi Plantation	Weed	5/18/76	

**Table 6.** Host distribution of local root-knot nematode isolates.

Hosts	<i>Meloidogyne</i> spp.				Unidentified
	<i>incognita</i>	<i>arenaria</i>	<i>javanica</i>	<i>hapla</i>	
<b>Vegetables:</b>					
Tomato	4	-	8	-	12
Bitter gourd	3	-	1	-	-
Eggplant	5	-	2	-	11
Pechay	1	-	3	-	3
Cabbage	3	-	-	-	3
Bush sitao	-	1	1	-	1
Pole beans	1	-	-	-	2
<i>Dolichos lablab</i>	-	-	-	-	1
Lima bean	-	-	-	-	1
Onion	-	-	1	-	-
Mustard	1	-	1	-	4
Chayote	1	-	-	-	1
Parslay	1	-	-	-	-
Peas	1	-	-	-	-
Cucurbit	-	-	2	-	-
Pepper	2	1	-	-	1
Squash	1	-	-	-	5
Okra	3	-	-	-	8
Raddish	-	-	-	-	1
Cadios	-	-	-	-	2
Cabbage	-	-	-	-	2
Hot pepper	-	-	-	-	1
Breadfruit	-	-	-	-	1
Pigeon pea	-	-	-	-	1
Winged bean	-	-	-	-	1
Sweet pea	-	-	-	-	1
Songe gourd	-	-	-	-	4
Lettuce	1	-	-	-	1
<i>Basella rubra</i>	-	-	-	-	1
<b>Field Crops:</b>					
Mungbeans	3	-	1	-	10
Soybeans	1	-	-	-	-
Sugarcane	5	2	3	-	4
Coffee	-	-	1	-	-
Coconut	1	-	-	-	1
Peanut	-	-	1	-	-
Pineapple	2	-	-	-	1
Tobacco	-	-	1	-	1
<b>Root Crops:</b>					
Sweet Potato	2	1	-	-	1
Ginger	-	-	-	-	2
Cassava	1	-	-	-	1
Taro	-	-	-	-	1
Yam	1	-	-	-	-
<b>Ornamentals:</b>					
Rose	1	-	-	-	-
Gladiolus	1	-	-	-	-
Chrysanthemum	-	-	-	-	1
African daisy	-	-	-	-	1
<i>Impatiens balsamina</i>	-	-	-	-	1

<i>Coleus blumei</i>	1	-	-	-	-
Bogainvilla	-	-	-	-	1
Gumamela	-	-	-	-	1
Dahlia	-	-	-	-	1
<b>Cereals:</b>					
Sorghum	2	-	-	-	-
<b>Fruit Crops:</b>					
Pomelo	-	-	-	-	1
Melon	-	-	-	-	2
Grapes	1	-	-	-	-
Papaya	1	-	-	-	5
Banana	1	1	-	-	3
Strawberry	-	-	1	-	1
<b>Fiber Crops:</b>					
Ramie	1	-	-	-	-
Cotton	-	-	-	-	1
<b>Misc:</b>					
Weeds	1	-	1	-	13
Breadfruit	-	-	-	-	1
Fiscus sp.	-	-	-	-	1
Corn soil	4	-	3	-	3
Patchouli	-	-	-	-	1
<b>Total</b>	<b>58</b>	<b>6</b>	<b>31</b>	<b>0</b>	<b>130</b>
<b>Percent</b>	<b>25.8</b>	<b>2.6</b>	<b>13.8</b>	<b>0</b>	<b>57.8</b>

IV. Problems encountered during the year under review.

The Philippine Council of Agriculture Research and Resources (PCARR) system of priorities has adversely affected our chances of obtaining local subsidy for the project. No support has been gotten from traditional fund sources thus far.

Hence, our program under the IMP is a courageous attempt at conducting research of an important nature. The project was left to ride on other projects for supplies and personnel support. Unfortunately, this arrangement which is largely internal has become increasingly difficult to justify.

The increase in foreign grants and

the institutionalizing of research in this country has made such activity highly competitive. The incentives offered by these grants have made participations in the project minimal and token.

V. Plans and prospects for 1978.

#### DISCUSSION

**Sivapalan:** I notice that more than 50 % of your collections remain unidentified. Is this because you have doubts of fitting the observed perineal patterns to the well established identified species?

**Reyes:** Many of these remain unidentified because of the lack of time to look at them.