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PERIODIC REPORT

1986 - 87



International Plant Protection Center
Oregon State University

Periodic Report

1986-87

International Plant Protection Center

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Consortium for International Crop Protection

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EXECUTIVE SUMMARY

The International Plant Protection Center (IPPC) of Oregon State University, in association with the Consortium for International Crop Protection (CICP), conducts a U.S. Agency for International Development (AID) funded program in pest and pesticide management, "Integrated Pest Management and Environmental Protection." This report covers the second year of a five year contract.

During the period October 1, 1986 to September 30, 1987, 26.5 person-months of professional staff (5 of which were not funded through the subcontract) were dedicated to meeting the program's objectives.

Total subcontract expenditures during the period were \$282,944. An additional \$104,142 was contributed.

There are four general areas of program activities: training, technical assistance, research, and program networking.

Major training activities conducted through the subcontract during the reporting period included: developing and conducting weed and pesticide management courses in Grenada, Panama, Gambia, Senegal, Pakistan, and the Sudan; developing formal and informal weed science courses for developing country scientists at Oregon State University; and preparing training materials for donor agencies and developing country universities.

Technical assistance was provided to USAID missions in Thailand and Sri Lanka, to the Government of Pakistan, and to AID/Washington. IPPC continues to respond to requests for assistance from developing country scientists. During September, 1987 alone, 34 requests for assistance were received and handled. IPPC pursued an unsuccessful effort to obtain

agrochemical and small application equipment industry support to conduct pesticide safety training in developing countries.

IPPC research was primarily oriented toward small farmer weed control problems in developing countries which included non-tillage production, mulches as a weed control technique, and small-scale spraying equipment performance.

A major research effort was started to economically evaluate the recent grasshopper/locust campaign in Sub-Saharan Africa.

The use of computers in pest management continues to be an important evolving IPPC research area.

Publications constitute a major method of communicating and networking with the developing country pest management community. During the reporting period 1,064 copies of various publications were distributed. Two issues of INFOLETTER, an award-winning newsletter, were sent to over 8,700 recipients in more than 130 countries. Computer graphics-enhanced instruction modules were developed and made available to the pest management community. Nine books and papers were written and published or republished by IPPC personnel during the year.

IPPC continued to serve as secretariate for the International Weed Science Society (IWSS). Through IWSS, IPPC helped provide: basic weed science libraries to seven developing countries; and, the recycling of technical journals to developing country scientists.

IPPC continues to produce HAUSTORIUM, the newsletter of the International Parasitic Seed Plant Research Group.

ACRONYMS

AID -	Agency for International Development
AID/W -	AID/Washington
BIFAD -	Board for International Food and Agriculture Development
CAI -	Computer aided instruction
CICP -	Consortium for International Crop Protection
COMALFI -	Sociedad Colombiana de Control de Malezas y Fisiologia Vegetal
FAO -	Food and Agriculture Organization of the United Nations
IICA -	Instituto Interamericano de Cooperacion para la Agricultura
IPM-	Integrated pest management
IPPC -	International Plant Protection Center
IWSS -	International Weed Science Society
OFDA -	Office of Foreign Disaster Assistance
OIRD -	Office of International Research and Development
OSU -	Oregon State University
PL480 -	Public Law 480
PPM -	Pest and Pesticide Management
ROCAP -	Regional Office for Central American Programs
USAID -	U.S. Agency for International Development (missions)

ACTIVITIES AND ACCOMPLISHMENTS

I. Background

In August 1985, the International Plant Protection Center (IPPC) at Oregon State University linked with the Consortium for International Crop Protection (CICP) to submit a joint proposal to the U.S. Agency for International Development (AID) to conduct a program in pest and pesticide management. The proposal, entitled "Integrated Pest Management and Environmental Protection," was accepted and the program initiated October 1, 1985.

CICP contracted with several other member institutions to conduct various phases of the effort. A scope of work identified four major work headings: training, technical assistance, research, and networking/communication. Division of responsibility among collaborating institutions is:

- ◆ Consortium for International Crop Protection:
 - ◆ project coordination and administration;
 - ◆ liaison with AID and other donor groups; and,
 - ◆ project development.
- ◆ International Plant Protection Center:
 - ◆ weed management;
 - ◆ pesticide management;
 - ◆ training coordination;
 - ◆ socio-economics; and,
 - ◆ information/networking coordination.
- ◆ University of Maryland:
 - ◆ entomology; and,
 - ◆ technical assistance coordination.
- ◆ University of Minnesota:
 - ◆ plant pathology; and,
 - ◆ research coordination.
- ◆ University of Miami:
 - ◆ pesticide residue analysis training; and,

♦ agromedical consulting and training.

Activities for the second year are reported under the four major headings.

II. Training

1. COURSES

IPPC/PPM specialists actively participated in eight formally organized training events during the report period (Table 1). A total of 213 participants received training through these courses.

Table 1. Participation in Formal Training Activities

Pesticide Management Training, November 1986, 2 one-week training courses, Grenada, 23 participants.

Pesticide Management Training, January 1987, 4 courses in Panama as part of the AID/Panama Technology Transfer Project, 96 participants.

Pesticide Safety Management, March 1987, one course in safe use of pesticides, Gambia, 33 participants

Pesticide Safety Management, April 1987, one course in safe use of pesticides, Senegal, 30 participants.

Weed Management Workshop, March 1987, Pak-Indo (Pakistan) Weed Management Workshop, 51 participants.

Pesticide Safety Management, June 1987, one course in safe use of pesticides, Sudan, 25 participants.

Weed Management Strategies, July - August 1987, IPPC shortcourse, Corvallis, five participants from four countries.

Pest and Pesticide Management, September 1987, workshop for Pakistani agricultural administrators, 20 participants, conducted at Oregon State University.

In addition, training consultants were provided for two courses held in Panama and Senegal (Table 2).

Table 2. Training Consultants

project output	site	date	pm	consultant
Pesticide Management	Panama	Jan. 87	1	A. Fischer
Pesticide Management	Senegal	Apr. 87	1	A. Fischer

2. SPECIAL PROGRAMS

Project associates A. S. Cooper and M. D. Shenk developed and conducted a 3-week specialized study program for a visiting weed scientist from Thailand. The program emphasized weed management research and pesticide residue considerations.

3. TRAINING MATERIALS

IPPC completed a Field and Laboratory Guide Manual for Weed Control for the Escuela Agricultura Panamericana (EAP) at the request of USAID/Honduras. The work is in Spanish. The manual will be published by EAP.

In cooperation with FAO, IPPC published an Instructors' Guide for Weed Management, FAO Training Series 12, 1986. An English version was published first which is presently being translated to Spanish and French.

Tropical Weeds, Malezas Tropicales, Vol. 1, Edicion 1986, was published jointly with Sociedad Colombiana de Control de Malezas y Fisiologia Vegetal (COMALFI). This all-color, bi-lingual text is one of the most extensive volumes available for tropical weed taxonomy and identification.

Weed Control Information Guidebook for Developing Countries, an extension-oriented weed control guidebook, is being finalized for publication in 1988.

4. OTHER TRAINING ACTIVITIES

A. S. Cooper, at the invitation and request of OFDA/AID, attended a week-long Pesticide Management Training Workshop in Washington, DC. The purpose of the workshop was to develop skills and improve training in pest and pesticide management in Africa.

III. Technical Assistance

1. ADVISORY

IPPC weed scientist M. D. Shenk continued to serve as cooperating scientist for five weed management research projects (under the PL480 program) in Pakistan managed through the U.S. Department of Agriculture. Activity included review of research, analysis of methods, and ongoing guidance. He participated in the Indo-Pakistan Weed Management workshop and visited the various PL480 weed research projects in Pakistan.

At the request of USAID/Sri Lanka, Shenk visited with Sri Lankan Ministry of Agriculture officers during June 1987 to advise on weed problems and methods of control.

Improving the library for technical backstopping for AID Missions and developing country scientists is an important function of IPPC personnel. The requests and IPPC responses for a month, September, 1987, are summarized in Annex #6. During that month alone, 34 requests for assistance were received and serviced.

While in SE Asia, A. S. Cooper responded to a request from AID/Thailand, the Ministry of Agriculture and FAO/Bangkok to discuss pest and pesticide training and research capabilities. A possible buy-in from Burma was reviewed.

2. INDUSTRY INITIATIVE

IPPC launched a program to collaborate with the agrochemical and small application equipment industry to conduct pesticide safety training in developing countries. A series of personal contacts, followed by individual letters to most of the major firms, set forth the outlines of training and proposed that a collaborative approach would be more cost-effective and have greater impact.

A meeting with all interested entities was held in February 1987, during the Weed Science Society of America annual meeting at St. Louis, MO. Due to insufficient interest expressed by the attending companies, the effort was suspended.

IV. Research

1. CURRENT RESEARCH

A research program to evaluate performance of various (configuration and material) spray nozzles provided by manufacturers worldwide continues. The first publication of the work should be available in December, 1987.

A research proposal was prepared for AID/W to economically evaluate the recent grasshopper/locust campaign in Sub-Saharan Africa. The proposal resulted in a buy-in that started October 1, 1987. As part of the proposal preparation, project personnel traveled to Bozeman, MT to review existing U.S. grasshopper research.

Microcomputer usage in pest management continues to be an important evolving research area. A. S. Cooper has continued documenting their use in research and training. As a result, he will provide a 6-week consultantship in Malawi (November/December, 1987) at the request of USAID/Malawi. A total of 154 requests from 51 countries have been made

for his publication, "Microcomputers for Research and Extension in Pest Management."

V. Networking

1. GENERAL NETWORKING

S. F. Miller, CACP Deputy Director, attended the CACP Board meeting at College Park, MD in July.

2. INFOLETTER

Two issues of the IPPC INFOLETTER were published and distributed during the report period. Issue #65, January 1987, featured articles on agromedical approach to managing pesticides and microcomputers battle crop pests. Issue #66, June 1987, included an article on improved field weeders by IRRI engineers.

The INFOLETTER mailing list was converted to a microcomputer database system in March, 1987. Nearly 300 names were added to the INFOLETTER mailing list during this report period. Annex #3 shows current and previous country-by-country distribution of INFOLETTER.

3. COMPUTER-AIDED INSTRUCTION

Computer graphics-enhanced instruction modules for pesticide safety and application topics intended to assist in the review of basic concepts in pest/pesticide management have been prepared by IPPC personnel. Specific module titles include:

- A. Pesticide Handling and Safety
- B. Pesticide Application Techniques
- C. Pesticide Application Equipment Calibration
- D. Pesticide Rate Calculations
- E. Pesticide Formulations

Of these, #A is available on diskette as a computer-operated module, a 35mm slide set, and as overhead projector transparencies. All formats are accompanied by a printed manual. As of September 30, 1987, 24 requests for the instruction materials have been sent to scientists in eleven countries.

4. PUBLICATIONS

IPPC continues to distribute a variety of publications in response to requests. Annex #4 provides a summary for distribution of publications, while Annex #5 lists numbers of papers/reprints distributed.

During the year, IPPC personnel participated in conferences in Pakistan, Malaysia, and Thailand. The following lists the papers presented by IPPC staff at these meetings.

Cooper, A.S., Shenk, M.D., and Deutsch, A.E. 1987. Weed and Pesticide Management Training Designed for Developing Countries. Presented at the Weed Science Society of America annual meeting, February 2-4, 1987. St. Louis, MO / USA.

Cooper, A.S. 1987. Live Mulching: A Conservation Technique.

Presentation given at Kasetsart University, September 30, 1987. Thailand.

Shenk, M.D. 1987. A Call for Improved Management of Pesticides.

Presented at Pak-Indo Weed Control Workshop, March 10-14, 1987. Islamabad, Pakistan.

4. IWSS

IPPC continued to serve as the secretariate for the International Weed Science Society (IWSS) during the year. Activities included membership transactions and other administrative duties.

IWSS collaborated with the Weed Science Society of America and IPPC to purchase/provide materials for basic weed science library sets. Seven

sets were mailed this year to developing countries. Each participant at the IPPC Weed Management Strategies shortcourse also received a set.

5. OTHER NETWORKING

A.) At the request of FAO, IPPC personnel assembled and sent training materials for a FAO sponsored weed control course in Ethiopia.

B.) IPPC continues to produce Haustorium, the newsletter of the International Parasitic Seed Plant Research Group.

C.) IPPC staff member A. E. Deutsch was an invited panelist for the session "Newsletters as Development Tools" during the joint Association of U.S. University Directors of International Agricultural Programs/Agricultural Communicators in Education Conference. The meeting, hosted by the University of Rhode Island, was themed 'Agricultural Development: Systems and Communications.' The published conference proceedings contained Deutsch's invited paper, "Along the path between prudence and puffery; or, can a dirt-brown broadsheet be an effective newsletter?" Several other meetings such as the Board for International Food and Agricultural Development (BIFAD) and various consortia, were held sequentially at the same site.

D.) The periodical Farm Chemicals International published an article by A. E. Deutsch, "Lever-operated knapsack sprayers."

E.) A program of collecting and redistributing unused/unwanted technical journals to developing countries was continued.

F.) The project and IPPC were represented at the regional BIFAD meeting at Lubbock, TX (Texas A & M) by A. E. Deutsch.

G.) Deutsch provided an article concerning international communication that was published in an Oregon Extension communication newsletter.

H.) Staff prepared and submitted two manuscripts to an international journal.

I.) Revisions were made to the PPM leaflet in preparation for reprinting.

Table 3. FINANCIAL REPORT

Project Expenditures: October 1, 1986 through September 30, 1987

Category	Amount	Contributed*
Salaries:		
Academic	\$111,389	\$33,268
Administrative	27,065	
Other Payroll Expenses (Fringe Benefits)	43,313	10,023
Services & Supplies	17,557	27,054
Travel	10,264	23,694
Indirect Costs (35%)	73,356	10,103
Total	\$282,944	\$104,142

*Includes state funds, training fees, and buy-ins external to core project funding.

Table 4. DISTRIBUTION OF PERSONNEL EFFORT

Distribution of effort (person months) for Project Specialists
for the period October 1, 1986 - September 30, 1987

<u>project output</u>	<u>site</u>	<u>date</u>	<u>PM</u>	<u>individual</u>
<u>TRAINING</u>				
<u>Courses</u>				
Pesticide Management	Grenada	Nov. 86	1.0	Shenk
Pesticide Management	Panama	Jan. 87	1.0	Shenk ^{1/}
Pesticide Management	Gambia	Mar. 87	1.0	Cooper ^{2/}
Weed Management	Pakistan	Mar. 87	1.0	Shenk
Pesticide Management	Sudan	Jun. 87	1.0	Cooper ^{2/}
Weed Management	Corvallis	Jul.-Aug. 87	1.0 1.0 0.5 0.5	Cooper Shenk Miller Deutsch
Pesticide and Pesticide Mgt. (Pakistan)	Corvallis	Sep. 87	0.5 0.5	Cooper Shenk
<u>Training</u>				
Visiting Scientist	Corvallis	Aug. 87	0.5 0.5	Cooper Shenk
Preparation of Training Materials for Honduras	Corvallis	*	2.25	Shenk
Training Seminar OFDA	Wash. DC	Aug. 87	0.5	Cooper
<u>TECHNICAL ASSISTANCE</u>				
Pakistan PL480	Corvallis	*	2.0	Shenk
Weed Management	Sri Lanka	Mar. 87	0.5	Shenk
Industry Initiative	Corvallis	Feb. 87	1.0 0.5	Miller Deutsch
Library Maintenance	Corvallis	*	1.0 0.5	Miller Shenk

Table 4. DISTRIBUTION OF PERSONNEL EFFORT (cont.)

project output	site	date	PM	individual
Technical Back-stopping for AID/W and developing country scientists	Corvallis	*	1.5 0.5	Cooper Shenk
Weed Management	Thailand	Sep. 87	.25	Cooper
<u>RESEARCH</u>				
Grasshopper/locust	Bozeman	Sep. 87	0.5	Miller
Nozzle Evaluation	Corvallis	*	0.5	Miller
Research Proposal /Africa	Corvallis	*	1.0 0.5	Miller Deutsch
Microcomputer/ Pest Management Applications	Corvallis	*	1.5	Cooper
<u>NETWORKING</u>				
Newsletters	Corvallis	*	3.0	Deutsch
Computer Modules	Corvallis	*	0.5	Deutsch
Publications	Corvallis	*	0.5 1.5	Miller Deutsch
Intl. Conferences	Pakistan Malaysia	Mar. 87 Sep. 87	.25 .25	Shenk Cooper
Reports/Planning	Corvallis	*	1.0 1.0	Miller Deutsch
IWSS Activities	Corvallis	*	1.0	Deutsch

1/ Buy-in through Core (increased authorized PM for Shenk to 12).

2/ Buy-in not through Core (increased authorized PM for Cooper to 8).

* Entire year

ANNEXES**Annex 1. SUMMARY OF TRAVEL**

<u>Date</u>	<u>Traveler</u>	<u>Itinerary</u>	<u>Activites</u>
Nov. 86	Shenk ⁴ /	Grenada	Conduct 2 one-week training courses in Pesticide Management Training
Dec. 86	Miller ⁴ / Shenk ⁴ / Deutsch ⁴ / Cooper ¹ /	College Park, Maryland	Participate in PPM staff meeting.
Jan. 87	Shenk ² / Fischer ² /	Panama	Conduct Pesticide Management courses in 4 regions under AID sponsored Technology Transfer Project.
Jan. 87	Deutsch ³ /	Lubbock, TX	Attend BIFAD regional meeting.
Feb. 87	Miller ¹ / Deutsch ¹ / Cooper ¹ / Fischer ² / Shenk ² /	St. Louis, MO	Conduct meeting for IPPC's chemical company initiative. Held in conjunction with WSSA Annual Meeting. Fischer and Shenk attended upon their return from Panama
Mar. 87	Cooper ³ /	Gambia Senegal	Conduct Pesticide Safety Awareness Course in Gambia. Prepare for upcoming course in Senegal.
Mar. 87	Shenk ³ /	Sri Lanka Pakistan	Make arrangements for Weed Management Training course scheduled for Aug/Sep 87 in Sri Lanka. Attend Pak-Indo Weed Management Workshop and visit PL480 Weed Research projects.
Apr. 87	Fischer ³ /	Senegal	Conduct Safe Management of Pesticides course.
Jun. 87	Deutsch ³ /	Rhode Island Washington, DC	Attend and participate in ACE-AUSUDIAP meeting. Meet with AID S&T officials.
Jun. 87	Cooper ³ /	Sudan	Conduct Safe Management of Pesticides course.
Jun. 87	Miller ¹ /	College Park, MD Washington, DC	Attend CICP Board Meeting. Meet with AID S&T personnel.

Annex 1. SUMMARY OF TRAVEL (cont.)

Date	Traveler	Itinerary	Activites
Aug. 87	Cooper ^{3/}	Washington, DC	Attend training seminar per request of OFDA.
Sep. 87	Miller ^{2/} Croft ^{2/}	Bozeman, MT	Meet with ARS/AID officials in preparation for Grasshopper/Locust project.
Sep. 87	Cooper ^{3/}	Philippines Malaysia Indonesia Thailand	Present paper at the Conf. on Pesticides in Tropical Agriculture in Malaysia. Attend 11th Intl. Congress on Plant Protection in Manila. Contact AID missions and FAO offices in the ASEAN region.

^{1/}IPPC Core funds

^{2/}Buy-in through Core

^{3/}Buy-in not through Core

^{4/}CICP Core funds

Annex 2. IPPC PERSONNEL

Name	Position	FTE
Miller, S. F.	Director, IPPC; Agric. Economist; Project Deputy Director	.5
Shenk, M. D.	Weed Scientist/Training	.9
Deutsch, A. E.	Communication/Networking	.7
Cooper, A. S.	Weed Scientist/Computer Splst.	.5
Larson, S. G.	Office Manager/Accounting	1.0
Carr, R. M.	*Word Processing/Information Asst.	.7

* Position eliminated May 1987.

Annex 3. WORLDWIDE DISTRIBUTION OF INFOLETTER

Country	Recipients as of			
	May 1981	May 1984	Sept. 1986	Sept. 1987
Abu Dhabi	1	1	1	1
Aden	1	-	-	-
Afghanistan	12	11	20	20
Algeria	3	7	12	12
Angola	1	1	3	3
Antigua, W.I.	2	2	6	6
Arab Rep. of Egypt	16	23	47	51
Arabian Gulf	1	-	-	-
Argentina	158	179	187	193
Australia	87	110	138	152
Austria	5	6	16	17
Bahamas	1	2	3	3
Bahrain	-	-	1	1
Bangladesh	8	16	33	31
Barbados	3	2	8	9
Basseterre, W.I.	1	2	-	-
Belgium	29	31	50	49
Belize	6	10	14	14
Benin	2	1	10	10
Bermuda, W.I.	1	1	1	1
Bhutan	-	-	2	3
Bolivia	28	26	35	35
Botswana	4	11	17	16
Brasil	192	206	323	326
British Virgin Islands	-	-	2	2
Brunei Darussalam	3	3	5	5
Bulgaria	2	2	3	3
Burkina Faso	6	10	37	36
Burma	4	7	11	12
Burundi	2	2	5	5
Cameroon	7	10	37	36
Canada	138	153	242	253
Canal Zone	-	3	4	4
Canary Islands	1	1	1	1
Cape Verde Island	1	3	6	6
Cayman Island, W.I.	1	1	2	2

Annex 3. WORLDWIDE DISTRIBUTION OF INFOLETTER (cont.)

Country	Recipients as of			
	May 1981	May 1984	Sept. 1986	Sept. 1987
Cent. African Rep.	1	1	6	6
Chad	4	2	4	4
Channel Islands	-	-	1	1
Chile	45	46	46	46
People's Rep. of China	4	7	12	12
Colombia	97	94	98	101
Comores	2	2	2	2
Congo	-	1	4	4
Cook Islands	-	3	6	6
Costa Rica	76	82	86	91
Cuba	1	3	4	4
Curacao	-	-	1	2
Cyprus	4	6	9	10
Czechoslovakia	12	12	21	21
Denmark	20	21	34	35
Djibouti	1	1	2	2
Dominica, W.I.	-	-	3	3
Dominican Rep.	15	16	18	17
Ecuador	49	52	52	52
El Salvador	11	12	13	14
Ethiopia	27	32	61	74
Fiji Islands	5	14	20	20
Finland	18	16	18	18
France	74	84	143	141
French W. Indies	1	-	-	-
Gabon	1	1	1	1
Gambia	4	6	12	43
Germany (East)	1	1	3	3
Germany (West)	59	60	95	98
Ghana	31	41	70	78
Gilbert Islands	-	-	2	2
Greece	27	28	48	49
Grenada	-	1	7	8
Guadeloupe, W.I.	-	1	4	4
Guatemala	15	18	19	22
Guinea	1	8	7	7

Annex 3. WORLDWIDE DISTRIBUTION OF INFOLETTER (cont.)

Country	Recipients as of			
	May 1981	May 1984	Sept. 1986	Sept. 1987
Guinea-Bissau	-	-	5	5
Guyana	4	5	14	14
Haiti	3	5	14	15
Honduras	21	31	36	38
Hong Kong	5	4	8	9
Hungary	8	7	11	12
Iceland	-	-	1	1
India	232	300	360	383
Indonesia	97	123	165	172
Iran	12	2	19	19
Iraq	3	3	5	5
Ireland	7	8	10	10
Israel	21	29	41	41
Italy	32	35	72	51
Ivory Coast	9	8	12	12
Jamaica	10	10	22	22
Japan	58	60	82	86
Jordan	8;	8	13	13
Kenya	35	57	89	92
Korea	13	12	18	19
Kuwait	2	2	3	3
Laos	7	7	11	11
Lebanon	6	-	10	11
Lesotho	3	3	10	10
Liberia	7	12	23	23
Libya	5	5	12	12
Madagascar	-	1	-	-
Malagasay Rep.	1	1	4	4
Malawi	7	13	28	28
Malaysia	65	76	118	130
Mali	3	6	18	17
Malta	4	4	6	6
Martinique	-	-	3	3
Mauritania	2	5	8	8
Mauritius	3	45	12	14
Mexico	69	88	97	95

Annex 3. WORLDWIDE DISTRIBUTION OF INFOLETTER (cont.)

Country	Recipients as of			
	May 1981	May 1984	Sept. 1986	Sept. 1987
Montserrat	1	1	3	3
Morocco	3	5	12	13
Mozambique	2	3	4	4
Nepal	2	7	9	11
Netherlands	36	44	86	80
New Caledonia	4	4	7	7
New Guinea	14	18	29	33
New Hebrides	2	2	5	5
New Zealand	26	31	60	60
Nicaragua	19	20	17	20
Niger	3	4	15	14
Nigeria	55	69	121	120
Niue	-	1	3	4
Norway	12	12	17	19
Oman	-	1	2	3
Pacific Islands	2	2	-	-
Pakistan	20	66	89	95
Palau Islands	-	-	1	1
Panama	17	21	26	29
Paraguay	11	12	12	12
Peru	77	83	73	74
Philippines	198	207	272	282
Poland	9	10	13	13
Portugal	11	14	28	29
Qatar	-	2	5	5
Reunion	-	-	4	4
Romania	4	4	10	10
Rwanda	-	-	3	4
St. Kitts	3	3	8	8
St. Lucia	-	2	11	16
St. Vincent	2	3	6	7
Saudi Arabia	6	11	17	19
Senegal	22	24	50	48
Seychelle Is.	1	1	3	3
Sierra Leone	6	7	14	13
Singapore	10	12	19	23

Annex 3. WORLDWIDE DISTRIBUTION OF INFOLETTER (cont.)

Country	Recipients as of			
	May 1981	May 1984	Sept. 1986	Sept. 1987
Solomon Islands	3	5	7	7
Somalia	1	1	7	8
South Africa	5	8	16	16
South Atlantic	-	1	1	1
South Pacific	-	2	-	-
South Vietnam	7	-	-	-
Spain	25	26	31	36
Sri Lanka	18	26	31	36
Sudan	17	24	36	38
Surinam	6	7	8	7
Swaziland	2	4	8	9
Sweden	28	27	34	33
Switzerland	28	28	60	63
Syria	9	8	17	17
Tahiti	3	2	5	4
Taiwan, R.O.C.	17	19	34	35
Tanzania	17	20	40	44
Thailand	60	96	134	143
Togo	2	4	9	9
Tonga	-	1	27	26
Trinidad & Tobago	21	27	41	41
Trucial States	1	1	1	1
Tunisia	5	7	10	12
Turkey	23	25	39	41
Turks and Caicos	-	-	1	1
Tuvalu	-	-	2	2
Uganda	5	6	25	27
United Kingdom	173	206	283	307
United States	1,661	1,854	2,822	2,876
Uruguay	23	27	24	25
U.S.S.R.	4	6	16	16
Venezuela	59	63	62	65
Wallis-Futana Islands	-	-	1	1
Western Samoa	9	15	27	27
Yemen Arab Rep.	3	2	4	9
Yugoslavia	8	12	18	20

Annex 3. WORLDWIDE DISTRIBUTION OF INFOLETTER (cont.)

Country	Recipients as of			
	May 1981	May 1984	Sept. 1986	Sept. 1987
Zaire	4	4	8	8
Zambia	10	10	26	28
Zimbabwe	1	6	11	13
	<hr/>	<hr/>	<hr/>	<hr/>
Total	4,931	5,735	8,553	8,851

Annex 4. WORLDWIDE DISTRIBUTION OF PUBLICATIONS

Identification Key

Symbol	Title
COM	Communication of Weed Science Technologies in Developing Countries
FM	Field Manual for Weed Control Research
IPM	Economics of Integrated Pest Management
KS	Knapsack Sprayers; Use, Maintenance, Accessories
LOK	Lever-Operated Knapsack Sprayers
MIM	Mimosa Pigra Management
MC	Manual de Campo Para Investigacion en Control de Malezas
MUL	Crop Production Using Cover Crops and Sods as Living Mulches
NT	No Tillage Crop Production in the Tropics
SF	Small Farm Weed Control
TRU	Algunos "Trucos" Utiles en Estadistica/Some Useful Tricks in Statistics
TWS	Semillas de Malezas Tropicales I Y II/Tropical Weed Seeds I and II
WCC	Weed Crop Competition

Annex 4. WORLDWIDE DISTRIBUTION OF PUBLICATIONS (cont.)

Country	SF	WCC	KS	TRU	TWS	FM	MC	NT	MUL	MIM	COM	LOK	IPM
Syria	--	--	1	--	--	--	--	--	--	--	--	1	--
Sudan	--	1	--	--	--	--	--	--	--	--	--	--	--
Tanzania	--	1	1	--	1	1	--	1	--	--	--	--	--
Thailand	--	1	1	--	--	2	--	--	--	--	1	1	--
Turkey	--	1	1	--	1	1	--	--	--	--	--	1	--
U. Kingdom	50	1	1	--	1	--	--	1	--	1	2	2	--
U. States	10	22	12	--	3	14	--	5	6	2	7	23	1
W. Samoa	--	1	1	--	1	--	--	--	--	--	--	1	--
Totals	64	65	58	8	49	56	5	26	9	5	29	70	4

Annex 5. WORLDWIDE DISTRIBUTION OF IPPC PAPERS

<u>Date written, title, authors, source, date published</u>	<u>Copies Distributed</u>
1971, <u>Weed control in cacao</u> , M. D. Shenk, WORLD FARMING, 1971.	20
1972, <u>Spray adjuvants make pesticides do a better job</u> , L. F. Taylor, WORLD FARMING, 1972.	30
1972, <u>El papel de la ciencia de malezas en desarrollo</u> , Chris Parker, Weed Science Society of America meeting, St. Louis, MO, 1972.	2
1974, <u>Problems of herbicide use in peasant farming</u> , John L. Hammerton, Weed Science Society of America meeting, Las Vegas, NV, Feb. 1974.	34
1974, <u>Small pesticide application equipment--its selection, use and maintenance</u> , A. E. Deutsch, WORLD FARMING, 1974	25
1974, <u>Equipos pequenos para aplicar plaguicidas--su seleccion, uso y mantenimiento</u> , A. E. Deutsch, AGRICULTURA DE LAS AMERICAS, 1974.	7
1974, <u>Con los plaguicidas--evite peligros</u> , A. E. Deutsch, AGRICULTURA DE LAS AMERICAS, 1974.	3
1974, <u>Crop varieties: can they suppress weeds?</u> R. D. Sweet, C. P. Yip and J. B. Sieczka, NY LIFE SCIENCES QUARTERLY, Vol. 7, No. 3, 1974.	34
1974, <u>Biological suppression of weeds: evidence of allelopathy in accessions of cucumber</u> , Alan R. Putnam and William R. Duke, SCIENCE, Vol. 185, 1974.	25
1974, <u>Calibrating and adjusting granular row applicators</u> , J. Siemens, WORLD FARMING, 1974.	22
1975, <u>Weed control with plant pathogens</u> , R. Charudattan, AGRICHEMICAL AGE, 1975.	44
1975, <u>The beautiful blue devil (water hyacinth)</u> , N. D. Vietmeyer, NATURAL HISTORY, 1975.	27
1975, <u>Statement on 2,4,5-T and TCDD</u> , Dost, et. al., Oregon State University, Corvallis, OR, 1975.	19
1976, <u>The relative agronomic and economic viability of alternative weed control systems for small farmers in Northeast Brasil</u> , Myron Shenk and Douglas L. Young, International Plant Protection Center, Oregon State University, Corvallis, OR.	23

Annex 5. WORLDWIDE DISTRIBUTION OF IPPC PAPERS (cont.)

<u>Date written, title, authors, source, date published</u>	<u>Copies Distributed</u>
1976, <u>Herbicides used in and around water for management of aquatic vegetation</u> , JOURNAL OF AQUATIC PLANT MANAGEMENT, Vol. 14, 1976.	29
1976, <u>Residuos de herbicidas en el suelo</u> , Eduardo Locatelli, REVISTA COMALFI, Vol. III, No. 1, 1976.	9
1976, <u>Approaches to weed control in cropping systems</u> , D. L. Plucknett, et. al. 1976 Cropping Systems Symposium of the International Rice Research Institute, Los Banos, Laguna, Philippines.	34
1976, <u>Weed control problems causing major reductions in world food supplies</u> , C. Parker and J. D. Fryer, FAO PLANT PROTECTION BULLETIN, Vol. 23, 3/4, 1975.	25
1976, <u>Problemas que presenta el control de las malezas que causan reducciones importantes en los abastecimientos mundiales de alimentos</u> , C. Parker and J. D. Fryer, FAO BOLETIN FITOSANITARIO, Vol. 23, 3/4, 1975.	3
1976, <u>Lutte contre les mauvaises herbes occasionnant d'importantes reductions des ressources alimentaires mondiales</u> , C. Parker and J. D. Fryer, FAO BULLETIN PHYTOSANITAIRE, Vol. 23, 3/4, 1975.	2
1976, <u>Purple nutsedge: tropical scourge</u> , R. D. William, HORTSCIENCE, Vol. 11, No. 4, 1976.	10
1976, <u>Perdidas ocasionadas por las malezas</u> , Richard L. Chase and Isidro Reyes M., AGRICULTURAL EN EL SALVADOR, Ano 15, No. 2, 1976.	5
1976, <u>Economic consideration affecting alternative weed control methods for developing countries</u> , D. Young and S. Miller, PROCEEDINGS OF THE SIXTH EAST AFRICAN WEED SCIENCE CONFERENCE, Nairobi, Kenya, 1976.	33
1977, <u>Controlled drop application--what does it all mean?</u> G. W. Cussans and W. A. Taylor, ARABLE FARMING, 1978.	30
1977, <u>Selecting appropriate weed control systems for developing countries</u> , Douglas Young, et. al., WEED SCIENCE, Vol. 26, No. 3, 1978.	37
1979, <u>Aquatic plants and their control</u> , Robert C. Hiltibran, WEEDS TODAY, Vol. 10, No. 1, 1979.	27

Annex 5. WORLDWIDE DISTRIBUTION OF IPPC PAPERS (cont.)

<u>Date written, title, authors, source, date published</u>	<u>Copies Distributed</u>
1979, <u>Herbigation: applying herbicides through sprinkler systems</u> , Eugene Heikes, WEEDS TODAY, Vol. 10, No. 1, 1979.	25
1979, <u>Small isn't necessarily beautiful in third world agriculture</u> , George Dion, DEVELOPMENT DIRECTIONS, 1979.	22
1979, <u>So you're going to do a slide show</u> , A. E. Deutsch, International Plant Protection Center, Oregon State University, Corvallis, OR.	28
1980, <u>El combate de malezas en potreros</u> , Myron Shenk, Presentado en curso corto de CATIE, Turrialba, Costa Rica.	6
1980, <u>The next revolution in weed control</u> , R. U. Whedon, AGRICHEMICAL AGE, 1976.	33
1980, <u>Controlling scrubweeds with goats</u> , G. J. Batten, NZ JOURNAL OF AGRICULTURE, 1979.	15
1980, <u>Agriculture research and development in the third world</u> , L. P. Apedaile, AGRICULTURE & FORESTRY BULLETIN, Vol. 3, No. 4, 1980.	28
1980, <u>Appropriate mechanization of agricultural field research to expedite experimentation and enhance technology adoption</u> , A. E. Deutsch and L. C. Burrill, PROCEEDINGS OF THE 5TH IAMFE CONFERENCE, 1980.	17
1980, <u>The biology, control, and utilization of aquatic weeds</u> , L. Holm and R. Yeo, WEEDS TODAY, 1980-81.	33
1981, <u>So you're considering a knapsack sprayer</u> , A. E. Deutsch, International Plant Protection Center, Oregon State University, Corvallis, OR.	28
1981, <u>Hand-held wiping devices for herbicide application</u> , A. S. Cooper, et. al., International Plant Protection Center, Oregon State University, Corvallis, OR.	28
1981, <u>Perspectives and priorities in weed research and control</u> , S. L. Everist, AUSTRALIAN WEEDS, Vol. 1, No. 1.	27
1982, <u>Weed control in integrated crop protection</u> , W. H. Vanden Born, AGRICULTURAL AND FORESTRY BULLETIN, Vol. 5, No. 3, 1982.	41

Annex 5. WORLDWIDE DISTRIBUTION OF IPPC PAPERS (cont.)

<u>Date written, title, authors, source, date published</u>	<u>Copies Distributed</u>
1983, <u>Pesticide packaging: there is room for improvement</u> , Brian Pickering, SHELL AGRICULTURE, 1982.	19
1983, <u>Pest management: the international dimensions of pesticides, labor and trade</u> , B. A. McCarl and S. F. Miller, International Plant Protection Center, Oregon State University, Corvallis, OR.	45
1983, <u>The nature of weed control practice related to its adoption</u> , A. E. Deutsch, CULTURE AND AGRICULTURE, Issue 21, 1983.	29
1984, <u>Biological and other methods of controlling problem aquatic plants</u> , G. E. Allen, et. al., Plant Protection Service, FAO, Rome, Italy.	28
1984, <u>IPM - myths, misconceptions</u> , P. B. Goodell. Reprinted from: AGRIBUSINESS FIELDMAN, August 1984.	25
1985, <u>Apuntes sobre el modo de accion de los herbicidas</u> , Bernal E. Valverde, International Plant Protection Center, Oregon State University, Corvallis, OR.	12
1985, <u>Mexico - U. S. pesticide trade: an economic analysis of the mexican import demand for U. S. pesticides</u> , M. Saremi, International Plant Protection Center, Oregon State University, Corvallis, OR.	3
1986, <u>Parasitic weeds and their control in the Near East</u> , C. Parker and A. K. Wilson. Reprinted from: FAO PLANT PROTECTION BULLETIN, Vol. 34, No. 2, 1986.	13
Total	1,064

Annex 6. SUMMARY OF PRINT MATERIAL DISTRIBUTION: SEPTEMBER 1987

Requestor	Affiliation	Country	Items
R. Attygalle Agric. Officer	Mahaweli Economic Agency	Sri Lanka	4 books; 21 papers
L. Kulatunga Agric. Manager	Agric. Devel. Auth.	Sri Lanka	2 books; information packet
P. McMullan	ND State University	USA	1 book
M. Riffle	OK State University	USA	6 books
Ministry of Forests		Canada	4 books
J. Patterson	WI Sugar Co.	Jamaica	information packet
K. Bhatt	Industrial Consultants	Canada	information packet
O. Avila		Panama	information packet
I. Effiong	Biase Comm. School	Nigeria	6 papers
T. Shima	Ministry of Agric.	Colombia	1 book
J. Thakur	Ministry of Agric.	India	6 papers
J. Epila	Makerere Univeristy	Uganda	7 papers
R. Lizarondo	Regional Crop Pest Center	Philippines	2 books
K. Fageiry	Agric. Research Corp.	Sudan	25 papers
A. Jalloul	Plant Protection & Quaratine Dept.	Lebanon	information packet
W. Tilahun	Plant Protection Section	Ethiopia	information packet
C. Sarfo	Student Agric. College	Ghana	6 books
F. Sinatra	Nyankpala Agricultural College	Ghana	6 books
N. Gworgwor	Univ. of Maiduguri	Nigeria	information packet
L. Labovitch	Shell Limited	United Kingdom	information packet
A. Ebieda		Egypt	23 papers
E. Serra		Panama	7 papers
V. Gomez	Univ. Chile	Chile	4 papers

Annex 6. SUMMARY OF PRINT MATERIAL DISTRIBUTION: SEPTEMBER 1987 (cont.)

Requestor	Affiliation	Country	Items
J. John		Nigeria	information packet
K. Agumeh	Intl. College for Youth	Ghana	7 books
E. Blidner		Argentina	information packet

Information Packet Consists of:

Current issue INFOLETTER
 IPPC Brochure
 IPPC Order Form
 IPPC Papers List
 INFOLETTER Subscription Form

Other Requests Received and Serviced During September, 1987:

- * A project contractor (USAID project) in Indonesia wrote and requested all information that could be provided on hydroseeders and hydro-mulchers--specifications and names of manufacturers. IPPC obtained a catalog and wrote a dozen firms, received material from five, and forwarded a full set of documents.
- * The senior IICA representative in Haiti requested any printed materials (in English, French, Spanish, and Portuguese) that could be provided to replace materials destroyed during civil unrest. IPPC responded with an offer to send a mini-library, plus several collections of technical journals, if IICA, with AID, could arrange shipping.
- * CARE in Costa Rica asked for general crop protection information and data about the PPM Project.
- * The world's leading manufacturer of hand-held spinning disc pesticide application equipment sent a complimentary set of the latest version of the firm's equipment with a request that it be used and feedback be provided to the firm.
- * A lever-operated knapsack sprayer from Spain was received with request that it be evaluated.
- * An Ethiopian weed scientist requested copies of the journal Weed Science for his research station. A nearly complete set of all back issues up through 1985 was provided.
- * A weed scientist in plant physiology from Pakistan requested literature on weed crop competition and experimental design. 25 pages of reports and articles were sent.