
Pest Management and Related Environmental Protection Project

AID Contract: DSAN - C-0252
Project No. 931-0930

submitted to:

**U.S. Agency for International Development
Bureau of Science and Technology
Office of Agriculture**

by:

Consortium for International Crop Protection



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College Park, Maryland 20740
U.S.A.**

Final Technical Report

September 1, 1980 - April 30, 1986

FINAL TECHNICAL REPORT

**PEST MANAGEMENT
AND
RELATED ENVIRONMENTAL PROTECTION PROJECT**

Contract No. AID/DSAN-C-0252
(September 1, 1980 - April 30, 1986)

Submitted to:

**United States Agency for International Development
Bureau of Science and Technology
Office of Agriculture**

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University of Florida
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University of Illinois
University of Maryland
University of Miami, Florida
University of Minnesota
Purdue University
University of Puerto Rico
U.S. Department of Agriculture

FOREWORD

This report summarizes the activities performed by the Consortium for International Crop Protection to fulfill the requirements of the United States Agency for International Development under the "Pest Management and Related Environmental Protection Project" (Contract No. AID/DSAN-C-0252, Project No. 931-0930). The Project was directed by Ray F. Smith from its initiation on September 1, 1980 until December 31, 1985 when Dr. Smith retired. The Project officially ended April 30, 1986, and this report covers activities supported through that date.

The Project successfully met goals of extending the concept of environmentally and socioeconomically sound pest and pesticide management throughout the developing world. The Consortium's member institutions sincerely hope that the activities reported will continue to have a beneficial effect in the future.

Allen L. Steinhauer

Executive Director

EXECUTIVE SUMMARY

For details, see: This is the fifth and final technical report of progress of the "Pest Management and Related Environmental Protection Project" (Contract No. AID/DSAN-C-0252, Project No. 931-0930). Financed by the United States Agency for International Development (AID), the Project was administered in AID by the Agency's Bureau of Science and Technology, Office of Agriculture (AID/S&T/AGR). The Contractor was the Consortium for International Crop Protection (CICP), a non-profit organization composed of 12 U.S. universities, the University of Puerto Rico, and the United States Department of Agriculture. The Project was an outgrowth of two earlier AID/S&T/AGR projects, both entitled "UC/AID Project in Pest Management and Related Environmental Protection" (Contract Nos. csd-3296 and ta-C-1195).

page 2

page 1

page 4

What to Find in Report

The report is divided into the following sections:

page 1

I. INTRODUCTION - Purpose of Project, origin and background, description of CICP.

page 5

II. ORGANIZATION AND COORDINATION - Project management component, staff, subcontractors and consultants, relationship to AID.

page 13

III. ACTIVITIES DURING FINAL REPORTING PERIOD - Technical assistance, training, networking, publications of period October 1, 1984 - April 30, 1986.

page 32

IV. OVERALL PROJECT ACCOMPLISHMENTS - Summary of activities of entire Contract period September 1, 1980 - April 30, 1986.

pages 39-66

In addition, there are five annexes.

Purpose and Implementation

page 1

The Project's purpose was to expand the capabilities of less developed countries (LDC) in the areas of pest and pesticide management through assistance to AID and LDC institutions. The Project provided the AID bureaus, missions, offices, and LDC institutions with diverse pest and pesticide management resources by:

pages 13, 32

- Assisting the Agency develop, implement, and evaluate projects in pest and pesticide management

page 32

- Preparing Initial Environmental Examinations (IEE) and Environmental Assessments (EA) of pesticide use in AID projects as required by Part 216 of Regulation 16 of the Federal Code of Regulations

pages 25, 33

- Developing training programs and educational materials in pest and pesticide management for use in LDCs

pages 13, 32

- Assessing crop pest and pesticide problems in individual LDCs or regions and recommending solutions

page 32

- Advancing safer and more economical use of pesticides in AID projects and LDCs

page 6

The Project activities were implemented by CICIP's Executive Director, Project pest management specialists, subcontractors at the CICIP member institutions, and a diverse group of short-term consultants representing the disciplines of plant pathology, weed science, entomology, nematology, vertebrate pest control, agronomy, plant breeding, economics, social science, epidemiology, pesticide toxicology, chemistry, communications, and others. CICIP's computerized data bank of specialists was used in identifying consultants with specific technical skills, experience, and language capabilities.

page 8

page 13

Activities of Final Reporting Period

Activities of the period October 1, 1984 - April 30, 1986 included:

page 13

Technical Assistance: Short-term (1-4 weeks) professional consultant support services, requested by AID or LDC host countries, were provided to the following countries: Burkina Faso, The Gambia, Niger, Mali, Senegal, Guinea Bissau, Rwanda, Nigeria, Ivory Coast, Bolivia, Dominican Republic, Peru, Ecuador, Belize, and Burma. Project staff and consultants provided a range of technical services in-country, including pest and pesticide assessments, project development and evaluation, and preparation of EAs. Some assignments in a country were carried out by an individual Project specialist. Others were performed by several Project specialists working as a team.

page 31 In addition, CICP's Regional Pest Management Specialist for Central America, stationed at AID's Regional Office for Central American Programs (ROCAP) in San Jose, Costa Rica, provided assistance to ROCAP, AID missions in the ROCAP region, and Central American national institutions on a continuing basis.

page 23 The Project also provided technical backstopping for AID/S&T/AGR on a continuing basis.

page 25 Training: Project staff, subcontractors, and consultants participated in, and/or helped to organize, a range of conferences and short courses. They served as major resources at international conferences in Costa Rica, Niger, and Thailand; represented the Project at an international conference in Malaysia; co-sponsored a pesticide legislation workshop for West Africa; and served as lecturers and resource backups in courses in pest and pesticide management in Ecuador, Kenya, and Peru. In addition, they took the lead in organizing a major workshop on pesticide management and IPM implementation in Southeast Asia which will be held in Bangkok, Thailand, in February 1987.

page 27 The University of Miami's (Florida) program in analytical training and quality control in pesticide residue analysis continued to attract chemists and public health workers from

a range of LDCs. Seven trainees from five LDCs participated in two 3-month courses held at Miami during the reporting period.

page 28

The University of Florida, through an agreement with CICP, completed a series of computer-based training modules in pest and pesticide management. Available in both English and Spanish, the training modules include software for use in a microcomputer with companion 35mm slide sets that illustrate pests, pest damage, and pest management techniques.

page 29

In April 1986, a panel representing AID, universities, private industry, environmental groups, communication specialists, and CICP reviewed the pesticide training modules developed under the Project and recommended ways to increase their effectiveness and to make them more widely available.

pages 29, 66

Networking: The Project continued to cooperate with a large number of national and international organizations through co-sponsorship of training programs, technical consultations, and information exchanges. The Project sponsored two international trips during the period specifically to follow up prior collaborations. A variety of donor agencies were visited in Europe, Africa, and Central and South America.

page 30

page 30

Publications: The Project developed, published, and revised a number of written documents and training manuals during the period. These have been made available to a large number of development, educational, and research organizations in the LDCs.

page 32

Overall Project Accomplishments

page 39

The overall Project accomplishments, summarized in part IV and the annexes, illustrate the wide dimension of services and programs that the Project made available to AID and AID countries. Annex 1 summarizes overseas activities performed by Project staff, subcontractors, and consultants during the Contract period. By combining expertise in pest and pesticide management of CICP institutions into a single coordinated effort, the collective resources of all the institutions were brought to bear on broader pest and pesticide problems in the LDCs, as well as specific problems in any one LDC. CICP is the only multi-institutional interdisciplinary consortium in the United States devoted entirely to international pest and pesticide management and represents a unique capability of the U.S. Land Grant System.

page 32

Technical Assistance: From September 1, 1980 to April 30, 1986, the Project provided technical assistance to more than 45 AID missions representing all the AID geographical bureaus. The diversity in this assistance can be seen in

Annex 2. Assistance was provided to a number of the AID missions and offices on a continuing basis. A substantial portion of the technical assistance related to AID's Regulation 16 requirement for pesticide risk-benefit assessments. Project staff and consultants, in fact, have been the primary developers of IEEs and EAs for pesticide use in AID since the Regulation went into effect in 1978. They performed the risk-benefit assessments and prepared the required documents for some 50 IEEs and EAs.

However, Project personnel provided many other kinds of technical assistance in AID countries. They participated in numerous AID-project design assignments. In 1984, an interdisciplinary Project team of eight designed all aspects of the ROCAP regional Integrated Pest Management Project in Central America. The Project assisted some 20 additional AID missions and offices to develop IPM projects and has been a major catalyst behind IPM development in LDCs.

Training: Lack of well-trained personnel constitutes a major obstacle to implementing effective pest and pesticide management and environmental protection in LDCs. Therefore, training geared for various audiences in those countries (extension workers, research technicians, health officials, government regulators, pest control operations personnel, and others) was a high priority of the Project.

Annex 3 summarizes Project participation in short courses, seminars, workshops, and other training during the Contract period. These non-credit training activities were conducted collaboratively with LDC institutions, donor agencies, and other organizations. Some focused on regional problems and addressed needs of trainees from more than one country. For example, trainees from 16 Caribbean countries participated in the Seminar and Workshop on Pest and Pesticide Management in the Caribbean held in Barbados, November 3-7, 1980. Other training activities focused on specific countries. The Project short courses, seminars, and workshops were conducted in English, Spanish, and French.

A popular Project training activity has been the University of Miami's (UMI) program in agromedicine and pesticide residue and formulation analysis. UMI has helped LDCs develop their capability to analyze pesticide residues in the environment, human tissues, and foodstuffs. Chemists and health workers from AID-assisted countries have taken a 6-week, intensive course in pesticide residue analysis at UMI. Back home, they have participated in an international quality control program, submitting their analysis of specially prepared "unknown" samples to UMI, which has informed them how well they scored in identifying the quantity, number, and chemical composition of residues. The course has been successful in upgrading LDC capacity to develop effective pesticide analysis programs suited for their particular needs.

page 62

Publications: Proceedings of the seminars, workshops, and short courses and other Project publications have been disseminated widely and used by CIGP universities and LDC educational and training institutions in numerous training efforts. The Project publications, which included a number of "train-the-trainer" manuals, are listed in Annex 4.

The 1982 book, Agromedical Approach to Pesticide Management - Some Health and Environmental Considerations, edited by UMI's John E. Davies and others and sponsored by the Project, is the "classic" in this field. Available in either English or Spanish, it is known worldwide and has been used in a variety of training efforts by many organizations.

page 37

Networking: Through collaborative efforts in training, conference planning and participation, technical assistance, and information exchange, the Project established a large number of linkages with national and international

page 66

organizations, as shown in Annex 5. The collaborative efforts have contributed in reducing duplication of efforts of the donor agencies and increasing the overall effort and information flow in pest and pesticide management in LDCs.

In summary, by pooling resources and technical competencies of the CIGP member institutions through central AID/S&T/AGR funding, the Project has provided AID and institutions in AID countries with a rich resource in pest and pesticide management and environmental protection.

TABLE OF CONTENTS

	<u>Page</u>
FOREWORD	i
EXECUTIVE SUMMARY	ii
TABLE OF CONTENTS	xii
ACRONYMS	xiv
I. INTRODUCTION	1
A. Purpose of Project	1
B. Origin and Background	1
C. About the Contractor	2
D. What to Find in Report	4
II. ORGANIZATION AND COORDINATION	5
A. Organization	5
B. Project Staff	6
C. Subcontractors and Consultants	8
D. AID Contacts	11
E. Contract Amendments and Modifications	11
F. Sequel to Project	12
III. ACTIVITIES DURING FINAL REPORTING PERIOD (October 1, 1984 - April 30, 1986)	13
A. Technical Assistance	13
1. Assistance in LDCs	13
2. Technical Backstopping for AID/S&T/AGR	23
B. Training	25
1. International Conferences and Short Courses	25
2. Conference Planning	25
3. Analytical Training and Quality Control in Pesticide Residue Analysis	27
4. Development of Training Materials	28
C. Networking	29
D. Publications	30
E. Regional Pest Management Specialist Activities	31
IV. OVERALL PROJECT ACCOMPLISHMENTS	32
A. Technical Assistance	32
B. Training	33
C. Publications/Training Aids	36
D. Networking	37
E. Accumulation of Resources	37

ANNEXES

1. Summary of Overseas Activities of Project Staff, Subcontractors, and Consultants During Contract Period	39
2. Summary of Project Assistance to AID Missions and Offices	56
3. Summary of Training Activities Sponsored by Project	59
4. Publications Developed During Project Contract Period	62
5. Project Linkages with International and LDC Institutions	66

ACRONYMS

ADO	Agricultural Development Officer (AID)
AID	United States Agency for International Development
AID/S&T/AGR	AID's Bureau of Science and Technology, Office of Agriculture
APROCICO	Asociacion de Productores de Ciclo Corto de Quevedo
ARS	Agricultural Research Service (USDA)
BARC	Bangladesh Agricultural Research Council
CAB	Commonwealth Agricultural Bureaux
CARDI	Caribbean Agricultural Research and Development Institute
CARICOM	Caribbean Community
CATCO	Caribbean Agricultural Training Company
CATIE	Centro Agronomico Tropical de Investigacion y Ensenanza
CIBC	Commonwealth Institute of Biological Control
CICP	Consortium for International Crop Protection
CID	Consortium for International Development
CIES	Centro de Investigaciones Ecologicas del Sureste
CILSS	Comite Interetats de Lutte Contre la Secheresse au Sahel
CIP	Commodity Import Program (AID)
CSIRO	Commonwealth Scientific and Industrial Research Organization
EA	Environmental Assessment
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuaria
FAO	Food and Agriculture Organization of the United Nations
GTZ	German Agency for Technical Cooperation
IADS	International Agricultural Development Service
IARC	International Agricultural Research Center
ICIPE	International Centre for Insect Physiology and Ecology
ICRISAT	International Crops Research Institute for Semi-Arid Tropics
ICTA	Instituto Ciencias y Tecnologia Agricola
IDRC	International Development Research Center (Canada)
IEE	Initial Environmental Examination
IICA	Instituto Interamericano de Cooperacion para la Agricultural
IITA	International Institute of Tropical Agriculture
INTSOY	International Soybean Program
IOBC	International Organization of Biological Control
IPM	Integrated pest management
IPPC	International Plant Protection Center
IRRI	International Rice Research Institute
JAMA	Jamaica Agromedical Association
LDC	Less Developed Country
MACA	Ministerio de Asuntos Campesinos y Agropecuarios
MAG	Ministry of Agriculture
MARDI	Malaysian Agricultural Research and Development Institute
NAL	National Agricultural Library (USDA)
NAS	National Academy of Sciences
NCPC	National Crop Protection Center (Philippines)
OAS	Organization of American States
OAU	Organization of African Unity
OFDA	AID's Office of Foreign Disaster Relief
PAHO	Pan American Health Organization
PID	Project Identification Document
PMPP	Perception and Management of Pests and Pesticides
PMU	Pest Management Unit (Grenada)

PP	Project Paper
PVO	Private Voluntary Organization
REDSO-EA	AID's Regional Office for Economic Development Services Organization/East-South Africa
REDSO-WA	AID's Regional Office for Economic Development Services Organization/West Africa
RFCP	Regional Food Crop Protection (Project)
RMPS	Regional Pest Management Specialist, Central America
ROCAP	AID's Regional Office for Central American Programs
SAFGRAD	Semi-Arid Food Grain Research and Development
SCPM	Silwood Centre for Pest Management
SPC	South Pacific Commission
SPRDO	AID's South Pacific Regional Development Office
TAMU/Ext.	Texas A&M University, Texas Agricultural Extension Service
UC	University of California
UCB	University of California at Berkeley
UHI	University of Hawaii at Manona
UI	University of Illinois at Urbana/Champaign
UMCP	University of Maryland at College Park
UMI	University of Miami
UNA	Universidad Nacional de Agricultura (Peru)
UNEP	United Nations Environment Programme
U.S.	United States
USAID	United States Agency for International Development (used in reference to a particular AID mission or office)
USDA	U.S. Department of Agriculture
UWI	University of The West Indies
WARDA	West Africa Rice Development Association
WINBAN	Windward Islands Banana Growers Association

I. INTRODUCTION

A. Purpose of Project

This is the fifth and final technical report of progress of the "Pest Management and Related Environmental Protection Project" (Contract No. AID/DSAN-C-0252, Project No. 931-0930). Financed by the United States Agency for International Development's (AID) Office of Agriculture in the Agency's Bureau of Science and Technology (AID/S&T/AGR), the Project was initiated September 1, 1980 and completed April 30, 1986. The AID Contractor was the Consortium for International Crop Protection (CICP).

The Project's purpose was to expand the capabilities of less developed countries (LDC) in the areas of pest and pesticide management through assistance to AID and LDC institutions.

B. Origin and Background

In 1970 a special committee of the National Academy of Science (NAS) reviewed AID's policy on procuring pesticides and the Agency's program in pest management in LDCs. On the basis of the review, the NAS committee made recommendations which led to formation of the "UC/AID Pest Management and Related Environmental Protection Project." On June 30, 1971, The Regents of the University of California (UC) signed a contract (csd-3296) with AID in which the University agreed to provide technical assistance in pesticides and pest management to LDCs. Headquartered at the University of California at Berkeley (UCB), the new project was a cooperative effort between AID and several U.S. universities, with participation of U.S. Department of Agriculture (USDA) in an advisory capacity. The universities were the University of California, University of Florida, Cornell University, North Carolina State University, Oregon State University, and the University of

Miami (UMI) in Florida. UCB was responsible for coordination and management of the Project.

The original contract expired February 28, 1975, and a second contract (ta-C-1195) remained in force until the current Project commenced on September 1, 1980.

C. About the Contractor

The Consortium for International Crop Protection is an outgrowth of the earlier UC/AID Pest Management and Related Environmental Protection Projects. Universities participating in the Project established CICP in August 1978 as a separate non-profit corporation. Additional universities and USDA later joined CICP. Present members of CICP are:

- University of California
- Cornell University
- University of Florida
- University of Hawaii at Manoa
- University of Illinois
- University of Maryland
- University of Miami (Florida) School of Medicine
- University of Minnesota
- North Carolina State University
- Oregon State University
- University of Puerto Rico
- Purdue University
- Texas A & M University
- United States Department of Agriculture.

Ray F. Smith, Professor Emeritus at the University of California at Berkeley and founding Director of the original UC/AID Project, served as CICP's Executive Director from the organization's inception in 1978 until August 31, 1985. On September 1, 1985, Allen L. Steinhauer, Professor and Chairman, Department of Entomology, University of Maryland at College Park, became the new and current Executive Director. The Deputy Executive Director is Stanley F. Miller, Professor of Agricultural and Resource Economics and Director of the International Plant Protection Center (IPPC), Oregon State University. David E. Schlegel, Professor of Plant Pathology, University of California at Berkeley, served as Chairman of the Board of Directors from 1978 when CICP was founded until August 31, 1985. H. David Thurston, Professor of Plant Pathology, Cornell University, is presently Chairman of the Board.

CICP's basic goal is to advance environmentally and socioeconomically sound crop protection in less developed countries. The specific objectives are to:

- Increase understanding of crop protection
- Develop training programs and educational materials in crop protection and pesticide management
- Design, implement, and evaluate crop protection programs
- Promote development and implementation of integrated pest management (IPM)
- Survey crop protection needs and problems
- Advance the agromedical approach to safe use and management of pesticides
- Conduct and supervise research in crop protection and pesticide management.

CICP operates under the guidance of a 14-member Board of Directors, each of whom represents a member institution. This body determines general policy, sets priorities, and approves programs.

CICP's main office, subcontractors, and member institutions are linked with numerous LDC and international organizations that engage in pest and pesticide management in the LDCs. A variety of approaches has been taken to establish linkages (see page 37).

The Consortium qualifies for tax-exempt status under Section 501(c)(3) of the Internal Revenue Code. It has been funded primarily by task-specific, cost-reimbursement agreements with AID.

D. What to Find in Report

Part II (page 5) describes the Project's organization and coordination; Part III (page 13) describes previously unreported activities, supported during the final reporting period of October 1, 1984 - April 30, 1986; and Part IV (page 32) summarizes overall accomplishments during the entire Contract period. In addition, there are five annexes (pages 39-66).

II. ORGANIZATION AND COORDINATION

A. Organization

CICP served as implementing agent and Contractor for the Project. The CICP headquarters administered and coordinated technical project activities and performed tasks required to comply with terms and obligations set forth in the Contract. Major responsibilities of CICP headquarters included:

- Maintaining liaison with AID/S&T/AGR
- Maintaining liaison with AID Contract Officer
- Managing subcontracts with participating member institutions and consultants
- Providing technical assistance for AID missions, offices, and bureaus for short- and long-term assignments in project design, resource support, technical documentation, IPM development, linkages with national research institutions, and preparation of Initial Environmental Examinations (IEE) and Environmental Assessments (EA) (Regulation 16 requirements)
- Organizing seminars, workshops, short courses, and other training
- Maintaining liaison with other donors and international organizations for the purpose of collaborative efforts in pest and pesticide management and environmental protection
- Contributing to the overall networking responsibility of the Project
- Providing information through publications and other channels
- Maintaining the CICP library
- Assuring timely reporting to AID Project Manager
- Engaging consultants
- Arranging travel for Project personnel and consultants.

CICP's structure for the purpose of implementing the Project activities is illustrated in Figure

B. Project Staff

The Consortium does not employ direct hire staff. Rather, its regular personnel are employed through contractual arrangements with member institutions or collaborators. For the Project, the Executive Director and staff at CICP headquarters were subcontracted through the Department of Entomological Sciences, University of California at Berkeley. The headquarters technical staff included three full-time Pest Management Specialists for the periods indicated:

- Donald J. Calvert, Ph.D. (September 1980 - August 1985)
- Patricia C. Matteson, Ph.D. (March 1981 - March 1984)
- Dale G. Bottrell, Ph.D. (September 1980 - March 1984).

In addition, CICP posted the following long-term Pest Management Specialists in LDCs during the periods indicated:

- Eduardo E. Trujillo, Ph.D. (September 1980 - September 1982). Regional Pest Management Specialist (RPMS) for Central America, stationed in Guatemala City
- Angel A. Chiri, Ph.D. (September 1982 - April 1986). Regional Pest Management Specialist for Central America, stationed in Guatemala City until 1985, then transferred to San Jose
- Travis R. Everett, Ph.D. (October 1981 - March 1983). Stationed in Philippines
- John A. Jackman, Ph.D. (March 1982 - August 1983). Stationed in Philippines.

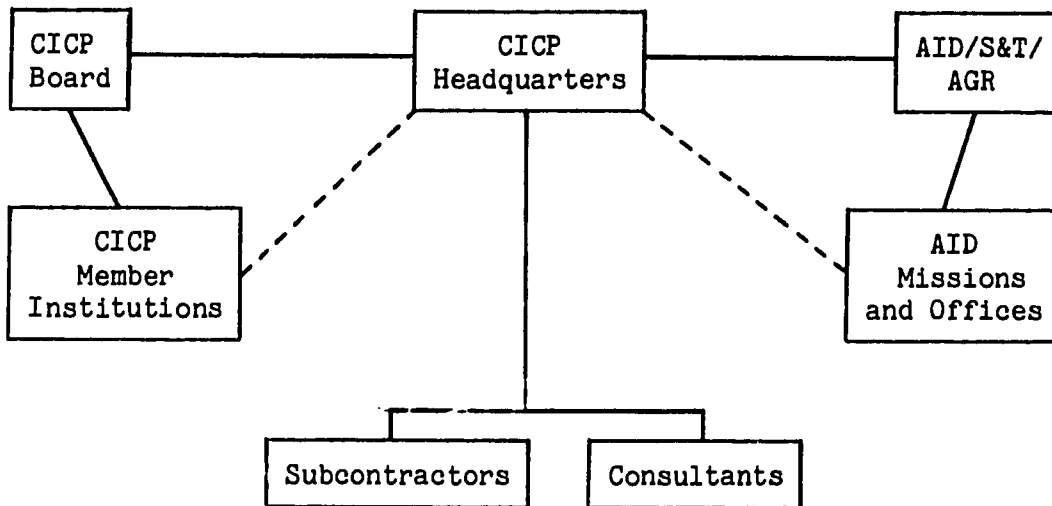


Figure 1
Organizational Structure of CICP to Implement Project

C. Subcontractors and Consultants

To secure the diverse administrative and technical services required to manage and implement Project activities, CIGP entered into a number of subcontracts with its member institutions and other organizations (Table 1). The subcontracts allowed CIGP to reimburse the institutions for costs of the services at a federally-negotiated overhead rate. All of the subcontractors were approved by AID/S&T/AGR prior to development of the subcontracts.

Funds for the RPMS' services in Central America were provided by AID's Bureau for Latin America and the Caribbean, independent of Project funds provided by AID/S&T/AGR. Funds for the services of the specialists in the Philippines were provided by AID's Bureau for Asia and the Near East.

Project staff and subcontractors provided the bulk of the technical assistance and training. In addition, CIGP utilized an array of short-term consultants to perform specific tasks in pest and pesticide management, agromedicine, economics, and other social sciences, etc. As a general policy, these individuals were selected from CIGP member institutions where their experience, background, and language capabilities were conducive to successful implementation of the Project. All consultants were approved by AID/S&T/AGR prior to recruitment.

CIGP maintains a computerized bank of prospective consultants which was utilized during the Project. The system denotes an individual's area of expertise, language capability, and familiarity with a given crop, pest or pest complex, geographical region, etc. It assists in the identification of specialists with specific skills and experience and allows CIGP to respond quickly to organizations requesting specialists to carry out specific short- or long-term assignments.

Table 1
Subcontractors During Project Contract Period

Organization	Services Provided	Dates
WARDA	Conducted regional rice IPM course and developed proceedings, in Liberia	Jan. - July 1982
TAMU/Ext.	Developed Trainers' Manual "Pesticide Applicators Training Program - Latin America"	July 1981 - Dec. 1982
TAMU/Ext.	*Provided John Jackman's long-term services in Philippines to develop pest monitoring/forecasting program at NCPC	Mar. 1982 - Sept. 1983
UI	Provided Michael Irwin's services to develop IPM program in Peru	June - July 1982
UMCP	Produced video cassette training tapes on IPM, CICP, and AID pest and pesticide management policies	Apr. 1981 - June 1983
PAHO	Conducted workshop on training-the-trainer in agromedicine in Trinidad and Tobago and produced Spanish version of materials used in training	July 1982 - Dec. 1984
SPC	Conducted South Pacific regional course in plant protection (and developed proceedings)	Oct. - Dec. 1982
UMI	Provided technical assistance, training, networking, and research in pesticide residue and formulation analysis and agromedicine	Sept. 1980 - Sept. 1985
UCB	*Provided Travis R. Everett's long-term services in Philippines to develop crop protection program at NCPC	Oct. 1981 - Sept. 1983
UCB	*Provided long-term services of RPMS in Central America	Sept. 1980 - Jan. 1986
UCB	CICP's management component	Sept. 1980 - Apr. 1986
UHI	*Provided services of Eduardo E. Trujillo in Central America	Sept. 1980 - Sept. 1982

(Continued)

Table 1 (Continued)

Organization	Services Provided	Dates
CARDI	Organized pest and pesticide management seminar/workshop in Barbados and produced proceedings	Aug. 1980 - May 1981
CARDI	Conducted train-the-trainer certification program in Jamaica	May - June 1981
TAMU/Ext.	*Provided services of Jose Amador to participate in plant disease diagnostic workshop in Honduras	Nov. - Dec. 1981
UWI	Conducted short courses in agricultural insect pest and disease management in Trinidad	July - Sept. 1981
John E. Davies	Developed manual on agromedical approach to pesticide management	Nov. 1980 - Sept. 1982

*Services provided under funding from sources other than
Contract No. AID/DSAN-C-0252.

Specialists in the CICP computer registry in June 1985 were:

<u>Discipline</u>	<u>Number</u>
Entomology	247
Plant Pathology	203
Plant Breeding	71
Weed Science	65
Horticulture	56
Nematology	45
Soil Science	37
Agricultural Economics	27
Other	<u>38</u>
Total	789

Services of the consultants were generally secured through a consulting agreement directly with the specialist. In a few instances, the services were arranged through a subcontract with the consultant's CICP-member institution.

D. AID Contacts

All Project activities were implemented in consultation with the Project Manager in AID/S&T/AGR and the appropriate AID bureaus and missions or offices. Some of the work in the LDCs was facilitated through a "buy in" arrangement. In such cases, the AID mission or office requesting the CICP services bought into Project activities through AID's Project Implementation Order/Technical Services.

AID/S&T/AGR regularly monitored Project activities and, in addition, commissioned two formal technical Project reviews, carried out by outside reviewers during the Contract period. The reviews (March 1983 and June 1985) were administered by the National Science Foundation.

E. Contract Amendments and Modifications

The effective date of the Contract was September 1, 1980. The original estimated completion date of work was August 31, 1985. However, the Contract

was amended to extend the completion to April 30, 1986. The extension, with no new funds obligated, was authorized to allow the Contractor to complete administrative tasks required in phasing out activities undertaken pursuant to the Contract.

F. Sequel to Project

On October 1, 1985, CICIP was awarded a new 5-year AID/S&T/AGR Contract, "Integrated Pest Management and Related Environmental Protection" (Contract No. AID/DAN-4142-C-00-5122-00), for services in pest and pesticide management.

Managed by CICIP, the new AID Project launched under this Contract is being implemented by five subcontractors (International Plant Protection Center at Oregon State University, University of Miami (Florida), University of Minnesota, University of California at Berkeley, and University of Maryland) in collaboration with other CICIP member institutions.

III. ACTIVITIES DURING FINAL REPORTING PERIOD (October 1, 1984 - April 30, 1986)

Part III describes Project activities of the final reporting period, October 1, 1984 - April 30, 1986. Activities of the four previous reporting periods (October 1-September 30 of 1980-81, 1981-82, 1982-83, and 1983-84) were described in the annual reports listed in Annex 4 (page 62).

A. Technical Assistance

Here, technical assistance means to provide professional consultant support services (short- or long-term), as requested by the AID missions, offices, or bureaus or LDC institutions. Technical assistance activities during the reporting period were as follows:

1. Assistance in LDCs¹

SAHEL (October 19-November 15, 1984): The purpose of the assignment was to assist AID's Bureau of Africa conduct a mid-term evaluation of the CILSS² IPM Project and a final evaluation of the Regional Food Crop Protection (RFCP) Project. CFCP consultants George Cavin (Crop Protection Specialist), Ted Herbert (Plant Pathologist), J. Donald Paschke (Entomologist), P. John Terry (Weed Scientist), and Robert Wesselmann (Agricultural Extension Specialist) participated in the evaluation. The CFCP consultants visited Mali, Burkina Faso, Paris (France), The Gambia, Niger, and Senegal during the evaluation. The evaluation team included, in addition to the five CFCP consultants, Team Leader/Institutional Analyst Janet C. Tuthill, Agricultural Economist Emmy Simmons, and Project Development Specialist Keith Simmons.

¹Complete reports of the assistance summarized here were earlier submitted to AID/S&T/AGR

²Comite Interetats de Lutte Contre la Secheresse au Sahel

The evaluation focused on the CILSS IPM Project initiated in 1978 and amended in 1983 and the RFCP Project Phase II initiated in 1979 following completion of Phase I (authorized in 1975). At the time of evaluation, the CILSS IPM Project was active in the eight Sahelian countries (Chad, Niger, Mali, Burkina Faso, Mauritania, Senegal, The Gambia, and Cape Verde) and the RFCP Project Phase II was active in Cape Verde, Senegal, The Gambia, and Mali. The RFCP Project had previously included, in addition to Phase II countries, Guinea Bissau, Chad, and Cameroon.

Funded by AID, managed by CILSS, and implemented by FAO technical specialists, the CILSS IPM Project was supposed to have generated IPM methodology to be fed into the RFCP Project. In turn, the RFCP Project was to have extended the IPM methodology to national extension and crop protection services in the region.

The evaluation team's conclusions and recommendations were formulated in a 115-page (plus annexes) report dated December 1984. They concluded that the RFCP Project had unrealistically depended on the CILSS IPM Project to develop IPM "packages" for extension to the crop protection services. At the time of evaluation, the CILSS IPM Project had not developed one IPM package. The team reported that pesticides in the Sahel are either provided gratis by donors, or sold at subsidized prices, enabling national governments to provide them free, or at nominal rates, to the farmers. They recommended that until the host countries have enacted appropriate pesticide legislation (currently not in place), provided proper controls, reduced or eliminated the pesticides, and made extendable IPM packages available, AID should not provide additional support to Sahelian crop protection services per se. They recommended instead that future AID assistance (via a bilateral basis) be directed at correcting these fundamental problems. They also recommended a follow-on modified

regional project in IPM so as to preserve progress to date and to ensure continuation of an IPM network system.

BOLIVIA (January 13-February 2, 1985): The purpose of the assignment of CICP consultant Jerome Dimitman was to assist USAID/Bolivia in developing a program in pesticide management, IPM research, and radio-based pesticide safety. Agnes Kiss of AID/S&T/AGR accompanied Dimitman to Bolivia and assisted in all aspects of the assignment.

The request for assistance resulted from a waiver signed by AID Administrator Peter McPherson (December 15, 1984) which authorized USAID/Bolivia to procure pesticides through a type of commodity import program under the Bolivia Disaster Recovery Project. The waiver mandated that pesticide management, IPM research, and a radio-based extension program be initiated simultaneously. Dimitman and Kiss assisted in implementing the waiver's mandate.

They outlined a comprehensive pesticide distribution and use monitoring program that emphasized these elements:

- Selection of specific, relatively low-toxicity pesticides
- Importation and distribution only through approved commercial firms and farmers' associations which meet minimum requirements and agree to specific pricing, distribution, and packaging constraints
- Technical and financial assistance to research and extension specialists associated with the IPM program
- Implementation of a pesticide management training course for pesticide users and handlers
- Implementation of a pesticide safety media-extension program directed at farmers.

Their IPM research recommendations emphasized cultural pest control methods coupled with judicious use of pesticides and focused on potato in the

Altiplano of Bolivia and tomato in the Yungas region. For the radio-based extension program, they recommended that USAID collaborate with the United States Information Service in implementing a pesticide safety campaign. Their report included an assessment of the Government of Bolivia's pesticide regulatory capability. Largely because of severe economic constraints, both pesticide enforcement and extension activities were at a minimum.

DOMINICAN REPUBLIC (February 3-14, 1985): The purpose of this assignment by CACP consultant Silverio Medina was to develop recommendations for use of pesticides in the AID-financed Satellite Vegetable Farming Project in the Dominican Republic's Azua Valley. The Project emphasized increased production of melons and cucumbers. Medina's report identified specific pesticides for use, based on guidelines set forth in AID's Regulation 16, Part 216 (see page 32), appropriate application procedures, and steps for encouraging IPM.

GUINEA BISSAU (February 21-March 15, 1985): The purpose of this assignment carried out by Roger Williams, CACP consultant, was to conduct the final evaluation of the RFCP Project Phase II (see Sahel, page 13) component in Guinea Bissau. Williams visited two of the four agricultural districts in Guinea Bissau and a number of sites near the capital city, Bissau, as well. A Project Development Officer of AID's Regional Office for Economic Development Service in West Africa (REDSO-WA), USAID/Bissau personnel, and Guinea Bissau's Ministry for Rural Development personnel accompanied Williams. As part of the evaluation, Williams also traveled to Abidjan (Ivory Coast) and Dakar (Senegal) to meet REDSO-WA and RFCP Project regional personnel.

Williams reported considerable progress in IPM. Field scouts from local villages were working with farmers and making weekly reports of pest infestations. Williams concluded that the infrastructure for extending IPM to subsistence farmers was in place. The training courses for scouts and supervisors were well structured, and the cadre of university-trained crop protection specialists was being increased. Progress with the RFCP Project Phase II component in Guinea Bissau appeared to be very good.

RWANDA (March 19-29, 1985): The purpose of CICP consultant Brian S. Hursey's assignment in Rwanda was to assess the problem of trypanosomiasis, a disease in cattle caused by flagellate protozoans (genus Trypanosoma) transmitted by tsetse flies (Glossina spp.), in the Nasho Resettlement Scheme and to advise on tsetse fly management. The objective of the Nasho Project, being implemented by Africare, is to resettle and upgrade the lives of some new 7,000 Ugandan refugee immigrants. The refugees are being maintained by the United Nations High Commission for Refugees. Since the Ugandan refugees are essentially cattle herders by tradition, the Nasho effort, to be effective, must give proper emphasis to cattle care and management of the problem with trypanosomiasis.

Hursey's report outlined procedures and resources required for launching an integrated disease and tsetse fly management program which would incorporate the following elements: a prophylactic treatment to cattle with the drug Isometamidium Chloride, inoculation with a sanative dose of a curative drug (Diminazene aceturate), and tsetse fly traps baited with known chemical attractants (octenol and acetone) and impregnated with an insecticide (deltamethrin). Area-wide use of insecticides applied by air or ground was not recommended because of the costs, potential problem of water contamination, and limitations in efficacy.

ECUADOR (June 1-6, 1985; April 20-26, 1986): CICP consultant Michael E. Irwin made two trips to Ecuador to review the Integrated Crop Protection Project of the Ecuadorian Commission on Integrated Crop Protection; to review the APROCICO³ pest management; and to suggest procedures for making public research and extension programs more responsive to private sector needs.

The Commission, formed in May 1984, serves as a catalyst in stimulating interest and action in pest and pesticide management by sponsoring seminars, intensive short courses, educational pamphlets, etc. According to Irwin's reports, the Commission has made considerable progress and is an important element in future Ecuadorian pest/pesticide management efforts. However, it is currently hindered by government bureaucracy. Irwin recommended a number of steps to be taken to increase the Commission's effectiveness.

APROCICO is a growers' association. One of its initiatives has involved a USAID/Ecuador-financed project to reduce insecticide use in maize for control of the sugar cane borer (Diatrea saccharalis). During his first trip to Ecuador, Irwin suggested that APROCICO launch an IPM program through the USAID/Ecuador-University of Florida Rural Technology Transfer System Project. APROCICO carried forth with that suggestion, and one of the objectives of Irwin's second trip was to follow up with progress and offer further advice. His second trip report included a number of suggestions for the IPM initiative and for linking APROCICO with appropriate research and extension programs in Ecuador.

³APROCICO-Asociacion de Productores de Ciclo Corto de Quevado

BELIZE (July 1-15, 1985): The purpose of the assignment, carried out by CICP consultant George A. Schaefers, was to assist in developing an Environmental Assessment of pesticides for use in Belize's Commercialization of Alternative Crops Project. Agnes Kiss of AID/S&T/AGR also participated in the assignment in Belize and contributed in writing the EA. The AID-financed project is aimed at developing alternative agricultural products for export and also for import substitutions. It will focus on three areas: (1) export crops such as vegetables, fruits, spices, foliage plants, and tropical flowers; (2) import substitution crops (e.g., soybean, sesame, sunflowers, cabbage, and onion); and (3) enhancement of traditional crops such as maize, rice, and red kidney beans. The USAID project personnel requested pesticides for use on the crops.

To mitigate the potentially adverse effects, the EA restricted the pesticide recommendations to those materials registered by the U.S. Environmental Protection Agency in the Agency's "general use" category. Further, it stressed need for educational and training programs to increase the farmers' capacity for proper and safe use of the pesticides.

BURKINA FASO and NIGERIA (July 30-August 15, 1985): The purpose of the assignment, carried out by CICP consultant George A. Schaefers, was to prepare an EA for Phase II of the regional Semi-Arid Food Grain Research and Development Project (SAFGRAD). The Project attempts to coordinate research and technology directed toward major food crops (sorghum, maize, millet, and cowpea) in 26 sub-Saharan African countries. Current AID funding (for Phase I) extends through March 31, 1987. The sequel Phase II project, which was being developed at the time of Schaefers' assignment, will use pesticides for off-station validation and demonstrations. Schaefers' EA proposed specific pesticides and actions necessary to minimize their adverse effects.

Schaefers did most of the work in Burkina Faso where SAFGRAD is headquartered. However, he also traveled to Nigeria to consult with SAFGRAD personnel or collaborators at the International Institute of Tropical Agriculture (IITA), Grain Legume Improvement Program, and AID.

Schaefers' report stated that the Project may not be able to ensure careful monitoring of pesticide use in trials scattered over SAFGRAD's 26-country region. As an alternative measure, Schaefers recommended a training program in pesticide management which would be carried out by SAFGRAD's Accelerated Crop Production Officers.

BURMA (August 15-September 15, 1985): The purpose of CICP consultant C. Richard Edwards' assignment in Burma was to develop an EA for the USAID-financed Burma Agriculture Production Project. The Project is emphasizing increased production of oilseed crops (peanuts, sesame, and sunflower). Edwards reviewed the pest situation in these crops, identified pesticides suitable for use in the Project, and outlined a comprehensive program in pest monitoring, pesticide management, technical assistance, and research and demonstrations.

Edwards' report points up the significance of pests that infest oilseed crops in Burma. Rats alone probably reduce peanut production by more than 20 percent. Leaf spot, caused by Cercospora spp., can reduce peanut production 40 percent in high rainfall areas. Weeds can result in 30-40 percent crop reduction. A number of other serious preharvest and postharvest pests affect peanuts and the other oilseed crops.

BOLIVIA (March 24-April 12, 1986): The purpose of CICP consultant Ben E. Lockhart's visit to Bolivia was to assist in survey and detection of

potato and tomato diseases, advise on computer-based prediction of potato late blight, and review progress of and provide orientation to personnel working in IPM. Field work was carried out in the Cochabamba area in central Bolivia. Lockhart's assignment included a presentation of one lecture to faculty and students at San Simon University and two lectures at the Faculty of Agriculture of the University of Bolivia in La Paz.

Lockhart's report showed that late blight (caused by Phytophthora infestans) and early blight (caused by Alternaria solani) were the two most widespread and damaging foliar diseases of potato. Virus infection was observed in all potato fields but was not uniform in distribution. Virus infection was the most frequent and damaging disease symptom on tomatoes. For some fields, up to 30 percent of the plants exhibited symptoms.

He reported that continued chemical control will be necessary for dealing with potato blight in the short run. Selection of blight-resistant potato cultivars was cited as a desirable long-term option. He pointed out the limitations of using a computer-based potato blight forecasting system in Bolivia. For tomato diseases, he outlined an integrated management system based on culture practices known to be effective, use of pest-resistant varieties, and chemical control.

His assistance was intended primarily for personnel associated with a USAID/Bolivia project in IPM (known as the USAID/IBTA PROCIPLA Project).

PERU (April 7-26, 1986): The purpose of CICP consultant Michael E. Irwin's assignment in Peru was to evaluate progress of an effort to establish a National Integrated Crop Protection Service and to assist in making the Service operational. Irwin conferred with various national and international organizations engaged in crop protection in Peru and drafted portions of a

document which charts the long-term objectives and programs of the National Service. Carlos A. Olivares, consultant to North Carolina State University working on a USAID/Bolivia contract at the Instituto Nacional de Investigacion y Promocion Agropecuaria, was responsible for finalizing the document. The document is to serve as the basis for a buy-in arrangement between USAID/Bolivia and CICP. Through the buy-in arrangement, CICP will provide a range of technical assistance in crop protection.

BOLIVIA (April 11-30, 1986): The purpose of CICP consultant Kenneth R. Barker's assignment was to review plant parasitic nematode problems affecting potato and tomato in Bolivia as related to the USAID/IBTA PROCIPLA Project (see page 21).

A nematode survey conducted by Barker revealed that 44 percent of the 30 potato fields surveyed contained potato plants with root galls induced by Nacobbus aberrans or Meloidogyne spp. Over one-fourth of the fields had significant nematode damage. The above nematodes and Globodera spp. were the primary taxa involved. Nacobbus aberrans as well as Meloidogyne were found parasitizing tomato in one field (apparently not observed in Bolivia before).

Barker's report made these points and recommendations: (1) nematodes should be identified microscopically as host symptoms are not always reliable, especially since N. aberrans and Meloidogyne spp. often occur in the same root galls; (2) the effects of various environmental factors should be considered when determining associated crop losses; (3) available nematicides, while profitable in some fields, should not be required in the common fine-textured soils in Bolivia when other management tactics are utilized effectively; (4) funds should be provided to Ph.D. candidates for support of research on

nematodes; (5) enumerated the components for an integrated control program for nematodes and suggested that it be expanded to include other pests and eventually integrated crop management systems; (6) recommended the establishment of some type of certified seed program (for nematodes and other pests as well as seed quality); and (7) suggested extension and public-awareness programs.

2. Technical Backstopping for AID/S&T/AGR

The Project provided technical backstopping for AID/S&T/AGR on a continuing basis. In addition to responding to regular AID/S&T/AGR requests for information, assistance in helping AID missions, etc., the Project assisted that AID Office on these major activities during the reporting period:

(a) CIP Program for Pesticides

The Project was requested to advise on pesticide procurement under AID's Commodity Import Program (CIP). Gerald A. Carlson, Harold T. Reynolds, and Paul S. Teng represented the Project at a meeting in Rosslyn, Virginia, August 28, 1985 to review the pros and cons of using CIP funds for this purpose. The CIP representatives developed statements following the Rosslyn meeting. An earlier meeting (held in Rosslyn May 3, 1985), represented by CIP consultant Edward H. Glass, also focused on pesticide procurement under CIP.

(b) Disposal of Pesticides

Project consultant Virgil H. Freed assisted AID/S&T/AGR in two separate requests for guidelines concerning the management and disposal of chemicals in LDCs. One request related to USAID/Indonesia's need for information on the disposal of pentachlorophenol, benzenehexachloride, and a fungicide called Eurapen. The other request related to a pre-proposal for a

survey of pesticide formulating and repackaging plants in AID countries. Freed developed a report for USAID/Indonesia which outlined procedures for proper disposal of the three chemicals listed above. He also developed a pre-proposal for AID's consideration which outlined procedures and requirements for the survey of formulating and repackaging plants.

(c) Residue Analysis Assistance

The purpose of this assistance, provided by CICP consultant J. G. Cummings, was to develop procedures for assessing pesticide residue analysis needs in Caribbean agricultural commodities produced for export under the Caribbean Basin Initiative. Cummings advised on needs in the Caribbean to ensure that crops entering international trade conform to U.S. residue tolerances and/or to CODEX Alimentarius maximum residue limits of pesticides in foodstuffs established by the Food and Agriculture Organization of the United Nations (FAO) and World Health Organization (WHO).

(d) Assistance to Oman

CICP consultant J. G. Cummings, with assistance from Brenda Mosley of AID's AID-PEST Program, developed a document to assist the Government of Oman concerning a request for information on U.S. and international systems of pesticide regulations. The consultants' report reviewed the various pesticide regulatory programs for Oman to consider in developing its own program.

(e) AID ADO Workshops

AID/S&T/AGR requested Project assistance at the AID Agricultural Development Officer's (ADO) June 1985 Workshop. CICP consultant Carl S. Barfield presented a lecture on IPM and discussed the status of IPM implementation in LDCs.

B. Training

During the reporting period, Project staff, subcontractors, and consultants participated in, and/or helped to organize, a range of conferences and short courses. They also participated in activities that involved the development and evaluation of training materials.

1. International Conferences and Short Courses⁴

Project participation in international conferences and short courses is shown in Table 2. Staff or consultants representing the Project and functions at these events are indicated. The Project did not organize any of the conferences or courses per se, but in some cases representatives of the Project organized individual conference or course sessions.

2. Conference Planning

A substantial effort during the reporting period involved organizing a workshop on pesticide management and IPM implementation in Southeast Asia planned for February 22-28, 1987, in Bangkok, Thailand. To be sponsored by AID, CICP, and German Agency for Technical Cooperation (GTZ), the workshop will focus on the pest and pesticide problems in Southeast Asia, progress in deriving solutions using case history examples, obstacles hindering further progress, and needs. The target audience, estimated at 80-100 participants, will include national and international organizations in the region involved in agricultural research, extension, development, services, and sales.

CICP consultant W. Harvey Reissig of Cornell University has taken the lead in organizing the workshop. He has received assistance from a number of

⁴Complete reports of the conferences and short courses were earlier submitted to AID/S&T/AGR

Table 2
Participation in International Conferences and Short Courses
October 1, 1984 - April 30, 1986

Dates and Location	Conference or Short Course and Organizers/Sponsors	Project Participants and Roles
<u>Nov. 12-14, 1984</u> San Jose, Costa Rica	"First Meeting of Interamerican Coordinating Group for Plant Health" (FAO, IICA)	Dale G. Bottrell - Organized session on training; elected Chairman of the Group's Training Committee
<u>Dec. 6-13, 1984</u> Niamey, Niger	"CILSS IPM Project International Seminar on the Strategies of Integrated Pest Management for Basic Food Crops in the Sahel" (CILSS, FAO, AID)	Galen P. Dively - Served as Chairman of Entomology Working Group on Millet, and responsible for summarizing recommendations at plenary session
<u>Jan. 7-11, 1985</u> Chiangmai, Thailand	"Perception and Management of Pests and Pesticides Fourth International Conference" (PMPP, Kasetsart University)	K. L. Heong - Presented paper "The Perceptions and Management of the Rice Tungro Virus in the Muda Irrigation Scheme, Malaysia," and participated in panel discussion on PMPP's future
<u>Feb. 25 - Mar. 8, 1985</u> Quito, Ecuador	"Integrated Pest Management and Pesticide Safety" (USAID/Ecuador, MAG, CICP)	Donald J. Calvert and James I. Grieshop - Served as lecturers and resource backups and demonstrated pictographic materials, logos, posters, and photo-novels developed by Project.
<u>Mar. 10-15, 1985</u> Nairobi, Kenya	"Regional Workshop on Pesticide Management in East and Southern Africa" (AID/REDSO-EA, Nairobi)	Harold G. Alford, John E. Davies, and Harold T. Reynolds - Each presented two papers and acted as resource backups
<u>Apr. 11-19, 1985</u> Lome, Togo	"West African Pesticide Legislation Workshop" (Government of Togo, USAID/Togo, GTZ, REDSO-EA, CICP)	Janice Jensen - Served as CICP representative to facilitate participant attendance
<u>Jul. 1-11, 1985</u> Yurimaguas, Peru	"First Regional Course on Pest and Pesticide Management"	Myron Shenk - Served as a principal lecturer and resource backup
<u>Mar. 17-20, 1986</u> Genting Highlands, Malaysia	"2nd International Conference on Plant Protection in the Tropics" (Malaysian Plant Protection Society)	Janice Jansen - Served as an observer

other CICIP consultants. The following summarizes Project-sponsored overseas travel related to the activity during the reporting period:

JANUARY 12-15, 1985: CICIP consultant K. L. Heong performed preliminary work in Thailand.

JANUARY 27-31, 1985: CICIP consultant Edward H. Glass, in Bangkok, worked out some of the arrangements concerning sponsorship, organizers, lodging accommodations, and costs.

APRIL 3-19, 1985: Reissig traveled to Frankfurt, Thailand, and the Philippines to make further arrangements and clarify roles of the various organizers and sponsors. In Frankfurt, he met with representatives of GTZ; in Thailand, officials of FAO, United Nations Environment Programme (UNEP), USAID, GTZ, and Thailand government; and in the Philippines, International Rice Research Institute (IRRI), Asian Development Bank, USAID, National Crop Protection Center (NCPC), private industry, and others.

FEBRUARY 15 - MARCH 9, 1986: Reissig returned to Thailand to work out more details.

MARCH 17-20, 1986: CICIP consultant Janice Jensen (based in Bangkok) attended the 2nd International Conference on Plant Protection in the Tropics in Malaysia where she discussed workshop plans with other participants and contacted a number of potential speakers.

MARCH 23-27, 1986: CICIP consultant Paul S. Teng met with Janice Jensen, USAID, and a number of others in Bangkok to work out more details.

3. Analytical Training and Quality Control in Pesticide Residue Analysis

Analytical training and quality control in pesticide residue analysis continued in the Department of Epidemiology and Public Health at the University of Miami in Florida. Since 1974, the UMI program has fostered and maintained uniform standards of operation among 45 LDC analytical pesticide residue laboratories. Every few months, UMI sends each participating laboratory a sample containing a mixture of pesticides. Laboratories are requested to perform both qualitative and quantitative analyses of the mixture. The results are subjected to statistical analysis, and then UMI provides the responding LDC laboratories an evaluation of performance intended

to help the LDC collaborators improve their performance. A coding system preserves the confidentiality of the participants' identity.

During the period October 1, 1984 - September 30, 1985, UMI mailed out samples to each of the participating laboratories, 13 of which responded.

Training carried out at UMI in pesticide analysis is an important aspect of the Miami program. The first training was instituted in 1977, and at least two courses per year have been offered subsequently. The courses are announced to the participating laboratories and all AID countries, so that qualified trainers may be named. During the period October 1, 1984 - September 30, 1985, two courses were offered in pesticide residue analysis. The first course (January 7 - April 5, 1985) trained four chemists from Bolivia, Dominican Republic, Honduras, and Philippines. The second course (April 22 - July 19, 1985) trained three chemists from Bolivia and El Salvador.

4. Development of Training Materials

The University of Florida, through an agreement with CICP, completed a series of computer-based training materials in pest and pesticide management. Available in both English and Spanish, the training modules include software for use in a microcomputer and companion 35mm slide sets which illustrate pests, pest damage, and pest management techniques. The modules have been tested and are being used by the Panamerican Agricultural School in Honduras.

Because of its popularity and demand in Latin America, the 1982 book, Agromedical Approach to Pesticide Management - Some Health and Environmental Considerations, developed by UMI subcontractor John E. Davies and collaborators, was printed in Spanish during the reporting period.

The Training Program for Pesticide Users manual was completed by Theodore A. Granovsky and collaborators and has been printed in both English and Spanish.

The pictograph project, initiated in 1983 by CACP consultant James I. Grieshop, was completed during the reporting period. Grieshop has submitted a final report of accomplishments to CACP headquarters. The objectives of the pictographic project were to develop and field test, refine, and distribute pictographic materials for use in pesticide safety/educational/communication campaigns in Latin America. The products included a set of 73 logos, posters (in Spanish and the native Ecuadorian language Quechua), negative (i.e., "do not") symbols, and photo-novels (comic book type publications) intended to illustrate pesticide hazards and needed safe practices. Grieshop's report to CACP evaluated the potential and limitations of using the various materials in Latin America, based on results from field testing and questionnaires. During the period November 19-23, 1984, CACP consultant Peter Gore traveled to Ecuador to assist Grieshop on the project.

In April 1986, AID/S&T/AGR reviewed the Project's pesticide educational modules. A panel representing AID, universities, private industry, environmental groups, and CACP participated in the review. Communication specialists were included on the panel. The panel developed a number of recommendations for making the modules more effective and more widely available.

C. Networking

Through its collaborative efforts in international training, conference planning, technical assistance, and information exchanges, the Project has established a large number of linkages with AID missions and offices and

national and international organizations in LDCs. In an effort to continue these relations, especially in view of the new AID-financed Integrated Pest Management and Environmental Protection Project (see page 12), the Project sponsored two international trips to explain the objectives of the new Project and to explore continuing and new opportunities for cooperation. During the period March 1-14, 1986, CACP's Executive Director Allen L. Steinhauer and Project Officer Carroll W. Collier of AID/S&T/AGR visited the following:

- Rome: FAO and International Fund for Agricultural Development
- Abidjan: REDSO-WA
- Nairobi: AID's Regional Office for Economic Development Services Organization/East-South Africa (REDSO-EA), International Centre for Insect Physiology and Ecology (ICIPE), and Desert Locust Control Organization for East Africa
- Frankfurt: GTZ.

During the period April 13-18, 1986, CACP's Deputy Director Stanley F. Miller and the new Project's Training Coordinator Myron Shenk visited the following:

- Guatemala: AID's Regional Office for Central American Programs (ROCAP), USAID/Guatemala, and CATIE-ROCAP IPM Project Country Coordinators for Guatemala and Panama
- Costa Rica: ROCAP, CATIE, and USAID/Costa Rica
- Panama: USAID, Ministry of Agriculture agencies, Instituto Interamericano de Cooperacion para la Agricultura (IICA), and private sector representatives
- Bolivia: USAID and private contractor representatives.

D. Publications

Publications produced during the reporting period can be found in Annex 4 (page 62), which lists all publications developed by the Project.

⁵CATIE-Centro Agronomico Tropical de Investigacion y Ensenanza

E. Regional Pest Management Specialist Activities

Through a cooperative agreement with AID's Bureau for Latin America and the Caribbean, CACP has based a Regional Pest Management Specialist at ROCAP in Central America since September 1979. The RPMS' job is to assist ROCAP, USAID missions, and national institutions in the ROCAP region in the areas of pest and pesticide management. The present RPMS, entomologist Angel A. Chiri, assumed the position in September 1982.

Among other duties, the RPMS serves as ROCAP's technical coordinator for the regional CATIE-ROCAP IPM Project with day-to-day responsibility for monitoring the Project. About 50 percent of the RPMS' time is devoted to this phase of work. Chiri resides in San Jose, Costa Rica.

The RPMS also participates in training and has organized a number of training programs in the region.

During the reporting period, the RPMS traveled out of country 20 times. All but one of the trips involved travel in the Central American region. The other trip (June 7-20, 1985) was made to College Park, Maryland to attend a 1-week course on parasitic hymenoptera sponsored by the Maryland Center for Systematic Entomology and to confer with AID and CACP personnel.

Also during the reporting period, the RPMS sponsored out-of-country travel for a number of consultants, who carried out technical assistance or training in the region, and for trainees, who participated in various training activities. Some of the consultants were recruited from U.S. universities. Other consultants and all the trainees were from Central America.

The Project backstopped the RPMS on various technical matters and utilized this position as its principal linkage to ROCAP and other Central American organizations. The RPMS serves as an important nucleus for networking in pest and pesticide management in Central America.

IV. OVERALL PROJECT ACCOMPLISHMENTS

Part IV summarizes overall Project activities of the Contract period, September 1, 1980 - April 30, 1986. The annual Project reports (see page 65) and Part III (page 13) presented more detail for individual reporting periods.

A. Technical Assistance

Technical assistance involved providing a range of professional consultant support services (both long- and short-term) in pest and pesticide management, as requested by AID missions, offices, and bureaus, and LDC national and international organizations.

The Project provided technical assistance to AID missions and AID offices in all the AID geographical bureaus. Annex 1 (page 39) and Annex 2 (page 56) clearly illustrate the breadth of this assistance which extended to more than 45 AID missions and offices. Project staff and/or consultants provided assistance on a continuing basis to a number of the missions and offices.

A significant portion of the technical assistance related to AID's Regulation 16. Implemented in 1978, Regulation 16 requires that when pesticides are to be used in an AID project, potential risks to human health and the environment must be weighed against potential benefits. Part 216 of Regulation 16 of the Federal Code of Regulations applies to every AID agricultural project in which pesticides are requested.

In implementing Regulation 16, AID missions, offices, and bureaus utilized Project staff and consultants to prepare the required Initial Environmental Examinations or Environmental Assessments of pesticide use; explain the Regulation to LDC officials; and outline any required training, research, or technical assistance. In fact, Project staff and consultants have been the primary developers of IEEs and EAs required since Regulation 16

went into effect. They developed some 50 IEEs or EAs for pesticide use in AID projects. CICP's file (see page 8) of consultants was used often to locate specialists for this work.

The Regulation 16 requirement has had a major impact. It has greatly reduced pesticide use in AID-financed projects, eliminated use of many unregistered and potentially hazardous pesticides formerly overused, and discouraged unnecessary use. Further, it has encouraged the use of alternative, nonchemical pest management techniques when available and appropriate for the particular LDC socioeconomic environment.

In addition, Project personnel provided many other kinds of technical assistance in AID countries and participated in numerous AID-project design efforts. In 1984, a Project team designed all aspects of the CATIE-ROCAP regional IPM Project for AID's Regional Office for Central American Programs. In the same year, the Project assisted in establishing the new Pest Management Unit (PMU), a centralized facility in Grenada's Ministry of Agriculture aimed at upgrading the country's capacity in pest and pesticide management. Subsequently, USAID/Grenada and the Ministry requested CICP to cooperate (via a 1-year buy-in arrangement) in developing programs in training, technical assistance, and research required to mobilize the PMU. The Project assisted some additional 20 AID missions and offices to develop IPM projects and has been a major catalyst behind IPM development in LDCs.

B. Training

Training geared for various audiences in LDCs (extension workers, research technicians, agricultural and health officials, government regulators, pest control operations personnel, and others) was a high priority of the present and earlier Pest Management and Related Environmental

Protection Projects. Participation in short courses, seminars and workshops, and other training in the present Project is summarized in Annex 3 (page 59).

Non-credit short courses (generally 1-3 weeks), seminars and workshops (generally 1 week), and conferences (1 week or less) were conducted collaboratively with LDC institutions and/or other organizations (e.g., FAO, AID, Peace Corps, International Agricultural Research Centers (IARCs)). Some focused on regional problems and involved trainee representatives from countries of a given region. For example, trainees from 16 Caribbean countries participated in the week-long Seminar and Workshop on Pest and Pesticide Management in the Caribbean, co-sponsored by the Project and Caribbean Agricultural Research and Development Institute (CARDI) and held in Barbados, November 3-7, 1980. Other training activities focused on individual countries. The Project sponsored short courses, seminars, and workshops conducted in English, Spanish, and French. CICP staff and consultants and specialists from LDC national and international institutions served as trainers.

Published proceedings of the short courses, seminars, and workshops have been disseminated widely and used by CICP universities and LDC educational and training institutions in numerous educational and training efforts.

The Project also sponsored newer approaches involving computer-based instruction through an agreement with the University of Florida. The computer-based materials have broad application in pest and pesticide instruction in LDCs since so many LDC educational/training institutions are now utilizing microcomputers. Available in English and Spanish, the computer programs (developed for IBM and IBM-compatible microcomputers) can be used to help teach LDC technicians IPM concepts and application of pest and pesticide management. The Panamerican Agricultural School in Honduras is currently using the programs in its curriculum in pest management.

In addition, the Project sponsored the development of videocassettes and slide sets for use in pest management training. Through a subcontract with the University of Maryland, three training videocassettes (each approximately 30 minutes long) were developed: one on principles and procedures of IPM, one on case histories of IPM in LDCs, and one on AID's policies and programs in pest and pesticide management. The videocassettes have been tested and used in a number of training programs.

The Project accumulated some 3,000 Kodachrome slides consisting of teaching modules on insect management, slide sets illustrating important plant diseases, slide/tape show for farmworkers on pesticide safety, etc.

A popular Project training activity has been the University of Miami's program in agromedicine and pesticide residue and formulation analysis. Through the current Project and the earlier UC/AID projects, UMI has helped LDCs develop their capability to analyze pesticide residues in the environment, human tissues, and foodstuffs. Chemists from AID-assisted countries have participated in a 6-week, intensive course in pesticide residue analysis at the University's pesticide residue analysis facility. Back at their home post, they have participated in an international quality control program, submitting their analysis of specially prepared "unknown" samples to UMI which has informed them how well they identified the quantity, number, and identity of residues. The courses have been successful in upgrading LDC capacity to develop effective pesticide analysis programs suited for their particular needs.

UMI epidemiologists are world authorities in the field of agromedicine. The 1982 book, Agromedical Approach to Pesticide Management - Some Health and Environmental Considerations, edited by UMI's John E. Davies and others and sponsored by the Project, is the "classic" in this field. Available in either English or Spanish, it is known worldwide and has been used in a variety of

training efforts by many organizations. The book has an accompanying 600-slide set geared toward train-the-trainer audiences. UMI personnel have trained over 1,700 persons from 20 LDCs in the agromedical approach to pesticide management.

The Project sponsored a series of training modules geared specifically toward correct and safe pesticide use. One effort involved the development and field testing of pictographic materials for pesticide safety education and training in Latin America. As discussed on page 29, pictographic materials in Spanish (and in the native Ecuadorian language Quechua) were developed for use by public and private institutions. They are now being used by these institutions in Ecuador and, on a very limited scale, in several other Latin American countries. Another effort involved preparation and testing of a manual (available in either English or Spanish), Training Program for Pesticide Users, that focuses on efficient and safe use and disposal of pesticides. A train-the-trainer manual, it has been used in training programs in several countries.

In April 1986, the Project's pesticide educational modules were reviewed by a panel representing AID, universities, private industry, environmental groups, and CICP. Communication specialists were included in the panel. They developed a number of recommendations for making the modules more effective and more widely available.

C. Publications/Training Aids

Publications developed by the Project are listed in Annex 4 (page 62). The newsletter, Pest Management News, was published periodically in English and Spanish and distributed gratis to individuals and organizations in over 150 countries. The newsletter reported on a range of technical subjects, conferences, and training activities, and other developments in crop

protection and pesticide management. The International Conferences Related to Pest Management, published quarterly, was another periodic publication. The Project publications have been widely distributed and used in many countries by many individuals and organizations.

D. Networking

The Project utilized various approaches to establish linkages with other organizations also involved in pest and pesticide management in LDCs:

- Information dissemination--in the form of publications
- Jointly sponsoring conferences, workshops, and short courses with FAO, IARCs, GTZ, and numerous other organizations
- Fielding interdisciplinary teams to assess pest and pesticide problems of a given country or region
- Participating in scientific society meetings and scientific exchanges
- Posting the Regional Pest Management Specialist in Central America
- Participating in design and evaluation of AID projects.

The Project actively linked with the national, regional, and international organizations listed in Annex 5 (page 66). In addition, the Project provided technical assistance to AID missions and offices (see Annex 2, page 56) linked with such organizations.

E. Accumulation of Resources

At the end of the Contract period, CACP possessed the following resources which the successor AID Project, "Integrated Pest Management and Environmental Protection," is utilizing:

- Library containing approximately 2,300 books, 15,000 reports, professional journals, serials, proceedings, and other specialized literature related to pest and pesticide management, environmental protection, and international development

- A computerized personnel file of nearly 800 specialists in crop protection and related fields
- A comprehensive library of 2,600 Kodachrome slides consisting of teaching modules on insect pest management, slide sets illustrating important plant diseases, slide/tape show for farmworkers on pesticide safety, slide series on agromedicine, etc.
- Series of videocassette training tapes on selected pest management topics
- A variety of computer software for use in training and research.

ANNEX 1

SUMMARY OF OVERSEAS ACTIVITIES OF
PROJECT STAFF, SUBCONTRACTORS, AND CONSULTANTS
DURING CONTRACT PERIOD

OCTOBER 1, 1980 - SEPTEMBER 30, 1981

October 4-12, 1980

Donald J. Calvert, Michael E. Irwin, and Fausto Cisneros - Conducted a follow-up evaluation with the attendees of the Short Course on Integrated Pest Control for Small Farmer Cropping Systems held in Turrialba, Costa Rica, August 27 - September 21, 1979.

October 5-6, 1980

Rene Bodegas, K. L. Heong, Banpot Napompeth, and Edward Tukahirwa - Participated in the meeting "Perception of Pests and Pesticides in Integrated Pest Management" held at Clark University, Worcester, Massachusetts, USA.

October 11-31, 1980

Dale G. Bottrell - Led a team of experts in preparing a report upon which the WARDA programme on integrated management of pests of rice was to be based. Traveled to Senegal, Ivory Coast, Upper Volta, and Nigeria.

October 25 -
November 3, 1980

Michael E. Irwin - Represented CIGP at the Food and Agriculture Meeting of the Committee on Plant Protection for Southeast Asia and the Pacific, Chiang Mai, Thailand.

October 26-31, 1980

J. Bruce Mann - Made a preliminary assessment of pesticide requirements and facilities for Guatemala.

October 31 -
November 4, 1980

J. Bruce Mann - In El Salvador, held discussions with the USAID Mission regarding the possibility of training in the area of pesticide residue analysis.

November 1-8, 1980

Perry L. Adkisson, Dale G. Bottrell, B. Currie, John E. Davies, Roger Drummond, Virgil H. Freed, George Georghiou, Walter Howard, Ronald Lacewell, Marshal McGlamery, and Ray F. Smith - Participated in the Seminar/Workshop on Pest and Pesticide Management in the Caribbean held in Bridgetown, Barbados.

November 8-11, 1980

John E. Davies and Virgil H. Freed - Consulted with officials in Trinidad and Tobago and of CARDI concerning pesticide residue analysis and pest management, and the agromedical approach to pesticide management.

November 9-28, 1980 Patricia C. Matteson - Made studies and prepared an Environmental Examination for Lofa County Rural Development II Project, Liberia.

November 9-15, 1980 Dale G. Bottrell and Ray F. Smith - Held discussions in Guyana concerning pest and pesticide management with personnel of the Guyana Ministries of Agriculture and Health and with Guyana Pharmaceutical Corp., Guyana Rice Board, and Guyana Sugar Corp.

November 9 -
December 13, 1980 Z. B. Mayo and Frank Turpin - Reviewed the use of endosulfan for the protection of maize in the Tanzania Resources for Village Production and Income Project, and reviewed the use of pesticides and planned research on maize in other AID projects in Tanzania.

November 25 -
December 16, 1980 Lowell Etzel - Participated as a lecturer in a training course in biological control of pests, sponsored by CIBC, in Bangalore, India.

December 1-6, 1980 T. Jack Morris - Participated in the Second Conference on Impact of Viral Diseases on Development of African and Mid-East Countries, in Nairobi, Kenya.

December 1-12, 1980 J. Bruce Mann - Conducted a course in pesticide residue analysis of beef at Lucam, in Guatemala City.

January 5-10, 1981 Ray F. Smith - Traveled to Panama to hold discussions with Government of Panama about sponsoring a seminar designed to reconcile differences in pesticide use between the Panamanian Ministries of Health and Agriculture.

January 7-24, 1981 Dale G. Bottrell - This was a continuation and completion of his October assignment in Africa as team leader of a mission of WARDA to establish an IPM project for rice in West Africa. Visited Senegal, Sierra Leone, Liberia, and Ivory Coast.

January 11-24, 1981 Winfield Sterling - Assessed environmental and human health hazards associated with cotton spraying, in Nicaragua.

February 1-7, 1981 J. Bruce Mann - In Costa Rica, evaluated procedures and equipment at a pesticide residue analysis laboratory, and in Nicaragua did a follow-up on the 1980 residue analysis training course.

February 2-27, 1981 Virgil H. Freed, Carl B. Huffaker, Fowden Maxwell, William Ruesink, H. David Thurston, Michael E. Irwin, Donald J. Calvert, Elkin Bustamante R., and Saul Risco B. - Participated in the CICP/USAID training short course on integrated pest control held in Lima, Peru.

February 16-22, 1981 Richard Johnson - Attended the International Seminar on Pesticides for Control of Stored Grain Pests at Slough, Buck, England.

March 8 -
April 7, 1981 Charles Ward - Assisted USAID/Jakarta in Indonesia with EA and pest and pesticide management problems associated with the Luwu Project. Consulted briefly with IRRI in Manila, Philippines.

March 12-18, 1981 John E. Davies and Virgil H. Freed - Participated in the Sixth International Workshop of the Scientific Committee on Pesticides of the International Association on Occupational Health held in Buenos Aires, Argentina.

March 23-27, 1981 G. A. Carlson, Ray F. Smith and Ray Frisbie - Attended the 10th Session of the FAO/UNEP Panel of Experts on Integrated Pest Control, in Rome, Italy.

April 1-5, 1981 Janice Reid - Of CARDI, Mona, Jamaica, met with John E. Davies in Miami, Florida to work out details on the course content for the "Train the Trainer" Certification Programme held in Jamaica, June 1981.

April 4-12, 1981 Donald J. Calvert - Met with officials of the Ministerio de Agricultura of Guatemala and the Centro Agronomico Tropical de Investigacion y Ensenanza in Turrialba, Costa Rica to discuss the organization of a training short course on integrated pest control for the Central American region held in Guatemala, October - November 1981.

April 20-25, 1981 Theodore Granovsky, Nathan Chandler, and Leopoldo Caltagirone - Presented papers at the "Uso de Plaguicidas en Panama y su efecto en la Salud y el Medio Ambiente" seminar held in Divisa, Panama.

April 21 -
May 8, 1981 Paige Taylor and Carroll Voss - Reviewed and assessed the current recommendations of WINBAN research. Traveled in Windward Islands of the Caribbean.

April 27 -
June 6, 1981 Dale G. Bottrell - In Tonga and Fiji, conferred with AID, the South Pacific Commission, and GTZ concerning the development of a short course on Integrated Pest Management sponsored by CICP and others in the South Pacific in October 1982; visited Monrovia, Liberia to participate in an annual WARDA review, and present an invitational paper on IPM in rice; in Rome, met with FAO to discuss implementation of a WARDA project.

April 30 -
May 20, 1981 Patricia C. Matteson - Reviewed the ICIPE/REDSO-EA Project on "Bases of Plant Resistance to Insect Attack," Nairobi, Kenya.

May 8-17, 1981 Ray F. Smith and J. Lawrence Apple - Met in Lima, Peru with Alexander Grobman, Loren Schulze, Fausto Cisneros, and others to discuss proposed collaborative efforts in research, extension, and training.

May 9 - June 7, 1981 William Morrison - Participated as a member of a team making an Environmental Assessment of an agricultural development project in the upper Huallaga Valley of Peru.

May 15 - June 1, 1981 Edward Glass - Traveled to Burma to participate in a project design team on maize and oil seeds production.

June 7-14, 1981 John E. Davies, Virgil H. Freed and Erica Koehler - Participated in the "Train the Trainer" Agromedical Certification Programme in Kingston, Jamaica.

June 9-13, 1981 Joel Meltzner - Evaluated the "Train the Trainer" Agromedical Certification Programme in Kingston, Jamaica.

June 11-21, 1981 Edwin Johnson - Participated in the CODEX meeting held in The Hague, Netherlands.

July 12-15, 1981 Donald J. Calvert - Met with officials of ICTA in Guatemala to discuss short course held in Guatemala, October 26 - November 21, 1981.

Mid-July - September 1981 Dale G. Bottrell and Patricia C. Matteson - Participated on a team which reviewed the CILSS IPM Project in Africa.

July 23 - August 5, 1981 Jerry Stimac and Harold Reynolds - Traveled to Nairobi, Kenya, to act as instructors in the ICIPE/UNEP Group Training Course.

August 10-21, 1981 Carl S. Barfield, Donald J. Calvert, Richard Farnsworth, and George L. Teetes - Participated as instructors in the "Short Course on Integrated Pest Management of Tropical Crops," held in St. Augustine, Trinidad.

August 13-25, 1981 J. Bruce Mann - Evaluated training needs in pesticide residue analysis at the East African Tropical Pesticide Research Institute in Arusha, Tanzania, and in the Ministry of Agriculture in Zimbabwe.

August 28 - September 6, 1981 Ray F. Smith - Discussed collaborative arrangements between CICP and the Philippine National Crop Protection Center in Manila, Philippines.

September 11-16, 1981 Ray F. Smith - Participated in the International Symposium "Insect Control of Tomorrow" held in Wageningen, The Netherlands.

OCTOBER 1, 1981 - SEPTEMBER 30, 1982

- October 1, 1981-
September 30, 1982 T. R. Everett et al. - Posted at NCPC, Philippines, to provide technical assistance, training, and research in pest and pesticide management.
- October 5-8, 1981 Patricia C. Matteson - Participated in ICRISAT/IDRC Second International Striga Workshop in Ouagadougou, Upper Volta.
- October 18-23,
October 30-
November 4, 1981;
May 8-28, 1982 Patricia C. Matteson - Assisted Niamey Department of Development Project and USAID/Niger to design, implement, and evaluate crop protection research and extension programs.
- October 19-22, 1981 Ray F. Smith - Participated in and chaired Second Session of FAO Committee of Experts on Pest Control, Eschborn, Federal Republic of Germany.
- October 19-24, 1981 D. A. Carlson - Participated in OAU/International Scientific Council for Trypanosomiasis Research and Control Biannual Meeting in Arusha, Tanzania.
- October 26-
November 19, 1981 Donald J. Calvert, Dan Gonzalez, Michael E. Irwin, Ted Granovsky, F. Cisneros, J. Quezada, and W. R. Coffman - Participated in "International Course in Integrated Pest Control" for plant protection specialists from Central America, in Antigua, Guatemala.
- November 4-14, 1981 Patricia C. Matteson - Completed an Environmental Assessment/risk-benefit analysis and guidelines for the use of pesticides in the Semi-Arid Tropics Crops Research Project in Mali.
- December 12, 1981-
January 23, 1982 Eduardo E. Trujillo - Assisted the Instituto de Investigacion Agropecuaria de Panama in the development of a national plan for IPM.
- January 10-20, 1982 Harry Howell - Visited Honduras to complete slide set and film strip for a pesticide training program.
- January 10-28, 1982 Dale G. Bottrell, Patricia C. Matteson, Michael Smith, Peter Kenmore, Omar Qawiyy, and Sheila Mulvihill - Participated in CICP-WARDA short course "Concepts, Techniques, and Application of Integrated Pest Management in Rice in West Africa" in Liberia.
- January 28-
February 28, 1982 W. W. Allen - Assisted in preparation of an AID Project Paper for the Secondary Food Crops Development Project and wrote an Environmental Assessment for the Project, in Indonesia.

January 28-29, 1982 Eduardo E. Trujullo - Assisted USAID/Honduras with pesticide recommendations for the Small Farmer Coffee Production Project and a malaria control project.

February 8-14, 1982 F. Howard - Assisted American Embassy in Mexico City in evaluation of pests affecting ash trees.

February 21-
March 15, 1982 Ray F. Smith and Michael Smith - Conferred with USAID/Philippines and NCPC officials and CACP consultants in the Philippines (Ray F. Smith); attended 1st International Conference of Plant Protection in the Tropics, in Kuala Lumpur, Malaysia.

February 28-
March 11, 1982 Patricia C. Matteson - Participated in meeting of AID's Regional Food Crop Protection Project in Dakar, Senegal.

March 5-28, 1982 Allen L. Steinhauer - Participated in meeting of AID's Regional Food Crop Protection Project (Dakar, Senegal) and reviewed IPM projects in Cape Verde and Guinea Bissau.

March 7-17, 1982 Donald J. Calvert - Worked on organization of seminars/workshops in crop protection in Bolivia and Peru.

March 22 -
April 2, 1982 Michael E. Irwin - Lectured at national IPM short course in Comayagua, Honduras.

March 28-31, 1982 Donald J. Calvert - Participated in XVII Congress Nacional de Entomologia, Saltillo, Coahuila, Mexico.

April 12 -
May 16, 1982 Patricia C. Matteson and Marcos Kogan - Both attended IOBC Colloquium on crop loss assessment (Paris, France) and planning session for legume IPM workshop (Ibadan, Nigeria); Matteson also assisted in design of IPM experiments in Niger.

April 18 -
May 10, 1982 Dale G. Bottrell - Assisted AID's South Pacific Regional Development office (Suva, Fiji), Peace Corps, and PVOs with crop protection problems in Fiji, Cook Islands, Tonga, and Western Samoa and developed plans for regional training.

May 2-25, 1982 Ray F. Smith - Worked on organization of plant protection course for South Pacific, in Australia, and Tonga.

May 22 -
June 7, 1982 Theodore Granovsky, Harry Howell, and James I. Grieshop Participated in 4-day course in pesticide safety at San Lorenzo, Paraguay and also tested pesticide safety training manuals.

June 8-22, 1982 Edwin Johnson - Attended CODEX Meeting in The Hague, The Netherlands.

June 14-18, 1982 Dale G. Bottrell - Participated in International Study Workshop on Crop Borers and Emerging Strategies for Their Control, ICIPE Mbita Point Field Station, Kenya.

June 16-18, 1982 Ray F. Smith - Participated in meetings on plant protection at FAO, Rome, Italy.

June 17 -
July 12, 1982 Fowden Maxwell - Participated in development of "Bases of Plant Resistance to Insect Attack" Project Paper for REDSO-EA in Kenya.

June 21-25, 1982 Dale G. Bottrell and K. L. Heong - Participated in meeting of Perception and Management of Pests and Pesticide Project, Nairobi, Kenya.

June 23 -
July 11, 1982 Michael E. Irwin, Myron Shenk, L. K. Bond, and J. W. De Grazio - Advised USAID and Government of Peru on development of IPM, in Peru.

June 26-29, 1982 Dale G. Bottrell - Met WARDA officials in Monrovia, Liberia concerning proceedings of CICP-WARDA rice IPM course held in January 1982.

July 4-25, 1982 E. Vogel - Prepared Environmental Assessment of pesticides for use in the Agricultural Technology Transfer System Project in Panama.

July 4 -
August 7, 1982 Wallace C. Mitchell - Assessed pest/pesticide problems in Costa Rica, Panama, Honduras, and Guatemala.

July 5-20, 1982 Carlton S. Koehler - Developed Environmental Assessment of pesticide use in CATCO Project, in Barbados.

July 18 -
August 6, 1982 Harold T. Reynolds and Jerry Stimac - Participated in pest management course in Kenya organized by ICIPE and UNEP.

July 22-31, 1982 Carl S. Barfield - Assessed potential consequences of Caribbean Basin Initiative in Belize on crop production and protection.

August 1-14, 1982 George A. Schaefers - Reviewed crop protection plans under the Central Tunisia Rural Development/Rural Extension and Outreach Sub-Project in Tunisia and developed Environmental Assessment of pesticide use.

August 22-27, 1982 Ray F. Smith - Participated in International Union of Biological Sciences XXI General Assembly, Ottawa, Canada.

September 15-22,
1982

John E. Davies, Virgil H. Freed, and James I. Grieshop
- Participated in train-the-trainer workshops in
Trinidad and St. Lucia.

OCTOBER 1, 1982 - SEPTEMBER 30, 1983

October 4-29, 1982 Dale G. Bottrell, Roy Nishimoto, Ivor Firman, Wallace C. Mitchell, and Jim Litsinger - Participated in regional short course in plant protection for the South Pacific for country representatives (3 weeks) and Peace Corps volunteers (1 week) in Tonga.

November 1 - December 21, 1982 Patricia C. Matteson - Participated as crop protection specialist and environmental consultant on the redesign team for the CILSS Sahel IPM Project.

November 2-10, 1982 Bruce Mann - Evaluated training needs in pesticide residue analysis in Paraguay.

November 28 - December 4, 1982 Donald J. Calvert and Ray F. Smith - Attended combined annual ESA, ESC, and ESO meetings held in Toronto.

December 5-11, 1981 Carl Barfield - Discussed IPM procedures and experimental design and future possibilities for use of IPM in USAID project in Guatemala.

January 6-17, 1983 George A. Schaefers - Prepared Environmental Assessment of pesticides in the Casamance Regional Development Project, Senegal.

January 6 - February 5, 1983 Austin Haws - Assisted USAID/Bolivia in making environmental determinations on use of pesticides in the Chapare Integrated Rural Development Project.

February 6, - March 7, 1983 Dale G. Bottrell - Assisted AID project personnel in St. Lucia, Dominica, and Barbados.

February 21-25, 1983 Michael E. Irwin and Luis Zavaleta - Keynote speakers at First Integrated Pest Control Congress of Guatemala.

February 21-25, 1983 Perry L. Adkisson, Donald J. Calvert, George Georghiou, Robert Levine, Bruce Mann, Catherine McInerney, and Wesley Yates - Participated as instructors in Bolivia Pesticide Management Seminar/Workshop held in Cochabamba. Calvert also consulted with officials in Peru and Ecuador regarding possible future IPM courses and workshops.

March 10-31, 1983 George A. Schaefers - Prepared an Initial Environmental Examination on use of pesticides in the Djibouti/AID Food and Nutrition OPG Project.

March 11-30, 1983 Dale G. Bottrell - Participated in Disasters and Development Conference in Mombasa, Kenya, and visited with REDSO/EA and ICIPE officials. In Liberia, met with WARDA personnel to discuss future collaborative research and training.

March 25 -
April 17, 1983 Fowden Maxwell - Participated in a team review of ICIPE in Kenya.

March 28 -
April 2, 1983 Joseph Danauskas - Administered cholinesterase analysis training in Dominica.

March 28 -
April 14, 1983 Leopoldo Caltagirone - Served as technical advisor on biological control of vegetable pests to USAID in Sri Lanka.

March 29 -
June 6, 1983 Jack Drea, Grace Goodell, Christine Hollis, Thomas Irvin, Allen L. Steinhauer, Janice Tuthill, and Ed Weiler - Performed project redesign for RFCP Project in West Africa.

April 3-17, 1983 Keizi Kiritani, Marcos Kogan, Ricardo Lantican, James Litsinger, Patricia C. Matteson, S. V. R. Shetty - Participated in the International Workshop on Integrated Pest Control for Grain Legumes held in Goiania, Brazil.

April 4-16, 1983 Merle Shepard and Angel A. Chiri - Advised Panamanian Government and Project officers on the development of vegetable IPM.

April 24-30, 1983 Ray Krueger - Discussed pesticide disposal procedures with personnel in Senegal.

May 1-8, 1983 Jack Beardsley and Ken Hagen - Conducted analysis of IITA proposal for biological control of cassava pests. Involved travel to Nigeria, Senegal, and the Central African Republic.

May 8-14, 1983 Virgil H. Freed and Ray Krueger - In Western Samoa, discussed pesticide disposal procedures.

May 8-24, 1983 Edward Glass and James Goodwin - Participated in redesign team for AID-financed RFCP Project in Cameroon.

May 22-28, 1983 Angel A. Chiri, Lou Falcon, Michael E. Irwin, and Katherine Reichelderfer - In Turrialba, Costa Rica, participated on design team organized by ROCAP to assist in developing a Project Identification Document for a regional IPM Project for Central America.

June 5 -
July 9, 1983 Ray Beal - Consulted with officials in Africa regarding possible substitutes for chlorinated pesticides for pests.

June 13-17, 1983 Ray F. Smith - Attended International Meeting in Costa Rica on Strengthening of Regional Plant Protection Organizations with Special Emphasis on Latin America and the Caribbean.

June 26 -
July 14, 1983

Dale G. Bottrell - Assisted AID's Regional Office in Barbados on several matters pertaining to use of pesticides in AID-financed projects in the Caribbean, traveling to St. Vincent and Barbados.

July 11-16, 1983

Robert Frans and Michael E. Irwin - In Tegucigalpa, Honduras, participated on a team reviewing IPM training program at the Pan American School.

July 17 -
August 11, 1983

Harold T. Reynolds, Gerald Carlson, Joseph Danauskas, and Donald Grimes - Team advised the Government of Sudan's Gezira Board on pest control of cotton, and prepared a plan of action for monitoring proposed applications of aldicarb.

July 25 -
August 13, 1983

Patricia C. Matteson - In Kenya and Zimbabwe, planned pest and pesticide management workshop for East and South Africa with REDSO-EA. Then, in Niger worked with the Niamey Department Development Project on design of crop protection extension program.

September 8 -
November 21, 1983

Hodge Black, Joseph Danauskas, Donald Morgan, and Geoffrey Zehnder - Carried out biological and health monitoring of effects of applications of aldicarb on cotton in the Sudan.

OCTOBER 1, 1983 - SEPTEMBER 30, 1984

September 19 -
October 18, 1983

Patricia C. Matteson - In Niger worked with the Niamey Department Development Project on design of crop protection extension program.

September 26 -
October 24, 1983

Harvey Reissig - In Philippines discussed IPM programs for rice with IRRI personnel. In Thailand, assisted USAID on crop protection matters.

November 16-25, 1983

Ray F. Smith - Attended International Congress of Plant Protection in Brighton, England.

December 5-22, 1983

Donald J. Calvert and Carroll W. Collier - Assisted in the preparation of Environmental Assessment involving purchase of pesticides by USAID/Bolivia.

January 8-19, 1984

James I. Grieshop - Met with officials at USAID and others to discuss training activities in crop protection, in Ecuador.

January 22 -
March 14, 1984

Dale G. Bottrell, Ray F. Smith, Harold Coble, Frederick Fliegel, Virgil H. Freed, Jennifer Kogan, George Niles, Katherine Reichelderfer, and David Thurston - Performed necessary work related to the preparation of a ROCAP Project Paper on the development of a regional integrated pest management project for Central America.

February 3-10, 1984

Diane Raines - Worked with officials at USAID and others in Costa Rica on techniques for analysis of pesticides in water.

February 7-12, 1984

Gary Simone - Assisted USAID/Belize in identifying the cause of severe loss in production of melons in Northern Belize.

February 12-22 and
February 26 -
March 8, 1984

George Cavin - Participated in meetings with USAID personnel from Caribbean basin countries to discuss economic impact and regulatory problems associated with EDB fumigation of tropical fruits and citrus plants.

February 22-26, 1984

George Cavin and Joseph Cummings - Met with AID personnel from Caribbean basin countries to discuss the impact of EDB fumigation of tropical fruits and citrus plants.

April 9-14, 1984

Joseph Cummings - Coordinated the technical work for the analysis of EDB in papaya and mango at the USDA/ARS laboratory and the University of Miami School of Medicine, in connection with shipments from Central America.

May 23 -
June 16, 1984 Michael E. Irwin - Worked with Integrated Crop Protection Commission and others in the continuing development of IPM programs in Ecuador and Peru.

May 31 -
June 20, 1984 Harold T. Reynolds - In Kenya, discussed with REDSO-EA and others associated with AID in Nairobi future planning for pest and pesticide management activities in East Africa. At FAO/Rome and at the International Pest Management Centre in Silwood Park, England, met with scientists and officials to discuss other IPM matters.

June 11-22, 1984 Fowden Maxwell - Represented AID at the ICIPE Host Plant Resistance Short Course in Nairobi and assisted in the redesign of the Bases of Plant Resistance Project.

July 5-14, 1984 Ray F. Smith - In Costa Rica, held discussions with officials of ROCAP and CATIE, among others, regarding future CICIP activities and networking. In Chile, participated in Biological Control Round Table and discussed crop protection networking in South America with representatives of various organizations. In Peru, met personnel of USAID and others to discuss matters concerning CICIP's future activities and networking in Peru.

July 24, 1984 Joseph Cummings - Met with Costa Rican chemists to discuss pesticide residue problems in coffee.

August 3-29, 1984 Alan Cooper - Participated as a trainer in short courses on "Safe Pesticide Use and Effective Application" in Lesotho and Zambia.

August 18 -
September 5, 1984 Ray F. Smith - Attended XVII International Congress of Entomology in Hamburg, Germany; then met various potential collaborators in France to discuss pest management activities.

August 23 -
September 6, 1984 Edward Glass - Crop Protection Specialist on USAID/Burma Agricultural Research and Development Project Paper Design Team.

September 4-6, 1984 Ken Hagen - Participated in the First Regional Symposium on Biological Control in Kuala Lumpur, Malaysia.

September 9, -
October 2, 1984 Dale G. Bottrell - Performed an Environmental Assessment and assisted in establishment of a Pest Management Unit in the Grenada Ministry of Agriculture.

September 15-19, 1984 Brenda Mosley - Assisted the Ministries of Agriculture and Health in the initiation of a program to disseminate information on agrochemicals in Panama, and to develop direct linkages in Panama to the resources in the U.S. National Agricultural Library.

September 16-20, 1984 Perry L. Adkisson - In Algeria, represented CIGP at the "Conference on Integrated Crop Protection and Rationalization of the Use of Pesticides in Agriculture in the Arab Region," sponsored by the Arab Organization for Agricultural Development.

September 19 -
October 5, 1984 George Cavin - In Mexico, worked with Sanidad Vegetal and USDA personnel to test alternate fumigants for EDB and to evaluate growth regulators for preventing development of fruit fly larva in fruit.

OCTOBER 1, 1984 - APRIL 30, 1986

- October 19 -
November 15, 1984 George Cavin, Ted Hebert, J. Donald Paschke, P. John Terry, and Robert Wesselmann - Participated in mid-term review of CILSS IPM project and terminal review for the RFCP Phase II project, in Mali, Burkina Faso, Paris (France), The Gambia, Niger, and Senegal.
- November 12-14, 1984 Dale G. Bottrell - Participated in first meeting of Interamerican Coordinating Group for Plant Health, San Jose, Costa Rica.
- November 19-23, 1984 Peter Gore - Assisted James I. Grieshop in Ecuador on CICP pictograph project.
- December 3-14, 1984 Galen P. Dively - Represented CICP at seminar, The Strategies of Integrated Pest Management for Basic Food Crops in the Sahel, sponsored by CILSS in Niamey, Niger.
- January 13 -
February 2, 1985 Jerome Dimitman - Accompanied Agnes Kiss of AID/S&T/AGR to Bolivia to assist USAID develop a pesticide management, IPM research, and radio-based extension program on pesticide safety.
- January 7-15, 1985 K. L. Heong - Participated in "Perception and Management of Pests and Pesticide International Conference," Chiang Mai, Thailand and worked (in Bangkok, Thailand) on organization of a proposed seminar/workshop on pest and pesticide management for Southeast Asia.
- January 27-31, 1985 Edward H. Glass - Conferred with USAID/Thailand in Bangkok about the proposed seminar/workshop noted for January 7-15, 1985 above.
- February 3-14, 1985 Silverio Medina - Reviewed proposed AID Vegetable Satellite Farming Project in Dominican Republic and developed recommendations for pesticide use in the project.
- February 21 -
March 15, 1985 Roger Williams - Participated in evaluation of Guinea Bissau Food Crop Protection Project, in Guinea Bissau and Dakar, Senegal and Abidjan, Ivory Coast.
- February 25 -
March 8, 1985 Donald J. Calvert and James I. Grieshop - Served as instructors for 1 week in IPM and pesticide safety short course in Quito, Ecuador and reviewed (Calvert only) IPM programs.
- March 6-16, 1985 Harold G. Alford, John E. Davies, and Harold T. Reynolds - Served as instructors in the "Regional Seminar/Workshop on Pest and Pesticide Management in East Africa" held at ICIPE headquarters, Nairobi, Kenya.

March 19-29, 1985 Brian S. Hursey - Advised the Africare/Rwanda Resettlement Project on tsetse fly control, in Rwanda.

April 3-20, 1985 William H. Reissig - Worked on organization of proposed seminar/workshop (see January 7-15, 1985 above) at GTZ in West Germany.

April 11-19, 1985 Mustafa Cassama, Soumana Sountera, Guid-Guid Djide N'gang, Jeannette Ravololonandrianiana, Mohamed Conte, and Salifou Traore - Supported participation of these trainees and provided funds for simultaneous translation and other expenses for a pesticide legislation workshop in Lome, Togo.

June 1-6, 1985 Michael E. Irwin - Reviewed IPM developments and plans under the Integrated Crop Protection Project and APROCICO corn and soybean pest management project, in Ecuador.

June 29 -
July 11, 1985 Myron Shenk - Participated in First Regional Course on Pest and Pesticide Management in Yurimaguas, Peru.

July 1-15, 1985 George A. Schaefers - Prepared an Environmental Assessment of pesticide use for the Agricultural Diversification Project, Belize.

July 30 -
August 15, 1985 George A. Schaefers - Developed an Environmental Assessment of pesticide use for SAFGRAD project, in Burkina Faso and Nigeria.

August 15 -
September 15, 1985 C. Richard Edwards - Developed an Environmental Assessment of pesticide use for Burma Agriculture Production Project, in Burma.

February 15 -
March 9, 1986 W. Harvey Reissig - In Bangkok, Thailand, conferred with USAID and others relative to the proposed seminar/workshop (see January 7-15, 1985 above).

March 2-15, 1986 Allen L. Steinhauer - Visited FAO and International Fund for Agricultural Development (Rome, Italy); REDSO-WA (Abidjan, Ivory Coast); REDSO-EA, ICIPE, and Desert Locust Control Organization for Eastern Africa (Nairobi, Kenya); and GTZ (Frankfurt, West Germany) with Carroll W. Collier to follow up on prior collaborations with project.

March 17-20, 1986 Janice Jensen - In Malaysia, attended 2nd International Conference on Plant Protection in the Tropics and worked on organization of proposed seminar/workshop (see January 7-15, 1985 above).

March 23-27, 1986 Paul S. Teng - In Bangkok, Thailand, worked on organization of proposed seminar/workshop (see January 7-15, 1985 above).

March 24 -
April 12, 1986

Ben E. Lockhart - Assisted in survey and detection of diseases on tomato and potato in IPM project area, advised on a computer-based late-blight predicting system for potato, and provided orientation to personnel working in IPM, in Bolivia.

April 6-18, 1986

Stanley F. Miller and Myron Shenk - Visited Guatemala (CATIE, USAID, and ROCAP representatives); Costa Rica (CATIE, USAID, and ROCAP-CICP representatives); Panama (USAID, MAG, IICA, and private sector representatives); and Bolivia (USAID and private contractor representatives) for purposes of reviewing collaboration with CICP and its subcontractors.

April 7-26, 1986

Michael E. Irwin - Evaluated progress and offered assistance in establishing a national integrated crop protection service for Peru.

April 11-30, 1986

Kenneth R. Barker - Assisted USAID/Bolivia in a project on nematode management in potato and tomato.

April 20-26, 1986

Michael E. Irwin - Evaluated the Integrated Crop Protection Project of Ecuador and advised on mechanism to facilitate crop protection activities at APROCICO and other grower organizations.

ANNEX 2

SUMMARY OF PROJECT ASSISTANCE TO AID MISSIONS AND OFFICES

Mission or Office	Year	Activity
<u>ASIA/NEAR EAST</u>		
Burma	1981	Project design
	1984	Project design
	1985	Project design
Egypt	1980	Reviewed plant protection
Indonesia	1981	Advised on pesticides
	1982	Project design
Jordan	1980	Assessed Jordan Valley pesticides
Philippines	1981-83	Provided long-term assistance at NCPC
South Pacific (SPRDO)	1980	Crop protection assistance
	1981	Crop protection assistance
	1982	Crop protection assistance
	1983	Assisted in pesticide disposal
Sri Lanka	1983	Advised on biological control
Thailand	1981	Advised on pesticide analysis
Tunisia	1980	Assisted on pesticide problems
	1982	Prepared EA
<u>AFRICA</u>		
Burkina Faso	1981	Project review
	1982	Project review
	1984	Project review
	1985	Prepared EA
Cameroon	1981	Project evaluation
	1983	Project design
Cape Verde	1981	Project review
	1982	IPM assistance
	1983	Project review
Djibouti	1983	Prepared IEE
The Gambia	1981	Project evaluation
	1983	Project design
	1984	Project review
Ghana	1980	Prepared IEE and EA
Guinea-Bissau	1981	Project review
	1982	IPM assistance
	1983	Project design
	1985	Project evaluation
Kenya	1980	Advised on pesticide use

(Continued)

Mission or Office	Year	Activity	
<u>AFRICA (Continued)</u>			
Liberia	1980	Prepared IEE; assisted WARDA	
	1981	Assisted WARDA	
	1982	Assisted WARDA	
	1983	Assisted WARDA	
Mali	1981	Project evaluation	
	1983	Project design	
	1984	Project review and design	
Mauritania	1981	Project evaluation	
Niger	1981	Project evaluation	
	1982	Prepared EA	
	1983	Consultation on insecticides for termites	
	1984	Project design	
Nigeria	1983	Evaluated biological control of cassava pests	
	1985	Assisted SAFGRAD	
REDSO/EA (Nairobi)	1981	Project review	
	1982	Project design	
	1984	Project design	
	1984	Consultation on pest/pesticide management	
REDSO/WA (Abidjan)	1983	Project design	
	1985	Evaluated tsetse fly problem	
Rwanda	1981	Project evaluation	
Senegal	1982	Project design	
	1983	Consultation on insecticides for termites	
	1983	Advised on pesticide disposal	
	1983	Prepared EA	
	1983	Project design	
	1983	Evaluated biological control of cassava pests	
	1984	Project review	
	1985	Project evaluation	
	Somalia	1980	Prepared EA
	Sudan	1980	Prepared EA; project design
		1983	Evaluated cotton insecticide (aldicarb)
Tanzania	1980	Advised on maize insect control	
	1981	Consultation on pesticide analysis	
Zambia	1983	Consultation on termite insecticides	
<u>LATIN AMERICA/CARIBBEAN</u>			
Belize	1982	Consultation on pesticide use	
	1984	Assisted with melon pest problem	
	1985	Prepared EA	
Bolivia	1983	Advised on pesticides	
	1983	Prepared EA	
	1985	Reviewed distribution/use of pesticides	
	1986	Assisted with IPM Project	

(Continued)

Mission or Office	Year	Activity
<u>LATIN AMERICA/CARIBBEAN (Continued)</u>		
Costa Rica	1984	Assisted in pesticide analysis in water
	1984	Assessed fumigation needs
	1984	Consultation on pesticides in coffee
	1980-85	Periodic consultation by CICP specialist at ROCAP
Dominican Republic	1985	Project review
Ecuador	1984	Advised on IPM
	1985	Reviewed IPM developments
El Salvador	1986	Reviewed/assisted IPM projects
	1980	Pesticide analysis
	1980-86	Periodic consultation by CICP specialist at ROCAP
	1985	Assisted in cotton IPM project
Guatemala	1980	Investigated cardamon virus problem
	1980	Pesticide analysis
	1982	Consultation on IPM
	1980-86	Periodic consultation by CICP specialist at ROCAP
Guyana	1980	Reviewed crop protection
Honduras	1980-85	Periodic consultation by CICP specialist at ROCAP
Mexico	1982	Advised on tree pest problems
Nicaragua	1981	Assessed pesticide hazards
Panama	1981	Consultation on pest/pesticide management
	1982	Prepared EA
	1983	Advised on vegetable IPM
	1984	Assisted on pesticide information system
Paraguay	1980	Consultation on pest/pesticide management
Peru	1981	Consultation on pest/pesticide management
	1981	Prepared EA
ROCAP	1984	Assisted in IPM development
	1986	Reviewed/assisted IPM projects
	1983	Developed IPM project PID
	1984	Prepared PP, IPM project
Regional Development Office/Caribbean (Bridgetown)	1985	Reviewed CATIE/ROCAP IPM project
	1980	Assessed pesticide use, CARDI project
Regional Development Office/Caribbean (Bridgetown)	1981	Reviewed banana pesticides used by WINBAN
	1982	Prepared EA for CATCO project
	1983	Prepared EA, St. Lucia
	1983	Prepared EA, St. Vincent
	1984	Established Pest Management Unit, Grenada

ANNEX 3

SUMMARY OF TRAINING ACTIVITIES SPONSORED BY PROJECT

Dates	Training Activity	Location	Sponsors
March 8-21, 1980	Seminar on analysis of insecticide residues of export meat	Nicaragua	CICP/AID
Sept. 2-13, 1980	Regional (Mesoamerica) course in integrated control of agricultural pests	Mexico	CICP/AID, CIES, FAO, OAS
Nov. 3-7, 1980	Seminar/workshop on pest/pesticide management in Caribbean	Barbados	CICP/AID, CARDI
Nov. 25 - Dec. 16, 1980	CAB - CIBC course in biological control	India	CAB, CIBC
Dec. 1-12, 1980	Course in pesticide residue analysis of beef	Guatemala	CICP/AID
Feb. 1-28, 1981	Course on integrated control of agricultural pests	Peru	CICP/AID, AID/Lima, UNA, MAG/Peru
Feb. 3-7, 1981	Follow-up to training course in residue analysis held in 1980	Nicaragua	CICP/AID
June 7-14, 1981	Train-the-trainer agromedical certification program	Jamaica	CARDI, CICP/AID
July 23 - Aug. 5, 1981	ICIPE/UNEP training course in pest management	Kenya	ICIPE, CICP/AID
Aug. 10-21, 1981	Short course on integrated pest management in tropical crops	Trinidad	UWI, CICP/AID, IICA, CARDI
Oct. 10-18, 1981	Pesticide management training	Jamaica	CARDI
Oct. 25 - Nov. 21, 1981	Short course on integrated control of pests of horticultural and basic grain crops	Guatemala	CICP/AID, AID/ROCAP, ICTA
Jan. 10-28, 1982	IPM for rice in West Africa	Liberia	CICP/AID, WARDA

(Continued)

Dates	Training Activity	Location	Sponsors
March 22 - Apr. 3, 1982	Short course in IPM	Honduras	Honduras Ministry of Renewable Natural Resources, CICP/AID, AID/Honduras, AID/ROCAP
May 22 - June 7, 1982	Train-the-trainer course in pesticide safety	Paraguay	AID/Paraguay, Peace Corps
July 18 - Aug. 10, 1982	ICIPE/UNEP training course in pest management	Kenya	ICIPE, UNEP
Sept. 15- 22, 1982	Train-the-trainer workshops in pesticide management	Trinidad and St. Lucia	PAHO, CICP/AID
Oct. 4-20, 1982	Course on plant protection in South Pacific region	Tonga	CICP/AID, GTZ, SPC, Government of Tonga
Oct. 25-29, 1982	Course on pest/pesticide management for Peace Corps Volunteers in South Pacific	Tonga	CICP/AID, AID/SPRDO, Peace Corps
Feb. 21-25, 1983	Bolivia Pesticide Management seminar/workshop	Bolivia	MACA, CICP/AID, PL-480 Title III Project in Plant Protection and Quarantine
March 12-15, 1983	Peace Corps workshop on crop protection	Mombasa, Kenya	Peace Corps, AID
March 28 - Apr. 2, 1983	Cholinesterase analysis training	Dominica	CICP/AID
April 3-17, 1983	International workshop in integrated pest control for legumes	Brazil	CICP/AID, EMBRAPA, FAO, IITA, INTSOY
June 18 - Sept. 14, 1984	Pesticide residue analysis training course	Miami, Florida	AID/OFDA, CICP/AID
Aug. 3-29, 1984	Course in safe pesticide use and effective application	Lesotho and Zambia	CICP/AID, IPPC/AID, AID/REDSO-EA

(Continued)

Dates	Training Activity	Location	Sponsors
Sept. 13 - Oct. 13, 1984	Pesticide safety course	Bolivia	AID/Bolivia, IPPC/AID
Sept. 17 - Dec. 14, 1984	Pesticide residue analysis	Miami, Florida	AID/OFDA, CICP/AID
Oct. 1-11, 1984	Entomology short course	Costa Rica	CATIE, AID/ROCAP, CICP/AID
Nov. 12-14, 1984	Interamerican plant health conference	Costa Rica	FAO, IICA
Dec. 6-13, 1984	International seminar on IPM in the Sahel	Niger	CILSS, FAO, AID
Jan. 4-27, 1985	IPM training workshop	Bangladesh	BARC, IADS, AID/ Bangladesh
Jan. 7-11, 1985	PMPP Conference	Thailand	PMPP, Kasetart University
Jan. 7 - Apr. 5, 1985	Pesticide residue analysis training course	Miami, Florida	AID/OFDA
Feb. 25 - Mar. 8, 1985	Pesticide training workshop	Ecuador	AID/Ecuador, MAG/Ecuador
March 10-15, 1985	Regional seminar/workshop on pest/pesticide management in East Africa	Kenya	AID/REDSO-EA, ICIPE
April 1-19, 1985	Pesticide legislation workshop	Togo	GTZ, CICP/AID
Apr. 22 - July 19, 1985	Pesticide residue analysis training course	Miami, Florida	AID/OFDA, CICP/AID
June 20, 1985	IPM lecture, AID ADO Workshop	Washing- ton, DC	AID
June 29 - July 11, 1985	Pesticide application course	Peru	USAID/Peru, CICP
March 17-20, 1986	2nd International Conference on Plant Protection in Tropics	Malaysia	Malaysian Plant Protection Society

ANNEX 4

PUBLICATIONS DEVELOPED DURING PROJECT CONTRACT PERIOD

Proceedings of Seminars-Workshops

1. **"Proceedings of Seminar and Workshop on Pest and Pesticide Management in the Caribbean."** 1981. **Hammerton, J. L. and E. G. B. Gooding, editors.**

(A report of the activities held at Bridgetown, Barbados, W.I., November 3-7, 1980. Sponsored jointly by CICP, AID, Ministry of Agriculture, Ministry of Food and Consumer Affairs, Ministry of Health and National Insurance, Barbados, CARDI, CARICOM, PAHO, and the University of the West Indies. Three volumes.)

2. **"Seminar on the Use of Pesticides in Panama: Effects on Health and Environment."** 1982. **Parillon D., Cutberto, Eduardo Trujillo and Pedro Martiz, editors.**

(Report on the proceedings of a seminar held in Divisa, Panama, April 22-24, 1981. Sponsored jointly by CICP, USAID/Panama, Ministry of Health and Ministry of Agricultural Development, Panama. In Spanish only.)

3. **"Proceedings of the International Workshop in Integrated Pest Control for Grain Legumes."** 1984. **Matteson, P. C., editor.**

(Compilation of papers presented at a workshop held in Goianas, Goias, Brazil, April 3-9, 1983. Sponsored jointly by CICP, USAID, EMBRAPA, FAO, IITA, and INTSOY.)

Proceedings of Short Courses

1. **"Second Intensive Course on Integrated Control of Agricultural Pests and Diseases."** 1981. **Anonymous.**

(Compilation of lectures presented during a short course on integrated pest control held in La Molina, Lima, Peru, from February 2-27, 1981, under sponsorship of CICP, AID, UNA, and the Ministry of Food and Agriculture, Peru. In Spanish only. Four volumes.)

2. **"International Course on Integrated Pest Control."** 1982. **Anonymous.**

(Compilation of lectures presented during a regional short course on this subject held at Antigua, Guatemala from October 16 - November 19, 1981, under sponsorship of CICP, ROCAP, ICTA, and the Ministry of Agriculture, Guatemala. In Spanish only. Three volumes.)

3. **"Integrated Pest Management in Rice in West Africa." 1982. Anonymous.**

(Compilation of lectures presented during a regional short course at the James T. Phillips, Jr., Regional Training Centre in Fendall, Liberia from January 10-28, 1982 under sponsorship of CICP, AID, and WARDA. In both French and English.)

4. **"Sub-Regional Training Course on Methods of Controlling Diseases, Insects and Other Pests of Plants in the South Pacific." 1984. Anonymous.**

(Report on the proceedings of a course held at the Government Experimental Farm, Vaini, Tonga, October 4-20, 1982. Sponsored jointly by CICP, AID, and German Agency for Technical Co-operation in cooperation with the Ministry of Agriculture, Fisheries, and Forests of Tonga and the South Pacific Commission.)

Training Manuals/Books

1. **"An Agromedical Approach to Pesticide Management: Some Health and Environmental Considerations." 1982. Davies, John E., Virgil H. Freed, and Fred W. Whittemore, editors.**

(CICP/AID Special Report containing background information for participants in pesticide safety training programs and pesticide management seminars/workshops.)

2. **"Training Program for Pesticide Users - Trainer's Manual." 1984. Granovsky, T. A., H. N. Howell, C. L. Heep, and J. I. Grieshop.**

(Training manual developed for use in pesticide safety training programs to train persons who teach, train, or advise others in the safe and proper use of pesticides. Not currently available for general distribution. In both Spanish and English.)

3. **"El Angel de la Muerte." 1984. Grieshop, J. I., with Esperanza Martinez Y. and David Winter. Photography by David Winter.**

(Photo-novel illustrating health hazards of pesticides. CICP/USAID/Ecuador, and the Comision para la Proteccion Integrada de Cultivos, Ministerio de Agricultura y Ganaderia: PNSV/Ecuador. Adapted from an earlier version prepared by Harry N. Howell, Texas A&M University, under the title "La Visita del Angel de la Muerte." In Spanish only.)

Reviews of LDC Crop Protection Problems/Programs

1. **"La Defense des Cultures en Tunisie."** 1980. Schaefers, George A., Benham, E. Lockhart, and George P. Georghiou.
(Updated report of the status of crop protection in Tunisia. In French only.)
2. **"IPM Needs of the CAP Region."** 1982. Mitchell, Wallace C. and Eduardo E. Trujillo.
(Updated report of the status of crop protection in Costa Rica, Guatemala, Honduras, and Panama. In both Spanish and English.)
3. **"An Integrated Crop Protection Program for Peru."** 1983. Irwin, Michael E., et al.
(UC/AID/PM Multidisciplinary Study Team Report.)

Directories/References in Pest Management

1. **"World Directory of Plant Pathologists"** (second edition). 1980. Fisher, Fran E., editor.
2. **"Acronym List of International Organizations Related to Agriculture, Economic Development, and Pest Management."** 1981. Anonymous.
(Comprehensive list of acronyms and addresses of international organizations.)

Newsletters

1. **"Pest Management News."** (Vol. 4, No. 2-4.) Calvert, Don, editor.
(The official Project newsletter, distributed at no cost worldwide to some 3,500 individuals and organizations per issue. Discontinued after Vol. 4, No. 4 because of budetary constraints.)

Quarterly Conference Announcements

1. **"International Conferences Related to Pest Management."**
(Twenty issues of the quarterly, International Conferences, were distributed worldwide at no cost. Discontinued after July 1985.)

Refereed Journal Articles

1. **"Intégrated Pest Management."** 1982. Environmental Science and Technology. (Vol. 16, pp. 282A-288A.) Bottrell, Dale G., and Ray F. Smith.

2. "Social Problems in Pest Management in the Tropics." 1983. Insect Science and Its Application. (Vol. 4, No. 1/2, pp. 179-183.) Bottrell, Dale G.
3. "The Ecological Basis of Boll Weevil (Anthonomus grandis Boheman) Management. 1983. Agriculture, Ecosystems and Environment. (Vol. 10, pp. 247-274.) Bottrell, Dale G.
4. "Government Influence on Pesticide Use in the Developing Countries." 1984. Insect Science and Its Application. (Vol. 5, No. 3, pp. 151-155.) Bottrell, Dale G.

Scientific Conference Proceedings

1. "Transnational Crop Protection Projects." 1983. Proceedings of X International Congress of Plant Protection, held at Brighton, England. Smith, Ray F., and Dale G. Bottrell.

Annual Reports

1. "Final Report, UC/AID Pest Management and Related Environmental Protection Project (1971-1980)." 1980.
2. "Annual Report (1980-1981)." Pest Management and Related Environmental Protection Project. Consortium for International Crop Protection. 1983.
3. "Annual Report (1981-1982)." Pest Management and Related Environmental Protection Project. Consortium for International Crop Protection. 1983.
4. "Annual Report (1982-1983)." Pest Management and Related Environmental Protection Project. Consortium for International Crop Protection. 1983.
5. "Annual Report (1983-1984)." Pest Management and Related Environmental Protection Project. Consortium for International Crop Protection. 1985.

*Published under funding from sources other than Contract No. AID/DSAN-C-0252.

ANNEX 5

PROJECT LINKAGES WITH INTERNATIONAL AND LDC INSTITUTIONS

Institution

LATIN AMERICA/CARIBBEAN

CARDI, St. Augustine, Trinidad
CATIE, Turrialba, Costa Rica
Escuela Agricola Panamericana, Zamorano, Honduras
IICA, San Jose, Costa Rica
JAMA, Mona, Jamaica
PMU, Ministry of Agriculture, St. George's, Grenada
UWI, Mona, Jamaica

ASIA

FAO, Inter-Country Rice Integrated Pest Control Project, Manila,
Philippines
IRRI, Manila, Philippines
MARDI, Kuala Lumpur, Malaysia
NCPCL, College, Laguna, Philippines

NEAR EAST, MIDDLE EAST, NORTH AFRICA

Cairo University, Cairo, Egypt

AFRICA

Egerton College, Njoro, Kenya
ICIPE, Nairobi, Kenya
IITA, Ibadan, Nigeria
WARDA, Monrovia, Liberia

INTERNATIONAL AND OTHER

CID, Tucson, Arizona
CSIRO, Canberra City, Australia
FAO, Plant Protection Division, Rome, Italy
GTZ, Bonn, Germany
INTSOY, University of Illinois, Urbana, Illinois
NAL, USDA, Beltsville, Maryland
Peace Corps, Washington, D.C.
PMPP, The Open University, United Kingdom
SCPM, Silwood Park, Ascot, Berkshire, United Kingdom
WHO/PAHO, Washington, D.C.
