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POSTHARVEST INSTITUTE FOR PERISHABLES

A N N U A L R E P O R T

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ANNUAL REPORT

October 1, 1989 to September 30, 1990

**Postharvest Institute for Perishables
College of Agriculture
University of Idaho
Moscow, Idaho 83843**

Harvey C. Neese, Director

Cooperative Agreement No. DAN-1323-A-00-5093-00

Prepared for the

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

by

PIP Staff

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I. EXECUTIVE SUMMARY

This annual report of the Postharvest Institute for Perishables (PIP), College of Agriculture, University of Idaho, covers the period October 1, 1989 through September 30, 1990.

There appears to be increasing demand for postharvest and marketing assistance by AID Missions for developing countries. Those countries are also increasing activity in making contacts with U.S. or European agribusiness firms which may be interested in investments in developing countries. Currently there is no consistent way for AID projects to contact U.S. agribusiness firms. Personnel from each project must develop their own technique. The time may have arrived for USAID to consider setting up a center which would routinely develop contacts with interested agribusinesses and make these contacts available to the various USAID-supported projects relevant to agribusiness development.

PIP had technical assistance projects in the following countries in FY90: Sri Lanka, Fiji/South Pacific, Bolivia, Morocco, Lesotho, Cameroon, and the Philippines.

Under training, the following projects were completed: Publishing the Commodity Systems Assessment Methodology (CSAM), organizing a conference on the "Rationale for U.S. Support of Third World Agricultural

Development," and sponsoring a trip to Honduras to prepare a proposal for setting up an information service and training personnel to maintain the center.

PIP also set up training courses for two Pakistanis, one in postharvest handling, and the other in operating an information center.

PIP continues its work with shrinkwrap as a disinfestation method to destroy fruit flies in tropical fruit. PIP also is supporting a research project to develop alternative methods of sprout control in potatoes.

In this reporting period, PIP published two progress documents, an annual report, four reports on various subjects, four technical reports, one PIP Tip, and three New Titles.

In the past fiscal year, the PIP Information Center received 31 percent more requests, served 26 percent more clients, and added 37 percent more titles to the collection than in the previous fiscal year.

The University of Idaho and the USAID S&T Bureau signed an extension of the second five-year Cooperative Agreement for a period of 27 months. This period is to be used to determine if PIP and three

other S&T supported projects might collaborate more closely and have a broader umbrella type postharvest designation.

Demand for PIP type activities continues to increase; however, with a modest budget and a small office staff PIP is limited as to how much it can expand in the future. Marketing, exports, and postharvest handling assistance projects are increasing. Currently, collaboration between agribusinesses in developing countries and the U.S. is becoming more important. However, linking interested agribusinesses in the U.S. with promising investments in developing countries is not an easy task.

II. INTRODUCTION

This report reviews activities of PIP for the period October 1, 1989, to September 30, 1990. This is the fifth annual report of PIP activities under the second five-year Cooperative Agreement AID/DAN-1323-A-00-5039-00 between the University of Idaho and the USAID Bureau for Science and Technology (S&T), Office of Agriculture.

PIP had over \$500,000 worth of buy-in contracts during the past fiscal year. These buy-ins are due in large part to PIP's Market Analyst, who is attached to the Agricultural Marketing Improvements Strategies project (AMIS). The AMIS Project, because of its marketing emphasis, has been deluged with requests from AID Missions for postharvest and marketing project work. Interest in the AMIS Project appears to be growing as more countries attempt to tap into the marketing of fruits and vegetables, a new source of foreign exchange for many countries.

PIP has two longer term specialists who are paid out of funds other than the PIP core budget. Richard Abbott is paid through the AMIS Project. The other specialist is Dr. Richard Schermerhorn, who has been assigned to almost half-time on the Philippine Marketing Information Services Sub-project (MARIS).

PIP has had to reduce efforts on projects that do not bring in additional funds each year. The organization has been able to progress only because of additional funding earned from buy-in projects. Long-term training for developing country students has been eliminated, and adaptive research has been substantially reduced.

PIP is continually searching for additional funding opportunities in order to fulfill its mandate of providing postharvest and marketing services to developing countries.

PIP has acquired an accounts manager to replace the previous secretary/records manager position. It was found with the increased project activity, that personnel in the records manager position did not have the training necessary to handle the more complex accounting.

III. PURPOSES, GOALS AND OBJECTIVES OF THE COOPERATIVE AGREEMENT

The purpose of the Cooperative Agreement DAN-1323-A-00-5093-00 between the U.S. Agency for International Development (USAID) and the University of Idaho is to increase PIP's collaboration with U.S., lesser developed countries (LDCs) and international institutions; to conserve perishables after harvest by improving LDC institutions and programs; to increase PIP's resource base; and to implement economically sound and environmentally safe postharvest programs.

The Cooperative Agreement is intended to strengthen PIP's capability to:

1. Carry out adaptive research related to postharvest conservation and marketing of perishable commodities.
2. Provide technical advice and assistance on postharvest problems of perishables to USAID Missions.
3. Produce, selectively collect, and distribute key research data on postharvest and marketing problems so as to increase the capability of the Postharvest Institute for Perishables Information Center (PIPIC).

The goals and objectives of the Cooperative Agreement are as follows:

1. To increase the availability of perishable food commodities without increasing production areas.
2. To improve the basic diets of people in developing countries by reducing postharvest food losses.
3. To reduce the costs of perishables by improving the efficiency of marketing systems.
4. To help develop private sector agribusinesses associated with marketing, processing, preserving, packaging, storing, transporting, and handling of perishables.

IV. PROGRAM DEVELOPMENT AND IMPLEMENTATION

The four major activities of PIP are adaptive research, technical assistance, training, and information collection and dissemination. Because of a reduced budget--partially due to the U.S. agricultural industry's opposition to foreign assistance--PIP organized a conference in FY 90 entitled "The Rationale for U.S. Support of Third World Agricultural Development." Participants attended from the Pacific Northwest's agricultural industries, the public sector, and officials involved with foreign assistance programs.

PIP continues its technical assistance as a subcontractor with the Agricultural Marketing Improvements Strategies (AMIS) project funded by USAID/S&T Office of Rural Development.

The past year's activities (FY90) are categorized by the areas as mandated in PIP's scope of work.

1. Adaptive Research Program

a. Preservation and storage

- Shrinkwrapping to destroy fruit fly larvae and eggs in tropical fruit.
- Publication of previous work on solar drying. (Partially completed.)

b. Commodity Systems Assessment Methodology (CSAM)

- Publication of the manual in FY90.

2. Training Program

Training by PIP is limited to short-term due to budget constraints.

- Training of Pakistan participant on refrigeration, storage, and marketing of perishable crops.
- Training associated with information personnel at Panamerican Agricultural School in Honduras.

3. Technical Assistance

a. The Basic Ordering Agreement (BOA) is a companion document to the Cooperative Agreement between the University of Idaho and USAID/S&T Agriculture.

b. The AMIS subcontract with Abt Associates implements technical assistance requests under a contractual arrangement similar to the BOA. Under this contract, PIP fulfills technical assistance requests, primarily

those concerned with perishable commodities.

Completed or ongoing technical assistance projects are as follows:

- Sri Lanka
- Fiji/South Pacific
- Bolivia I and II
- Morocco
- Lesotho I and II
- Cameroon
- Philippines

4. PIP Information Center

Information searches and dissemination of information are integral to PIP's efforts to improve postharvest handling of perishables in developing countries. The PIP Information Center (PIPIC) collects and stores postharvest documents; provides microfiche or paper copies to developing countries' clients; completes bibliographic searches; and provides other information services for developing countries as requested. (See Section IX for detailed information on PIPIC).

5. Agricultural Marketing Improvement Strategies (AMIS)

PIP, as mentioned, is a subcontractor to Abt Associates on the AMIS Project. The AMIS scope of work involves technical assistance, market innovations, adaptive research, case studies, training, and networking. (See Section VIII.)

6. Administration

- Dr. Al Lingg, Associate Dean for Resident Instruction of the College of Agriculture, is the Director of International Agricultural programs.
- Harvey C. Neese is the Director of PIP.
- Selma Nielsen is the Information Specialist and Manager of PIPIC activities.
- The Field Director's position will soon be filled by Judy Edmister. Judy has had extensive experience in Africa and South Asia on developmental assistance programs. She has a M.S. degree in Food Science.

V. ADAPTIVE RESEARCH DEVELOPMENT AND MANAGEMENT PROGRAMS

PIP sponsored the following adaptive research projects, or project components, during the reporting period:

1. Preservation and Storage

a. Shrinkwrap fruit fly disinfestation.

Dr. Eric Jang, USDA/ARS Fruit and Vegetable Research Laboratory, Hilo, Hawaii.

Papayas and nectarines were the two fruits used for the shrinkwrap work this year. Papaya tests were set up to evaluate the efficiency of the cryovac wraps D940#60 and D955#60 in disinfestation and also to see their effects on fruit quality. These tests were carried out with temperatures varying from 52° F to 90° F. 90 degree F seemed to have the best kill with no survivors after 48 hours.

The quality tests showed that a mature green papaya could be wrapped and held up to 25 days in an ambient temperature which varies from 63° F to 80° F. After 25 days, the fruit ripened normally and still retained its desirable qualities.

Nectarines have been a main focus during the past quarter. The results are promising as far as kill is concerned but the quality remains a problem. The wrap creates a fermented taste in the fruit which increases with time. When fruits are infested either naturally or by plugging, no survivors can be found after seven days.

Dr. John Fellman, Postharvest Physiologist, University of Idaho

Volatile molecules responsible for the disinfestation reaction caused by shrinkwrapping are still under investigation. The oxygen and carbon dioxide levels within the headspace of the wrapped papayas was found to change dramatically. Within 24 hours, carbon dioxide levels increased to nine percent from less than one percent, and oxygen levels dropped from 20 percent to 7.25 percent. Other studies showed that atmospheric modification alone was not responsible for insect mortality as results could not be duplicated by mimicking the atmospheric conditions within the papaya. This led to further investigation of the minor

components within the papaya flesh. Modern sampling technology in the form of purge-and-trap cryofocusing capillary gas chromatography was applied to macerated papaya tissue samples. Comparisons of samples from papayas wrapped at various stages of ripeness and non-wrapped papayas revealed the presence of four major volatile compounds in the fruit flesh. The volatile profiles from wrapped papaya flesh changed with one component appearing to accumulate for 24 hours. Although relative quantities of these four volatile compounds are known, their identity is still being investigated using mass spectroscopic techniques.

b. **Alternative Methods of Sprout Control in Potatoes**

Dr. Kiran Shetty, Postharvest Physiologist, University of Idaho.

This research project, supported by PIP, will test some of the naturally occurring volatile compounds for sprout control in potatoes. Potato tubers emit various compounds, some of which suppress the growth of sprouts.

On-farm potato storage is a continuing problem in some developing countries. If the sprouting mechanism in potatoes can be delayed, farmers would have longer use of stored potatoes. In addition, the marketing period for locally grown potatoes could be stretched out over a longer time frame, increasing the income of potato growers.

c. **Solar Drying Review Manual**

Marilyn Swanson, Food Nutritionist and Larry Williams, Agricultural Engineer

The manual on solar drying, which will include what has been learned since PIP conducted its first workshop, is nearing completion. A food nutritionist and agricultural engineer from the University of Idaho have worked on the manual, which will be published in the next fiscal year.

2. Commodity Systems Assessment Methodology (CSAM)

- a. Postharvest handling and marketing systems.

**Jerry LaGra, IICA
Tom Dechert, PIP**

The CSAM manual uses a methodology to assist agriculturists in developing countries to quantify losses and identify marketing problems and solutions for perishable commodities. The goal of the CSAM methodology is to provide developing country professionals with the tools to be able to establish commodity system databases, and from these, identify problems within the system and solutions to the problems. Five years were spent in developing the manual by the Inter-American Institute for Cooperation on Agriculture (IICA), the ASEAN Food Handling Bureau, and PIP.

- a. "Development of the Agribusiness System for Fruit and Vegetables in Chile", by Dr. Claudio Barriga, University of Chile, Santiago.

- b. "Successful Innovations in Thailand's Fresh Fruit and Vegetable Export Industry", by AgriSource Co. Ltd., Bangkok, Thailand.

PIP's Market Analyst on the AMIS Project supervised the Chile case study, which included two trips to Chile (enroute to Bolivia on buy-in activities), and editing of two successive draft versions of the report. For the Thailand case study, the Analyst edited a draft of the report. Both are expected to be finalized by the end of December 1990.

3. Case Studies (AMIS Project)

As of the end of September 1990, drafts had been completed of the following two case studies:

VI. TRAINING PROGRAMS

PIP has had several different projects this reporting period which related to training or preparing training manuals. PIP staff feels that training, both formal and informal, should be a major component of all of PIP's international development projects.

CSAM Manual

The Commodity Systems Assessment Methodology (CSAM) is a systematic procedure developed as a guide for training developing countries' personnel to identify postharvest and marketing problems and to find solutions. The CSAM manual is now completed and PIP expects the CSAM to be used by numerous developing countries and international donor organizations.

Conference entitled "Rationale for U.S. Support of Third World Agricultural Development."

About 75 people attended this PIP-sponsored national conference in Boise, Idaho, which was opened by Governor Cecil Andrus. The Citizen's Network for Foreign Affairs and the Agency for International Development helped to finance the conference.

Various speakers gave the pros and cons on the value of foreign agricultural assistance to the U.S. agriculture industry. A consensus opinion at the end of the

conference was that developing countries that do not progress economically will buy few agricultural products from the U.S. Because of developing countries' heavy emphasis on agriculture, the group agreed that this is the area that has the best opportunity for increased commodity sales, for both domestic and export markets.

Solar Food Drying Manual

The new and revised Solar Food Drying manual is nearing completion by a nutritionist and agricultural engineer at the University of Idaho. This manual will be used as a training guide for solar drying of food crops. PIP has organized a number of solar drying workshops in the past. Based on the experience from these workshops, and the previous PIP publications on solar drying, this latest manual should provide up-to-date information on the subject.

P a n a m e r i c a n A g r i c u l t u r e School/Honduras

PIP's Information Specialist traveled to Zamorano, Honduras, to help prepare a proposal for setting up an information center at the Panamerican Agricultural School.

Phase One included a visit to Zamorano to prepare a proposal. Phase Two will accomplish the following: acquire necessary equipment, train personnel, and implement a work plan.

Pakistan Training

PIP set up an eleven-week training program in postharvest handling and marketing of perishable crops for a Pakistani from a private sector cold storage firm in Pakistan.

The training program involved theoretical training in marketing and postharvest handling, and tour of various cold storage and postharvest facilities in the states of Washington and California.

Faculty from the Universities of Idaho and California/Davis conducted the training course.

PIPIC also provided technical training to a Pakistan librarian who visited the campus under the auspices of the university library.

VII. TECHNICAL ASSISTANCE AND FIELD RESEARCH PROGRAM

Mahaweli Agriculture and Rural Development Project (MARD)

PIP's participation in the MARD project is the result of a subcontract between PIP and the primary contractor, Development Alternatives (DAI). PIP is to provide approximately ten months of short-term technical assistance on the project.

Two consultants for PIP, an agricultural economist and postharvest specialist, spent eight weeks each in Sri Lanka during FY90 under this subcontract. The scope of work for the two consultants included the following:

1. Prepared assessment of harvest technology and practices required and recommended for diversified crops, based on priorities established by MARD and in reference to target commodities.
2. Determined postharvest technology required made recommendations for the project area.
3. Recommended timing for profitable investment in required harvest and postharvest technology and for application of this technology and practices.

4. Provided economic analysis of financial returns for four selected investments in harvest and postharvest technology.

5. Proposed implementation plan for MARD-funded program to test innovative harvest and postharvest technology.

The two-person team investigated a number of potential commercial possibilities in food processing and in exports, including silver skin onions, gherkins, pickled okra, and others.

Fiji Commercial Agricultural Development Project (CAD)

Two PIP consultants--a postharvest specialist and a marketing specialist--visited four countries in the South Pacific to assist the Suva AID mission to prepare a Project Identification Document (PID). The goal of the PID is to help the private sector develop a sustainable commercial agricultural system which will enhance the social and economic well-being of people on the island nations of Fiji, Western Samoa, Vanuatu, and the Solomon Islands. The CAD project, if approved, will assist the regional nations in increasing exports of high value horticultural crops.

Marketing Information Services Sub-project (MARIS)

The Accelerated Agricultural Production Project (AAPP) in the Philippines has three major parts:

- a. Improved services to farmers.
- b. Market development.
- c. Economic analysis, planning, and statistics components.

Under the market development component, the Marketing Information Services Sub-project (MARIS) is being implemented by the Bureau of Agricultural Statistics.

The main objective of the MARIS sub-project is to implement a "farmer-oriented" marketing information system which involves an integrated and comprehensive service.

PIP's Marketing Information Specialist made two trips to the Philippines during FY90.

Cameroon Fertilizer Privatization

PIP continues to advise on the Fertilizer Subsector Reform Program (FSSRP) in Cameroon. The PIP Market Analyst, a Soil Fertility expert, and a Monitoring and Survey Specialist, visited Cameroon to help establish the monitoring network for the FSSRP Project.

On the third project with the FSSRP in Cameroon, the team established a research coordination capacity within the Technical Support Unit. They also completed the work started in the previous consultancy by finalizing the arrangements for 1990 monitoring activities with those institutions participating in the FSSRP monitoring network.

Morocco Agribusiness Promotion Project

USAID Morocco is designing an Agribusiness Promotion Project to stimulate private sector business initiatives in the country's agricultural sector. The PIP Market Analyst, along with a team of specialists from Development Alternatives, conducted a rapid appraisal of the Moroccan business development environment. In addition, the team completed an analysis (both macro and sectoral level), of agribusiness development and helped develop a Project Identification Document which will explain the concept of the new project.

Lesotho Market Improvement Project

A PIP Market Specialist completed two consultancies in Lesotho and provided assistance in the following areas:

1. Strengthening vegetable marketing extension activities in Lesotho.
2. Expanding the input market information systems.

3. Recommending the strengthening of market information systems under the Lesotho Agricultural Production and Institutional Support (LAPIS) Project.

Bolivia Chapare Marketing Project

PIP has sent specialists to assist the Bolivia AID Mission in the Chapare Marketing Project. The consultants included the PIP Market Analyst, a Postharvest Specialist, and an Agribusiness Specialist. The scope of work was to determine the market potential for fresh and processed forms of specific crops--either new crops or improved varieties of existing crops which are being introduced into the project area.

The PIP Market Analyst, assisted by the Agribusiness Specialist, organized a trip to Bolivia by representatives of U.S. agribusiness firms. The objective was to promote and encourage those firms to become involved in the processing and marketing of crops grown in the Chapare and surrounding areas.

VIII. AGRICULTURAL MARKETING IMPROVEMENTS STRATEGIES (AMIS)

PIP's Market Analyst on the AMIS Project, Richard Abbott, continued during the year to function as one of the three core staff members on the project. He is based in the offices of the prime contractor, Abt Associates, in the Washington D.C. area. His activities consisted of technical assistance on buy-ins, which accounted for about 55 percent of the available work days, while the balance of the time was occupied with case study supervision and editing, the Inventory of Innovations, and project planning and management.

Technical Assistance

The Market Analyst contributed to and managed buy-ins from USAID Missions in Cameroon and Bolivia. The Analyst also contributed to a buy-in from USAID/Morocco. (This work is described in Section VII of the report.) Work in Cameroon and Bolivia is expected to continue in FY91.

Case Study Supervision and Editing

The analyst worked on case studies of the fruit and vegetable export industries of Chile and Thailand during the year. This work is described in Section V.

Inventory of Innovations

A partial draft of the Inventory of Innovations was completed by the Analyst early in the year for review and comment. There was general agreement on the format and content, but time constraints imposed by buy-in activity have delayed further work until FY91.

Project Planning and Management

These administrative activities include buy-in planning, staffing, and proposal writing, communicating with PIP in Idaho and with AID/Washington and overseas missions, writing of periodic reports and planning papers, and attending various meetings with AMIS Project personnel and with AID personnel. The Analyst spent two days at the PIP offices at the University in September 1990 to plan activities for FY91.

IX. THE INFORMATION CENTER

Introduction

During the past fiscal year, the Postharvest Institute for Perishables Information Center (PIPIC) continued to expand its services to a world increasingly in need of postharvest handling and marketing literature. In this fiscal year, PIPIC received 31 percent more requests, served 26 percent more people, sent 19 percent more orders, and added 37 percent more titles to the collection than in the previous fiscal year. In other words, PIPIC provided more bibliographic searches and documents to a larger number of people in more countries in 1990 than in previous accounting periods. The higher circulation figures illustrate that postharvest food losses and marketing problems continue to plague the developing world; and farmers, researchers, extension workers, nongovernmental organizations, consultants, professors, and agricultural information center personnel are still solving local food loss and agribusiness problems with the literature made available through the PIP Information Service.

Personnel

PIPIC staff members remain the same, and each person's job in the Information Center has expanded with new responsibilities during the past year. Selma Nielsen (Information Specialist) and Karri Meister (Library Assistant II)

have broadened their bibliographic search capabilities to include a greater number of local databases, like "Aquaculture" at the College of Agriculture; CDROM products, the USAID database of library holdings; on-line services, i.e., Colorado Alliance of Research Libraries (CARL); and electronic bulletin boards, like the Idaho Agri-Net through the U of I Department of Agricultural Economics and Rural Sociology, and the Economic Bulletin Board provided by the U.S. Department of Economics. Two telecommunication networks yet to be added to the PIPIC search repertoire are ORBIT with its tropical agriculture database and the Science and Technology Network (STN).

Similarly, other PIPIC staff have expanded their range of job activities. Diane Jackson (Library Assistant), in addition to her usual duties, has taken the responsibility for handling copyrights with the Copyright Clearance Center in Massachusetts, training other personnel to use the microfilming camera, and overseeing the scientific journals table-of-contents service. Casey Jacobsen has broadened her activities to include computerized client input, document keywording, stack searching, and starting to do database searching.

Marne Fouts, the fifth vital member of the PIPIC information team, has been photocopying, operating the microfiche reader/printer, and doing stack and CDROM searching.

Activities

During the past year, the focus of PIPIC information services has been on libraries, universities, missions, institutes, agencies, nonprofit and nongovernmental organizations, small businesses, and agricultural information centers, rather than on individual information users. Of course, PIPIC still supplies information to individuals, but the emphasis has changed because libraries and other educational institutions can provide wider access to PIPIC bibliographies and documents through their reference and referral services. Last summer, PIPIC contacted 100 international agricultural libraries and information centers that had not previously known of PIPIC information services. The countries with the most libraries contacted in the initial mailing of form letters and printed catalogs were Nigeria, Bangladesh, Zambia, Cameroon, Botswana, and Zimbabwe. The next mailing will concentrate on libraries in Central and South America.

Partially due to the recent promotional mailing, the number of requests received by PIPIC climbed by 38 percent and the number of persons served rose by 47 percent. PIPIC staff members have been able to serve a greater number of clients with growing information needs by holding

weekly staff meetings to discuss work strategies and priorities, organizing office operations more efficiently, working more hours, using two modems for dial-in searching, accessing more CDROM databases, and gaining additional expertise in locating and processing documents. However, future major increases in requests for PIPIC materials and services will require newer equipment and additional staff in the Information Center.

Education

PIPIC staff are continuing to take advantage of the educational opportunities that are available locally. The PIP Information Specialist and the two Library Assistants attended a training session on how to search the Western Library Network (WLN) system from the terminals in the University of Idaho Library. The Information Specialist and the Library Assistant II attended another session that discussed the current and potential uses of PEACESAT, the NASA satellite that makes it possible for nonprofit educational/health organizations to teleconference with people with similar interests in Western Samoa, Australia, Tasmania, and other countries. The Information Specialist also completed the following job-related courses: Spanish, Literature of the Biological Sciences, and The Automation of Small Libraries.

PIPIC has also been providing some technical training in the management of information to other information providers. A librarian from Pakistan,

Nuzhat Rasmin, from the Pakistan Council of Research in Water Resources, National Documentation Centre, Library and Information Network (NADLIN), visited the University of Idaho Library and the PIP Information Center. She participated in all aspects of the U of I Library system and in the information services provided at PIPIC.

Networking

Following is a partial list of the organizations that PIPIC regularly networks with:

ASEAN Food Handling Bureau, Kuala Lumpur, Malaysia.

Centro de Investigaciones en Tecnologia de Alimentos, San Jose, Costa Rica.

International Potato Center (CIP), Lima, Peru.

Commonwealth Scientific and Industrial Research Organization, Canberra, Australia.

ECHO Institute, Fort Meyers, Florida.

Fundacion Hondurena de Investigaciones Agricola, La Lima, Honduras.

Inter-American Institute for Cooperation on Agriculture, San Jose, Costa Rica.

International Development Research Centre, Ottawa, Canada.

International Institute for Tropical Agriculture, Ibadan, Nigeria.

International Voluntary Services, Washington, D.C.

Overseas Development & Natural Resources Institute, Chatham, Kent, U.K.

Southern Pacific Regional Agricultural Development, Western Samoa.

U.N. Food and Agriculture Organization, Postharvest Programmes, Rome, Italy.

Universidad Tecnica de Ambato, FCIAL, Ambato, Ecuador.

University of Port Harcourt, Port Harcourt, Nigeria.

University of the Philippines, Los Banos, College, Laguna, Philippines.

Volunteers in Technical Assistance, Washington, D.C.

In addition to the above organizations, PIPIC has been networking with the Escuela Agricola Panamericana (EAP) or the Panamerican Agricultural School in Zamorano, Honduras. In September, the PIP Information Specialist traveled to Honduras, with the Coordinator of the Postharvest Documentation Service (PHDS) at Kansas State University. The reason was to transfer two databases of bibliographic citations to postharvest handling and marketing literature into a database management program called

CDS/ISIS--which is being used at the school and throughout the developing world.

The database transfer proposal developed into a broader library automation project, and the two information center coordinators, in collaboration with EAP personnel, are currently writing a proposal of library services to accommodate the database transfer. The recommended system for automating the library at EAP consists of a local area network, including appropriate hardware, library management/communication software, microfiche equipment, and the computer furniture needed to outfit several workstations.

Once library services at EAP are automated, the opportunities for PIPIC and PHDS to network in Honduras and Central America will be increased. After the postharvest/marketing data has been transferred, the two USAID-supported Information Centers in North America will continue to send magnetic tapes of database updates. EAP will in turn make these citations available to a wider audience in Honduras, send its bibliographic database north, as well as help supply some of the documents requested by users located in Honduras and Central America.

Publications and Public Relations

During the past year, the Information Center published three New Titles, the December 1989, the April, and August

1990 editions. These printed catalogs represented 728 documents added to the collection, which now consists of 12,109 items. The featured change in the New Titles is the section devoted to marketing agricultural commodities. The new section is in keeping with the worldwide interest in rural economic development, agribusiness, product standards and quality regulations for export, rapid market appraisals, prevention of food losses in the marketplace, consumer buying preferences, tariff legislation, pricing and taxes. PIPIC clients can now easily locate this type of material within each edition of the New Titles.

In the public relations sphere, PIPIC has attempted to make all of its client user forms clear and easy to read. At the local level, PIPIC has set up exhibits at the Annual Ag-Days celebration, sponsored by the U of I College of Agriculture, established a table at the International Trade and Development Food Fair, and put up colorful displays in the U of I Library showcase.

Partial List of Future Projects

PIPIC's future projects include the following:

- Increased technical assistance and networking with the Panamerican Agricultural School in Honduras and with other libraries and universities in Central and South America.

- Expanded bibliographic and document services to small businesses, like the Asociacion de Proyectos del Pueblo, headquartered in Tegucigalpa, Honduras, and to non-profit alternative marketing organizations, such as, Pueblo to People, headquartered in Houston, TX.
- Stepped-up collection of Spanish-language materials with an ultimate goal of 25-30 percent of the total PIPIC collection.
- Production and distribution of a packet of extension materials (in cooperation with PHDS) for farmers in Honduras and other Spanish-speaking countries.
- Close cooperation and exchange with the new postharvest potato unit being established by the University of Idaho in Kimberly, Idaho.

User Satisfaction

In the FY90, PIPIC received a total of 211 blue client satisfaction cards: 86 from Africa, 59 from Asia, 55 from Latin America, and 11 from developed countries. The majority (87 percent) of PIPIC information users indicated a high degree of satisfaction with PIPIC materials. Of the remaining respondents, 12 percent said that the information was

too general, and one percent marked the too specific category.

PIPIC clients continue to be pleased with the bibliographies they receive. Responses on the user satisfaction cards indicate that 16 percent found the materials 100 percent helpful; 38 percent said that the materials were on-target 76-99 percent of the time; the same number of clients (38 percent) told PIPIC that the materials were useful 51-75 percent of the time; and 8 percent checked the "other" category.

"Major use" categories remain approximately the same as last year. Most respondents (54 percent) are using PIPIC materials for research; 17 percent for extension outreach; 16 percent teach classes with the materials; 11 percent put PIPIC information into other libraries; and 2 percent use the materials for other purposes.

Photocopy quality remained high. Copies sent from PIPIC were readable 95 percent of the time and difficult to read 5 percent of the time.

Information Center materials arrived when expected 70 percent of the time; sooner than expected 29 percent of the time; and only 1 percent indicated that the items arrived too late for use.

Statistics

The PIPIC document collection now contains 12,109 items. This total represents an increase of 728 (a 37 percent increase over FY89) additions to the collection. New documents were announced via three NEW TITLES (v. 8, n. 3; v. 9, n. 1; and v. 9, n. 2), which were distributed to clients in 120 countries.

In addition to showing a sizeable increase in collection building, PIPIC performed well in other major areas of the information business. The number of requests sent to PIPIC climbed by 31 percent; the number of documents sent by PIPIC rose by 30 percent; the amount of orders mailed from PIPIC increased by 19 percent; 24 percent more new requesters asked PIPIC for information; 26 percent more people were served by PIPIC; and the average order size expanded by 15 percent.

The PIP Information Center showed praiseworthy increases in client services throughout FY90, but, unfortunately, due to recent cutbacks in PIPIC staff hours, certain services may have to be limited or eliminated. PIPIC will, of course, continue to work as diligently as ever to serve its respected clientele, but fewer hours will of necessity mean slower and possibly fewer information services.

PIPIC STATISTICS

	FY 1989 10/88—9/89	Trimester 6/90—9/90	FY 1990 10/89—9/90	TOTAL
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CIRCULATION INFORMATION

Number of requests received:	626	275	902	
Number of new requesters:	275	105	361	
Additions to collection (titles)	461	227	728	12,109
Number of persons served:	460	175	618	
Number of orders sent:	637	224	786	
Number of countries served:	98	63	71	

MATERIALS DISTRIBUTED

DOCUMENTS:

Paper copies	4,552	2,710	6,031	
Obtained from other libraries	161	112	295	
Microfiche copies	421	251	957	
TOTAL DOCUMENTS	5,134	3,073	7,283	66,842

BIBLIOGRAPHIES:

In-house bibliographies	329	79	237	
Dialog bibliographies	118	49	168	
TOTAL BIBLIOGRAPHIES	447	128	405	3,422

TOTAL MATERIALS DISTRIBUTED:	5,581	3,201	7,688	70,264
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AVERAGE SIZE OF ORDER:	14.63 docs	13.72	17.14	
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X. ADMINISTRATIVE ACTIVITIES

Extension of Cooperative Agreement

PIP has been granted a 27-month extension of Cooperative Agreement II by the Office of Procurement in the S&T Bureau of AID. The extension period was proposed, instead of a third five-year Cooperative Agreement, to study whether PIP and three other S&T-supported projects at U.S. universities can be restructured to reduce administrative work for AID, obtain increased financial support in the future, and develop more of a postharvest collaborative mode.

S&T Review Team

Two consultants were contracted by the Office of Agriculture in the S&T Bureau to look at four Cooperative Agreements supported by this AID Bureau. The two-person team visited PIP for two days to learn more precisely the organization of PIP and the ways in which it provides meaningful assistance to developing countries.

Field Director Position

The previous Field Director for PIP has resigned in order to return to graduate school and obtain his Ph.D. The process of filling the position has been completed. The new Field Director will be on board in November. She is Judy Edmister, who has her M.S. in Food Science.

PIP Moving to New Quarters

PIP will be moving its administrative office to the University of Idaho Foundation-owned building in downtown Moscow in a month or so. There will be considerably more space for PIP to grow in the new quarters.

College of Agriculture

Dr. Al Lingg, Associate Dean, remains the Director of International Programs in the College of Agriculture. Dr. Lingg oversees all international work within the college, including PIP.

XI. PIP PUBLICATIONS

PIP publishes a number of reports and information documents. The following is a listing of PIP publications in FY90. All documents are available through USAID/PPC/CDIE, User Services, Document & Information Handling, 7222 47th Street, Chevy Chase, MD 20815, Tel: (301) 951-7191 unless otherwise noted.

PIP Interim and Annual Reports

PIP Staff. Annual Report: October 1, 1989 to September 1, 1990.

PIP Staff. Interim Report: October 1, 1989 to January 31, 1990.

Reports and Conference Proceedings

Conference Proceedings. *The Rationale for Support of Third World Agricultural Development.* February 1990.

PIP Staff and University of Idaho. *"Is Foreign Aid Good for U.S. Agriculture?"* Videotape. February 1990. (Available through PIP.)

PIP Staff. *Briefing Papers on Activities of the Postharvest Institute for Perishables.* July 1990. (Manual available through PIP.)

LaGra, Jerry. *A Commodity Systems Assessment Methodology for Problem and Project Identification.* Adaptive Research Project Report 12R, August 1990. (Manual available through PIP for U.S. \$15.)

AMIS Project Reports

Following are listings of AMIS projects for which PIP staff has had a major responsibility.

Abbott, Richard D. *Privatization of Fertilizer Marketing in Cameroon: A Second-Year Assessment of the Fertilizer Sub-Sector Reform Program.* June 1990.

Abbott, Richard D. *Privatization of Fertilizer Marketing in Cameroon: A Second Year Assessment of the Fertilizer Sub-sector Reform Program (Technical Report)*. June 1990.

Johnson, Anthony and Daniel C. Moore. *Monitoring and Data Collection System for the Fertilizer Sub-Sector Reform Program*. (Cameroon) June 1990.

Minot, Nicholas and Jerry J. Johnson. *Fertilizer Utilization Practices and Crop Response Research: Recommendations for the Fertilizer Sub-sector Reform Program of Cameroon*. October, 1989.

PIP Tip

Shetty, K.K., R.B. Dwelle and J.K. Fellman. *Shrink Wrapping--A Fresh Idea in Produce Shelf Life Extension*. PIP Tip No. 5. April 1990.

New Titles

PIPIC Staff. New Titles, vol. 8, no. 3, December, 1989
New Titles, vol. 9, no. 1, April, 1990
New Titles, vol. 9, no. 2, August, 1990

XII. PROPOSALS AND UPCOMING PROJECTS

PIP has potential projects in several developing countries as of the end of FY90. These are listed briefly below:

Eastern Caribbean Marketing Project

A joint proposal has been submitted to the ACDU by PIP and Great American Farms, a Florida food brokerage firm. Funding of the project, if approved, will be from the European Economic Community (EEC).

Panamerican Agricultural School/Honduras

PIP's Information Specialist travelled to Zamorano, Honduras to help prepare a proposal to set up an information center similar to the PIP Information Center. Training will be an integral part of the project.

Bangkok Conference on Postharvest Handling and Marketing

This proposed conference has been somewhat at a standstill because of lack of consensus on how the conference will be organized. PIP is looking at a possible tie-in with the PROPAK organization in Southeast Asia. PROPAK has a conference on packaging for food marketing held in alternate years between Bangkok and Singapore. The PROPAK people have indicated interest in collaboration with a PIP sponsored

conference on postharvest and trade issues.

India Council for Agricultural Research (ICAR)

We are awaiting news from India that computers have been purchased to conduct a training course for analysis of collected data. The data was collected, using the CSAM manual as a guide, but for various reasons, ICAR has not yet acquired the computers for the training program.

Nepal and South Pacific Island Countries

PIP has implemented short-term projects in Nepal and assisted the Fiji AID Mission to prepare a Project Identification Document (PID). A PID document is also being prepared in Nepal. Some project work may develop from one or both of these proposed projects.

Nicaragua Handling and Marketing

The Nicaragua AID Mission is preparing a project involving long- and short-term consultants to improve the handling and marketing of various food crops. PIP has been asked to submit a capabilities statement to the AID Mission for possible future work.

XIII. ECONOMIC SPIN-OFFS FOR U.S. AGRICULTURE

The following research projects and conferences offer potential benefits for U.S. agriculture.

1. **Conference entitled "Rationale for U.S. Support of Third World Agricultural Development."**

Some 75 agriculturists, representatives of donor organizations, and political figures attended the conference in Boise, Idaho.

A 20-minute video was produced by PIP from the conference speakers entitled "Is Foreign Aid Good for U.S. Agriculture?"

2. **Shrinkwrap for disinfection of fruits infected with fruit fly larvae and eggs.**
(See Section V).
3. **Postharvest/Trade Conference in Thailand.**
(See Section XI).
4. **Callus tissue and adaptability requirements in potatoes.**

PIP personnel have assisted a University of Idaho scientist to prepare a proposal in collaboration with the International Potato Center in Peru. The research proposal involves the treatment of potato

callus tissue to determine the climate required for adaptation of particular potato varieties. This research could have positive economic benefits for developing countries and the U.S.

5. **Alternative methods of sprout control in potatoes.**

This research project, with potential benefits for both U.S. and Third World potato producers, is described in Section V.

PIP has helped fund the initial research work because of its potential use by Third World potato growers.

XIV. EXTERNAL COST SHARING

The following amounts are estimated cost sharing donated to PIP by external organizations. This does not include cost sharing by UI faculty and staff.

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Inter-American Institute for Cooperation in Agriculture (IICA)/Costa Rica</p> <p>Project: Commodity Systems Assessment Methodology.</p> <p>Estimated time donated: 25 days</p> <p>Cost of consultant time: \$200/day</p> <p>Total cost of donated time:</p> <p style="padding-left: 40px;">25 days x \$200/day = \$5,000</p> | <p>3. Citizens Network of Foreign Affairs/Washington, D.C.</p> <p>Funds donated: \$4,000</p> <p>Estimated time donated: 10 days</p> <p>Cost of consultant time: \$200/day</p> <p style="padding-left: 40px;">10 days at \$200/day = \$2,000</p> <p style="padding-left: 40px;">\$2,000 + \$4,000 = \$6,000</p> |
| <p>2. Great American Farms, Inc./Florida</p> <p>Project: TROPRO Project/Caribbean and ACDU Proposal/Caribbean</p> <p>Estimated time donated: 15 days</p> <p>Cost of consultant time: \$300/day (average)</p> <p>Total cost of donated time:</p> <p style="padding-left: 40px;">15 days at \$300/day = \$4,500</p> | <p>4. Participants in Boise Conference on "Rationale for Support of Third World Agricultural Development"</p> <p>Est. No. of participants: 50 (not on federal salary)</p> <p>Estimated donated time: 200 days (three day conference plus travel)</p> <p>Cost of donated time: \$150/day (average)</p> <p style="padding-left: 40px;">200 days x \$150/day = \$30,000</p> <p>Total cost sharing by external organizations and personnel \$45,500</p> |

XV. PIP STAFF AND TIME RELATED TO PROGRAM COMPONENTS

The PIP staff at the end of FY90 is given below:

Harvey Neese, Director

Field Director

The selection process for hiring a new field director after Tom Dechert resigned to complete his graduate studies, has been completed. Judy Edmister will fill the position in November.

Selma Nielsen, Information Specialist
(3/4 time)

Tom Scherer, Program Assistant

Susan Peterson, Secretary

Karri Meister, Library Assistant
(3/4 time)

Diane Jackson, PIPIC Assistant
(3/4 time paid by UI College of
Agriculture)

Richard Abbott, Market Analyst
(paid with AMIS project funds)

Richard Schermerhorn, Marketing
Specialist (1/2 time, paid with AMIS buy-
in funds)

Irregular Help--several students work as
part-time irregular help for PIP.

Approximately 80 person-months of staff time, including professional and nonprofessional time, were charged to the PIP core funds during the 1990 fiscal year.

Staff time in months is estimated below for the six program components funded with PIP core funds. Irregular employment of students and others are also calculated for this fiscal year.

1. **Adaptive Research Program**
Estimated staff time:
13 person-months
2. **Training Program**
Estimated staff time:
12 person-months
3. **Technical Assistance and Field Research Program**
Estimated staff time:
13 person-months
4. **PIP Information Center**
Estimated staff time:
34 person-months
5. **General Administration** (does not include administrative time for projects within each of the components)
Estimated staff time:
8 person-months

TOTAL--80 PERSON-MONTHS