

PROJECT DATA SHEET

1. TRANSACTION CODE

A = Add
 C = Change
 D = Delete

Amendment Number 1

DOCUMENT CODE 3

2. COUNTRY/ENTITY

ROCAP

3. PROJECT NUMBER

596-0150

4. BUREAU/OFFICE

Latin American/Caribbean

05

5. PROJECT TITLE (maximum 40 characters)

Regional Environmental and Natural Resources Management

6. PROJECT ASSISTANCE COMPLETION DATE (PACD)

MM DD YY
 09 30 95

7. ESTIMATED DATE OF OBLIGATION
 (Under 'B.' below, enter 1, 2, 3, or 4)

A. Initial FY 89 B. Quarter 4 C. Final FY 95

8. COSTS (\$000 OR EQUIVALENT \$1 =)

A. FUNDING SOURCE	FIRST FY <u>89</u>			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total				48,500		48,500
(Grant)	(7,975)	()	(7,975)	(48,500)	()	(48,500)
(Loan)	()	()	()	()	()	()
Other U.S.				13,000		13,000
1. NGOs						
2.						
Host Country						
Other Donor(s) (USAIDs)	2,000		2,000	10,900		10,900
TOTALS	9,975		9,975	72,400		72,400

9. SCHEDULE OF AID FUNDING (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) ARDN	233	090		16,478		4,500		24,500	
(2) PSEE	233	090		2,939		4,000		19,000	
(3) HF	233	090		195				2,500	
(4) EHB	233	090		89				2,500	
TOTALS				19,701		8,500		48,500	

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)

066 067 069

11. SECONDARY PURPOSE CODE
 283

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code PVOU PVON ENV
 B. Amount 9,000 1,000 28,000

13. PROJECT PURPOSE (maximum 480 characters)

The Purposes of this RENARM Amendment are: (a) wide-spread planting, management, and utilization of multi-purpose trees on small and medium-size farms; and (b) to enhance general awareness of the costs of misuse of pesticides and of the benefits of proper handling, useage, and disposal, and to institutionalize public and private sector pesticide management practices accordingly.

14. SCHEDULED EVALUATIONS

Interim MM YY MM YY Final MM YY
 06 92 04 94

15. SOURCE/ORIGIN OF GOODS AND SERVICES

000 941 Local Other (Specify) CACM

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a page PP Amendment.) Adds \$8.5 million of ROCAP funds to finance tree crop dissemination and pesticide management activities, which together with \$4.6 million additional bilateral buy-ins brings the total AID cost level to \$59,422.

I certify that the methods of payment and audit plan of RENARM are in compliance with the Payment Verification Policy as described in the original Project Data Sheet.

17. APPROVED BY

Signature: Ronald Nicholson
 Title: Ronald Nicholson
 Acting Regional Director

Date Signed MM DD YY
12/19/90

Gary Bylesby, CONT

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION

MM DD YY

Project Paper Supplement

REGIONAL ENVIRONMENTAL AND NATURAL RESOURCES MANAGEMENT PROJECT
(RENARM)
(596-0150)

RENARM Tree Crop Dissemination Activity

RENARM Pesticide Management Activity

United States Agency for International Development
Regional Office for Central American Programs
(ROCAP)

December 1990

DRAFT PROJECT AUTHORIZATION AMENDMENT

Name of Country: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Panama, Nicaragua.

Name of Project: Regional Environmental and Natural Resources Management Project (RENARM): Tree Crop Dissemination and Pesticide Management Activities.

Project Number: 596-0150

1. Pursuant to Sections 103, 104, 105 and 106 of the Foreign Assistance Act of 1961, as amended, the Regional Environmental and Natural Resources Management Project (RENARM; 596-0150) for Belize, Costa Rica, El Salvador, Guatemala and Honduras was authorized on September 11, 1989, and was amended on June 29, 1990, to include Panama and Nicaragua. That authorization is hereby further amended as follows:

A. Planned obligations are amended to a total sum not to exceed Fifty Nine Million Four Hundred and Twenty Two Thousand United States Dollars (US\$ 59,422,000) in development assistance grant funds over a six year period from date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing the foreign exchange and local costs for Project activities.

B. The new Tree Crop Dissemination Activity will effect widespread planting, management and utilization of multi-purpose trees on small and medium-sized farms in Central America. The new Pesticide Management Activity will: (1) enhance general awareness of, and educate users on, the costs of misusing pesticides and the benefits of proper pesticide handling, usage and disposal; and (2) assist the public and private sectors in pesticide management.

C. The waiver of normal A.I.D. requirements with respect to the nationality of services approved for the RENARM Project on September 11, 1989, permitting the suppliers of technical services to have any country included in A.I.D. Geographic Code 941 as their place of nationality, shall also apply to activities carried out under this Project Paper Supplement.

D. The Project Agreements, which may be negotiated and executed by the officer to whom such authority is delegated in accordance with A.I.D. regulations and Delegations of Authority, shall be subject to the same terms and conditions as authorized on September 11, 1989, together with such other terms and conditions as A.I.D. may deem appropriate.

2. The authorization cited above remains in force except as hereby amended.

(name)
Assistant Administrator
Bureau for Latin America and the Caribbean

(date)

SUMMARY AND RECOMMENDATIONS

Summary

The Regional Environmental and Natural Resources Management Project (RENARM) was authorized on September 11, 1989, for a six year implementation period. The Project was approved by AID/W at an initial level of \$40.0 million in ROCAP funds with the understanding that \$10.0 million would be held in reserve for additional activities that would be included in the Project at a later date. As of September 30, 1990, approximately \$19.0 million has been obligated. This Project Paper Supplement presents two new discrete activities to be financed under the RENARM Project which were foreseen in the RENARM Project Paper: The Tree Crop Dissemination Activity and the Pesticide Management Activity. These two activities are independent yet related parts of RENARM Component Three, "Sustainable Agriculture and Forestry".

The objective of the Tree Crop Dissemination Activity is to effect widespread planting, management and utilization of multi-purpose trees on small and medium-sized farms throughout Central America. The objectives of the Pesticide Management Activity are: 1) to enhance general awareness of, and educate users on, the costs of misusing pesticides and the benefits of proper pesticide handling, usage and disposal; and 2) to assist the public and private sectors in pesticide management.

The Tree Crop Dissemination Activity will be implemented through an existing Project Agreement with the Tropical Agricultural Center for Research and Education (CATIE). The Pesticide Management activity will involve PASA Agreements with the Environmental Protection Agency (EPA) and the Peace Corps, and Grant Agreements with ICAITI and INCAP. Both of the proposed activities described in this PP Supplement are fully consistent with Agency, Bureau and Mission strategies, especially A.I.D.'s Central American Environmental and Natural Resources Strategy.

Project Inputs

The RENARM Project's amended budget summary and financial plan, incorporating costs and financing to be incurred by the new Tree Crop Dissemination and Pesticide Management activities, is summarized in Table 1. A revised Methods of Implementation and Financing Table is included as Table 2.

A.I.D Geographic Code 941 Waiver

A waiver of normal A.I.D. requirements with respect to the nationality of services was approved for the RENARM Project by the Acting AA/LAC on September 11, 1989. That waiver permits the suppliers of technical services under the RENARM Project to have any country included in A.I.D. Geographic Code 941 as their place of nationality. Since the activities described herein are integral components of the RENARM Project, and the justification included in the original Project is still valid, it is hereby proposed that that waiver also apply to activities to be carried out under this PP Supplement.

Recommendation

The Project Committee recommends authorization of this Project Paper Supplement based on analysis of the institutional, technical, social, financial and economic feasibility of the two respective components.

Table 1

BUDGET SUMMARY AND FINANCIAL PLAN BY ACTIVITY
(\$000)

<u>Activity</u>	<u>ROCAP</u>	<u>OTHER A.I.D.</u>	<u>TOTAL</u>
1. <u>POLICY INITIATIVES AND TECHNICAL SUPPORT</u>	<u>9,140</u>	<u>400</u>	<u>9,540</u>
Advisors	5,640	0	5,640
Policy Analysis	3,500	400	3,900
2. <u>ENVIRONMENTAL AWARENESS, EDUCATION, AND BIO-DIVERSITY CONSERVATION</u>	<u>9,000</u>	<u>4,000</u>	<u>13,000</u>
NGOs ACTIVITIES	9,000	4,000	13,000
3. <u>SUSTAINABLE AGRICULTURE AND FORESTRY</u>	<u>26,250</u>	<u>6,000</u>	<u>32,250</u>
Plant Protection	9,700	1,000	10,700
Watershed Management	4,390	400	4,790
Production from Natural Forests	3,660	0	3,660
Tree Crop Dissemination **	4,500	2,600	7,100
Pesticide Management **	4,000	2,000	6,000
<u>MONITORING, EVALUATIONS AND AUDITS *</u>	<u>806</u>	<u>0</u>	<u>806</u>
<u>INFLATION</u>	<u>1,652</u>	<u>261</u>	<u>1,913</u>
<u>CONTINGENCY</u>	<u>1,652</u>	<u>261</u>	<u>1,913</u>
<u>TOTAL</u>	<u>48,500</u>	<u>10,922</u>	<u>59,422</u>

* Mid-term evaluations incorporated in the budgets of Plant Protection, Watershed Management, Production from Natural Forests, and Tree Crop Dissemination.

** Project budgets include inflation and contingencies.

TABLE 2
Revised Methods of Implementation and Financing
 Figures in US\$000,000

<u>LINE ITEM</u>	<u>IMPLEMENTATION METHOD</u>	<u>FINANCING METHOD</u>	<u>AMOUNT</u>
<u>PERSONNEL</u>			
Technical	ROCAP Direct Contract/PSC	Direct Pay	\$ 7.2
	Institutional Procedures/PSC	Advance/	\$ 8.8
	PASA Agreements	Reimburs.	
	Grant Agreements		
Support	Institutional Procedures/PSC	Advance/	\$ 5.2
		Reimburs	
<u>TECHNICAL ASSI'T</u>			
Short Term	Institutional Procedures/ Profit Making Contractors	Advance/ Reimburs	\$ 1.0
<u>TRAINING</u>			
M.S. Scholarships	Place by Mission/Direct Placement	Direct Payment	\$ 1.6
Seminars & Workshops	Institutional Procedures/ Contractor or Institutional	Adv/Direct Payment	\$ 0.7
<u>POLICY ANALYSIS & RESEARCH</u>			
Policy Analysis	ROCAP Procedures/RFP	Direct Pay	\$ 1.7
Research Grants	ROCAP Direct Contract/Contrac- tor or Institutional	Direct Pay/\$ Reimburs	\$ 0.3
<u>TRAVEL & PER DIEM</u>			
Int'l & Local	Institutional Procedures/ Separate Invoices	Advance	\$ 1.5
<u>EQUIPMENT</u>			
Special Equipment, Vehicles, MicroComputers, Office Equipment	Institutional Procedures/ Bids/Purchase Orders/ Separate invoices	Advance	\$ 1.5
<u>MATERIAL & SUPPLIES</u>			
Operating Expenses	Institutional Procedures/ Purchase Orders/Combined invoices/Separate billing.	Advance/ Reimburs	\$ 2.0
<u>ADMINISTRATIVE SUPPORT</u>			
Overhead	Institutional Procedures, OMB circular/Audit Report	Reimburs	\$ 3.0
<u>EVALUATIONS & AUDITS</u>			
	ROCAP Direct Contract/ Profit Making Contractor	Direct Payment	\$ 1.2
<u>NGOs ACTIVITIES</u>			
	US, NGOs/Miscellaneous Grant & Coop. Agrm	Advance/ Reimburs	\$ 7.8
	PASA Agreements	Reimburs	\$ 1.2
<u>INFLATION & CONTINGENCIES</u>			
	-----	-----	\$ 3.8
USAID BUY-INS			
			\$10.9
	Total		\$59.4

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Project Paper Supplement

RENARM TREE CROP DISSEMINATION ACTIVITY
("MUCHALEÑA")

Regional Office for Central American Programs
(ROCAP)

December 1990

Project Paper Supplement

RENARM TREE CROP DISSEMINATION ACTIVITY
(“MUCHALEÑA”)

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- A. Tree Crop Dissemination Logical Framework.
- B. Work Plans.
- C. Detailed Cost Estimates.
- D. Training Plan.

List of Acronyms

AA.	Assistant Administrator (A.I.D.).
A.I.D.	United States Agency for International Development.
APHIS.	Animal Plant Health Inspection Service
BOSCOSA.	USAID/Costa Rica forestry project.
CATIE.	Tropical Agricultural Center for Research and Education.
CINDE.	Costa Rican Coalition for Development Initiatives
CODEFORSA.	Honduran Corporation for Forestry Development
DGF.	Director General of Forestry
DIGEBOS.	Direction General of Forestry
EOP.	End of Project.
EPA.	United States Environmental Protection Agency.
ESNACIFOR.	National School for Forestry Sciences (Honduras)
FDA.	Food and Drug Administration
FECCOPIA.	Federation of Agricultural Producers Organizations for Central America and the Caribbean
FHIA.	Honduran Foundation for Agricultural Investigation
FORESTA.	USAID/Costa Rica forestry project.
GIS.	Geographic Information Service.
GOES.	Government of El Salvador.
ICAITI.	Central American Research and Technology Institute for Industry
INCAP.	Institute of Nutrition for Central America and Panama
INCIENSA.	Costa Rican Institute for Nutrition and Health Research and Training
INFORAT.	CATIE's Technical Forestry Information Center
IPM.	Integrated Pest Management
LAC.	A.I.D. Bureau for Latin America and the Caribbean.
LEÑA.	ROCAP Fuelwood and Alternative Energy Sources Project.
LOP.	Life of Project.
LUPE.	Land Use Productivity Enhancement (Honduras)
MADELEÑA.	ROCAP Tree Crop Production Project.
MIRA.	Tree Resources Information Management System (=TRIM).
MIS.	Management Information System.
NGO.	Non-governmental organization.
PACD.	Project Activity Completion Date.
PASA.	Participating Agency Service Agreement.
PIRAMIDE.	CATIE reforestation project.
PROFOR.	Swiss forestry project in Columbia.
PVO.	Private voluntary organization.
RENARM.	Regional Environmental and Natural Resources Management Project.
RPMS.	Regional Program Management System
TFAP.	Tropical Forestry Action Plan.
TFAPS.	Tropical Forestry Action Plans
USAID.	United States Agency for International Development (bilateral Mission).
WHO.	World Health Organization

Project Paper Supplement

RENARM TREE CROP DISSEMINATION ACTIVITY ("MUCHALEÑA")

1.0 SUMMARY

The forestry and fuelwood situation in Central America offers another significant example of a natural resource-based economic sector destroying its own foundation. Wood provides over 65% of the energy consumed in Central America, and is of unique importance to the poor. There is no evident substitute for wood in their lives, and the consequences of increasing wood scarcity are severe. Reforestation and new planting of trees is a major part of the solution to this problem, and since over 80% of the land is in private hands, tree crop plantations (large and small) must be developed by the private sector.

ROCAP began to address this problem ten years ago, financing two projects directed by the Center for Tropical Agricultural Research and Training (CATIE): a five-year examination of some 200 tree species for their fuelwood value, followed by a six-year research and extension campaign to promote the planting of multi-purpose trees and the formation of fuelwood plantations. Farmers large and small have responded, and planting rates throughout the region are rising significantly. The technical information and outreach services offered by CATIE through local extension agencies have been an important factor in this favorable turn of events. The planting rate, however, has not yet reached the equilibrium or trend reversal levels for which a continuation and expansion of CATIE's promotional and technical assistance activities will be required. A third-stage, five-year, \$7.1 million effort, including a \$4.5 million AID Grant through ROCAP and \$2.6 million in Central American bilateral Mission buy-ins, is described in this Supplement.

2.0 BACKGROUND AND RATIONALE

2.1 LEÑA AND MADELEÑA

Cumulative years of deforestation in Central America and Panama (CA/P) have resulted in a worsening wood supply problem throughout the region. Self-sustaining reforestation on private land holdings, the major share (over 80%) of land in the region, offers a remedy. The hundreds of thousands of small and medium-size private land holders and farmers of Central America and Panama will undertake tree cropping if the feasibility, profitability and techniques of doing so are demonstrated and understood.

The initial attempt to address this problem on a regional scale began in 1980 under the Fuelwood and Alternative Energy Sources Project (LEÑA), administered by CATIE, which assessed some 200 different tree species for their fuelwood value. Following that, the 1985 Tree Crop Production Project (MADELEÑA) widened the scope of investigation to include multi-purpose trees and developed promotional and extension techniques. LEÑA and MADELEÑA initiated more than 10,000 demonstration plots for testing multi-purpose tree species and management systems. Experimental data were collected in six Central American countries over a wide range of environmental and site conditions and a variety of species production systems. MADELEÑA tested more than 150 species, of which 14 were identified for intensive experimentation.

In addition, the low operational microcomputer-based MIRA (Manejo de Información sobre Recursos Arbóreos, or Tree Resources Information Management -TRIM) system was established to permit analysis, exchange and transfer of scientific information on these species. Technical guides were drawn up for the establishment, measurement, analysis and model development of production systems. MIRA now controls all the information generated by field research plots from the LEÑA and MADELEÑA projects. The MIRA data base contains silvicultural information on tree species, seeds, soils, site characteristics and meteorological information. Socioeconomic factors will be integrated into the data base later. Users of MIRA to date include a number of companies and individuals in Costa Rica drawing on MIRA to comply with requirements under the "parcela de medición" (a sample plot on which growth is systematically measured) of the Reforestation Law, and the similar LUPE-AID project in Honduras. In addition, the Swiss PROFOR Project in Cochabamba, Bolivia, is using a Management Information System (MIS) based on MIRA for experiments in the Andes, and inquiries have been received from other South American countries as well.

The hypothesis that farmers would invest in forestry once the species, techniques, and benefits were demonstrated, and seedlings, and extension services provided, has been proven. Looking over the region today, in Costa Rica plantations are being established at a rate of 10,000 hectares (ha) per year at an annual cost of \$10 million, encouraged through fiscal incentives. Initiatives which include tree planting include the FORESTA and BOSCOA projects of USAID/Costa Rica, reforestation financed through the Forestry Development Fund of Costa Rica/Netherlands (Programs of the DGF, IDA and CODEFORSA), and a new National Forestry Fund for industrial-scale reforestation within the framework of the Tropical Forestry Action Plan. Guatemala has passed a law which will encourage reforestation, and CATIE was retained by USAID/Guatemala to design a broad-based reforestation project called PIRAMIDE. Also, agroforestry practices which CARE/DIGEBOS have been carrying out during the last 15 years are being expanded and industrial scale reforestation with government credit is progressing at the rate of about 5,000 ha per year.

Honduras has several projects in which small farmers will plant trees, of which the most ambitious is the LUPE project financed by USAID/Honduras. For 15 years, German assistance has also helped establish trees in the south of the country. El Salvador, with the help of PL 480 funds and technical assistance from MADELEÑA, now has several hundred community nurseries worked by thousands of small farmers turning out more than a million plants a year.

Reforestation using this model is now the policy of the GOES Ministry of Agriculture and is included in the National Reforestation Plan. Perhaps more importantly, it is accepted by campesinos as a way to improve their properties and their incomes. In Panama, AID is preparing the Natural Resources Management Project with reforestation and management of multipurpose trees in small farms and industrial scale reforestation. The new AID program in Nicaragua will also include support for natural resource management, and tree crop production is likely to be required as part of a watershed management program. Despite the war, Nicaragua continued to give importance to tree planting, so there is now some base of experience to build on.

LEÑA and MADELEÑA interventions ranged from direct supply of inputs and technical assistance to the farmer, common in the early years, to the establishment of demonstrations or the provision of information for planning plantations. The Projects' trend is to become an outreach catalyst, causing others to establish and manage trees. Much of this outreach has been through informal personal contacts. To achieve wider impact beyond the Forest services, CATIE is collaborating with private sector institutions (NGOs, PVOs, cooperatives, businesses) to provide better extension practices, and extension materials (printed material, videos) are being designed to reach a wider audience. However, the Outreach component of MADELEÑA began late because of recruitment problems and is not currently meeting demand.

In sum, systematic reforestation is off to a good start throughout the region. Nevertheless, plantings will not occur at a rate sufficient to offset deforestation trends unless national information and outreach capabilities are further strengthened.

2.2 PROBLEM STATEMENT

Reforestation in Central America has required many years of effort, and offers a long list of costly mistakes. Some failures were due to fire or lack of protection against grazing. Others failed through technical ignorance, such as improper matching of species to sites, inadequate nursery or establishment practices, inappropriate seed source, or through inept management. Nevertheless, the rate of tree planting has increased dramatically since 1985. As the rate of planting rises, it is increasingly important that investments of all sizes be based on reliable technical and economic information.

Although the current rate of tree planting has grown substantially over the past few years, it is small compared to the need. A ROCAP-financed study estimates that between 1985 and 1995 about 900,000 ha of plantations will need to be established in Central America to meet the demand for forest products. Now, in 1990, the current rate of planting is probably less than 25,000 ha per year, about one quarter of the target rate. Reaching the target means planting trees on hundreds of thousands of farms. Effective outreach, which goes beyond the traditional government extension services, is essential to achieve this spread. Extensionists and para-extensionists need to be well trained, supplied accurate information, and supported by understandable, convincing teaching materials. Current extension efforts are inadequate, with little interplay between projects and countries. MADELEÑA has supported extension work in institutions other than the Forest Services, and the

multiplier effect of a wider spectrum of extensionists has been beneficial. Much, however, remains to be done. Most of the trials and demonstrations are relatively recent, and other trees planted under MADELEÑA are still young. Information as to growth, yields, disease resistance and response to management practices (thinning, coppicing) becomes more reliable as the trees get older. There is a need to continue to monitor and analyze the existing trials and to use this information to refine technical packages. As programs expand, the information they are based upon needs to be more precise and reliable, and the delivery system network of collaborating institutions needs to be strengthened and expanded in outreach capacity and information management. These ends can be achieved through continuation of the MADALENA system, in modified form reflecting the experience of the past five years in dealing with the environmental and institutional conditions in Central America today.

The problem, simply put, is that the LEÑA and MADELEÑA Projects have been successful but have proven insufficient in scope and extent to meet the emerging demand for information and outreach services which tree crop planters must have if they are to reverse the constant diminution in wood supply confronting Central America.

2.3 AMENDMENT RATIONALE

The rationale behind this Amendment considers two questions: Why do it at all? And why do it as part of RENARM?

As noted above, CATIE, and by association AID, are in the position of having started something that is working more quickly and better than expected, and that is addressing a problem which is both better understood, and more serious, than when the LEÑA-MADELEÑA effort began ten years ago. The rationale for continued support is three-fold: 1) this \$7.1 million additional AID investment (and this may not be the last) will increase the "return" or developmental impact of the \$16.5 million already invested, as well as have an additional return at least as high; 2) if the proposed investment is not made, the research, training, and information campaigns carried on by CATIE will wither, reducing the effectiveness of local extension and para-extension services throughout the region, a trend certain to discourage actual and potential planters; and 3) an expansion of LEÑA and MADELEÑA into stage three ("MUCHALEÑA") will lead to an unusually broad-based private sector development effort to combat the economic, environmental and social time-bomb of deforestation.

Obligating this Amendment under RENARM makes sense. Reforestation and tree cropping is a "sustained use of natural resources", to quote from RENARM's purpose, and CATIE is generating and transferring the information and technology essential to this end. In addition, there will be management and oversight efficiencies for ROCAP in bringing these and other forestry-related activities under the RENARM umbrella.

An unusually high level of bilateral Mission buy-ins is anticipated in MUCHALEÑA, and this should serve three significant purposes. First, it will permit a second, critical look at the activity's purpose, design and feasibility. Second, it will enhance awareness within bilateral Missions and throughout the region of reforestation and new planting activities taking place in each country. And third, it will set the stage for more precisely

tailored, higher impact bilateral projects to follow. ROCAP considers the MUCHALEÑA activity to be a form of a joint venture, offering regional services and support to the development of massive local (bilateral) efforts.

3.0 AMENDMENT DESCRIPTION

3.1 GOAL AND PURPOSE

The Goal of RENARM, of which the RENARM Tree Crop Dissemination Activity is an integral part, is "to help produce, with the citizens of Central America, the conditions for the sustained utilization of natural resources, to minimize damage to the environment, protect bio-diversity, and provide the means for equitable and sustainable economic growth." The purpose of RENARM is "to create the conditions for public and private institutions to generate, transfer and apply the information and technology essential for the sustained use of natural resources." The specific objective of the RENARM Tree Crop Dissemination Activity is "wide-spread planting, management and utilization of multi-purpose trees on small and medium-size farms."

3.2 END OF PROJECT INDICATORS

3.2.1 Outreach

In each country the network of local institutions that disseminate information about the planting, management and use of multi-purpose trees to farmers will be expanded. These will include both public and private sector institutions, and projects carrying out field activities in reforestation and agricultural extension. A major effort will include the use of NGOs in national extension effort. The message that tree crops can bring financial and other benefits to the farmer will be integrated with national agricultural programs whenever possible, since it has been found that this combination improves the acceptability of both messages.

Network staff dealing with extension will be qualified in subjects dealing with tree crop production and extension techniques. Institutions in the MIRA network will be supplied with training and extension materials appropriate to local conditions, and will use them in their extension work on a routine basis. These materials will be based on the technical information generated, compiled and updated by the Project. Training materials will include silvicultural and socioeconomic guidelines for each of the 14 priority species, and manuals for extensionists covering reforestation and plantation management practices, extension techniques, validation, and impact assessment. Extension materials will include audiovisual materials, flyers and pamphlets, "how to" booklets, and simple flip charts. The capacity to continue to produce and use simple extension materials will be institutionalized in at least one institution in each country.

3.2.2 Information

Successful outreach for tree crops demands reliable technical information, both silvicultural and socioeconomic. The MIRA management information system, set up under MADELEÑA, will be continuously enriched with new data, and will be easily accessible to users in each country. It will have the most complete data base on the silviculture, seed

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supply, economic, and social aspects of tropical multi-purpose trees in Central America, and probably in the western hemisphere. The use of minimum data sets and standardized procedures for measuring critical variables will ensure that enough information is collected to develop models and to support end-users' decisions. Information gained from experimentation will be easily transferable improving information shared among institutions which are network members of CATIE (See Section 3.2.2).

MIRA's linkage to the CATIE Geographic Information System (GIS) that relates tree crop and forest management information to location will permit the preparation of maps showing the production potential for selected species, in selected locations, based on climate, soil and other site factors. The establishment of information data bases on multi-purpose species will permit improvement in all phases of both public and NGO efforts in forest management, e.g., seed procurement and species selection for different environmental zones.

A computerized bibliographic documentation service in CATIE covering tree crop production will be accessible through telephone lines from at least two institutions of the Network in each country. MIRA's MIS will also be installed in at least two institutions in each country, linked in a network with each other and with CATIE. Both the documentation services and MIRA will be easily accessible to reforestation associations, forest services, development projects, planning offices, preparers of Tropical Forestry Action Plans (TFAPs), project design teams, students, researchers and individual farmers and investors. Finally, a service to train, upgrade and maintain this Forestry Information Network will be functioning out of CATIE, providing technical assistance as needed. The MIRA system could become the prototype for a Latin American MIS network for forestry research.

3.3 PROPOSED ACTIVITIES

3.3.1 Outreach

MADELEÑA has demonstrated the effectiveness of CATIE working through institutions and projects which carry out field operations, rather than trying to deal with farmers directly. An increasing number of institutions in Central America carry out activities involving tree planting, often in conjunction with agricultural activities. These "second level" institutions, and the "third level" of institutions through which they often work in turn (NGO's, cooperatives, community groups), frequently do not have access to the information needed to make their outreach effective. The proposed Project activity will catalyze and support the tree cropping efforts of these public and private institutions and further upgrade their capacity to accelerate these activities. As a first step, Project personnel will work directly in each country to organize a network of these institutions, many of which are already cooperating with MADELEÑA. The focal points of the activity will continue to be the teams built up over the years in the Forest Service of each country and expand this work to the NGO community. Specifically, the Country Coordinator of those teams will be responsible for promoting and coordinating the network in the early stages and facilitating communication with the CATIE Center. It should be emphasized that the majority of work will take place at the country level. Linkages will gradually be established between the member institutions. Experience has shown that without strong leadership and an individual responsible for taking the initiative of encouraging the participating institutions, progress will be slow. CATIE will

formalize agreements with each new collaborating institution and strengthen those which currently exist.

Technical assistance will help the network in the design of extension strategies and programs based on experience, and in monitoring, evaluating and readjusting these programs. The Project will train personnel involved in extension through short courses, seminars, workshops and on-the-job training. The subjects to be covered include silviculture, socioeconomic aspects of extension and extension methods. Many of the costs of regional short courses in high demand can be met by the institutions who send participants. Some courses have been shared with other educational institutions (ITCR, ESNACIFOR). MUCHALEÑA will encourage this trend by financing decreasing proportions of the regional courses as they are repeated, so that they gradually become permanent activities of either CATIE or one of the collaborating educational institutions. For example, regional short courses in three subject areas (Silviculture, Forest Economics, Extension) will be organized initially by the Project staff and taught in collaboration with specialists from other national institutions.

At the start of MUCHALEÑA some potential leaders will be given scholarships for university level study at CATIE or abroad. Project professionals will contribute to, but not carry full responsibility for, some courses of the CATIE graduate program. This training and technical assistance will draw upon the experience and information compiled during the ten years of LEÑA and MADELEÑA, including the demonstration value of thousands of farms which have planted trees. Professionals at CATIE will continue to update some of this information, and will be responsible for assuring the quality of training, training materials, demonstration plots and the overall assistance package. CATIE will facilitate the interchange of experience between countries by using qualified professionals from within the Network as consultants to other member institutions, by sponsoring internships in particularly effective member institutions, and by assisting in the formulation and implementation of Tropical Forestry Action Plans.

MUCHALEÑA will produce written and audiovisual training and extension materials. Through a consultancy, the quality and impact of the materials produced under MADELEÑA will be evaluated independently and the results used in formulating a production plan. A mechanism of consultation will be established so that the needs of Network institutions can be tracked, and materials can be planned and produced in response to those needs. Because more than 20 institutions belong to the Network, economies can be achieved by producing materials in demand by the various institutions and by dividing up and contracting the production tasks among them.

The best-performing institutions will increase their share of this production, and eventually take it over. The Project will train their staff, offer technical assistance, and provide some of the funds to make this possible. The primary audience for these materials will be extensionists and farmers. The media will include printed material, radio programs and audiovisuals.

Basing output on needs, the Project will also produce technical manuals aimed at extensionists, silvicultural guides refined with new data, and socioeconomic information. Materials for mass audiences will also be produced. Because these usually have to be carefully adapted to local conditions, many will be modules which can easily be adapted and reproduced for local use. A system will be developed for monitoring the distribution and

use of these materials, and for evaluating their impact. A detailed tabulation of new activities is attached as Annex B, Work Plans.

3.3.2 Information

The MIRA forestry management information system (MIS) is the "working memory" of the Project, storing the results of ten years work and as the Project generates new data. MIRA will provide much of the technical and socioeconomic information needed for both public and NGO extension, as well as for project planning, economic analysis and many other uses. Although the Project will not establish new silvicultural trials, it will continue to support staff in the national Forest Services to measure those under way, as well as expand its efforts to assist NGO extension efforts. These data will continue to be incorporated into MIRA. Similarly, socioeconomic data will continue to be collected and incorporated. Several projects have already taken steps to integrate their plot data at their own cost. In addition, the silvicultural plot data to be collected by the "Production from Natural Forests" Element of RENARM will be integrated into MIRA for use by the outreach activities of that component. These additions will require amplification of the logical structure of MIRA and new standardized forms. The process of decentralizing and transferring responsibilities to the countries will continue, especially concerning verification and analysis of the data. The development of additional user-friendly application programs which facilitate input and access to MIRA is under way.

A critical step will be to define additional silvicultural and socioeconomic analyses to respond to the needs of extension workers and other users. One frequent question concerns the costs and financial benefits of tree planting under various ecological and management conditions. The answer requires a combination of cost data, data on the price of wood products, and yield models developed on the basis of 50 to 200 plots for each species. These models, many of which are being produced by MADELEÑA, will be refined as trial plots grow and new data are incorporated. The utility of MIRA will be enhanced by linking it to CATIE's GIS, so that information retrieval can be carried out for particular localities.

MUCHALEÑA will improve access to CATIE's computerized forestry bibliographic data base (operated by INFORAT) by providing "on-line" computer access via telephone lines. Through the same connection, other CATIE data bases (watersheds, pest management, Orton library) and international documentation services will become easily available to Central Americans.

Upon request, the CATIE documentation center will produce specialized bibliographies. Library linkages to facilitate access to original documents or photocopies will be improved. These innovations will require short courses and on-the-job training in CATIE for personnel from each country, and persistent promotion among potential users. The MIRA and bibliographic information service will only reach their potential if these systems are housed and function within Central American institutions. The Project will help install, operate and update the systems in the institutions belonging to the Network. It is expected that different institutions will give different emphasis to extension, the MIRA system, and bibliographic information according to their own interests. Before expanding the MIRA system to a new institution, however, non-AID financing for its operation and servicing will be assured.

All of the above will require training of national personnel through short courses and seminars, as well as through graduate study and on-the-job training at CATIE. These courses will emphasize such topics as the MIRA, tree production techniques and extension mechanisms. Through this training, the Project will facilitate exchanges of experience and strengthen linkages among members of the Network. Offices concerned with the Tropical Forestry Action Plans (TFAP) of the respective countries and of Central America will be important users, and will also generate data to be incorporated into MIRA. A forestry bibliography for Central America (CA) is being prepared, for example, for the CA TFAP. The Project will also assist in providing and maintaining computer hardware and audiovisual equipment.

4.0 SUMMARY COSTS AND FINANCIAL PLAN

A detailed breakdown of cost estimates for ROCAP, for anticipated bilateral USAID mission buy-ins, and for CATIE under this activity is attached as Annex C. These estimates, rounded, are summarized in Table 1. The total estimated cost of the RENARM Tree Crop Dissemination Activity is US\$ 7.1 million, of which ROCAP will contribute US\$ 4.5 million, and bilateral USAIDs US\$ 2.6 million through buy-ins.

A projection of ROCAP and bilateral USAID expenditures by fiscal year, also rounded, is presented in Table 2. Estimated ROCAP, USAID and total expenditures will maximize in year two, and gradually taper off throughout the rest of the activity implementation period.

5.0 PROJECT ANALYSES

5.1 ECONOMIC ANALYSIS

The MADELEÑA project employed a least-cost method of economic analysis, noting the difficulty of quantifying the direct economic benefits of this type of project to small and medium-sized farmers and industrialists and the long time frame during which the true benefits will appear. A number of indirect benefits, however, may be expected from tree crop projects: improved soil nutrient regimes, shade for certain subsistence food crops leading to increased yields, forage and shade for livestock, and, in the end, sale of the wood. In considering cost effectiveness, the Analysis made a convincing case for the delivery of high-priced services and equipment through a regional "third stage" mechanism such as CATIE, rather than via duplicative national models. These conditions and conclusions remain valid today.

A new element, however, is consideration of the magnitude of this third-stage investment against the estimated costs of the problem being addressed. This needs to be viewed in relation to the enormous dependence of Central America on trees. Over 65% of all energy consumed in Central America is derived from fuelwood; given recent petroleum price trends, this dependence is likely to continue or even rise, pushing some households back to using wood as a primary fuel source. The market value of fuelwood consumed annually in Central

Table 1
Summary Cost Estimates and Financial Plan
 (US\$ 000 's)

Source	ROCAP		USAIDs		Total
	FX	LC	FX	LC	
Personnel	2,300		300		2,600
Training	300		600		900
Travel/per diem	300		400		700
Equipment	200		200		400
Communications	200		200		400
Operations/Maintnce.	200		400		600
Supplies/Materials	100		0		100
Admin. Support	500		300		800
General Services	100		0		100
Inflation/Conting.	300		200		500
TOTAL	4,500	0.0	2,600	0.0	7,100

TABLE 1 A
Summary Cost Estimates by Components

<u>Components</u>	<u>Amount</u>
1. General Operations	\$1,351.8
2. Outreach	995.4
3. Information Management	1,273.2
4. Contingency & Inflation	362.0
5. CATIE Administration Cost	517.7
TOTAL	\$4,500.0

Table 2
Projection of ROCAP and Bilateral USAID Expenditures by Fiscal Year
 (US\$ 000 's)

<u>Fiscal Year</u>	<u>ROCAP</u>	<u>USAIDs</u>	<u>Total</u>
1991	1,100	600	1,500
1992	1,110	750	1,900
1993	1,060	500	1,600
1994	655	450	1,200
1995	575	300	900
TOTAL	4,500	2,600	7,100

America is estimated at about \$220 million. All sources of funding included (ROCAP, buy-ins and CATIE), the Tree Crop Dissemination Activity constitutes about 3.5% percent of this amount--significant but not excessive for a promising effort to replenish the supply of a resource critical to the environment and welfare of Central America.

5.2 TECHNICAL ANALYSIS

The Technical Analysis addressed the feasibility of implementing the Project, the suitability of the proposed methods, and the consistency of Project design in relation to solving known problems. The technical soundness of this Project is evidenced by the substantial increases in tree plantings in all participating countries. These proven technologies and methods will be used throughout the implementation of this activity.

5.3 INSTITUTIONAL ANALYSIS

The Tree Crop Production Project Paper (1985) presents a 13-page analysis of CATIE and its institutional linkages throughout the region, and another such exercise appears in the RENARM PP (1989). In the last year, a Board-mandated external review of CATIE provided additional evidence that CATIE is qualified to implement this Project. This Review gave high marks to several activities of the Tree Crop Production Project and especially to the prospects for the MIRA management information system. Most institutions which are to be members of the Network have collaborated with the Tree Crop Production Project for years and have demonstrated their effectiveness.

5.4 SOCIAL ANALYSIS

The Social Soundness Analysis addressed target populations, the distribution of benefits, compatibility with the sociocultural environment, and adoption of innovative techniques. It notes two assumptions behind the Project: that small and medium farmers have traditions and practices of using trees in their farm enterprise, and that strengthening forestry research, training, and information dissemination capabilities in the region can increase the availability of wood resources and forestry products. The conclusion is that silvicultural research, socioeconomic research, and training and information dissemination are the bases of a sound project design. This conclusion remains valid, and applies to the proposed Amendment.

6.0 IMPLEMENTATION AND MONITORING

6.1 METHODS OF IMPLEMENTATION AND FINANCING

Methods of implementation and financing for this activity remain unchanged from the RENARM Project Paper. Assessment of those methods in the RENARM PP were based on ROCAP's prior experiences with CATIE. Monthly advances will be made from ROCAP to CATIE, and CATIE will submit monthly expenditure fiscal reports accounting for funds previously advanced prior to receiving subsequent monthly advances. Table 2 included in the Summary and Recommendation Section of this PP Supplement specifies the revised methods of implementation and disbursement for individual line items in accordance with preferred methods.

6.2 ADMINISTRATION

CATIE will provide a core-funded Project Leader responsible for overall administration and coordination of both the Outreach and Information Management Components of MUCHALEÑA. Implementation in each country will be carried out through a Network of institutions, most of which are collaborating on MADELEÑA and will continue to participate under this Amendment. They in turn may work through NGOs, development projects, cooperatives, community organizations and farmer associations. CATIE will not carry out extension directly with farmers, but will train extensionists, make information accessible to them, and prepare extension materials for their use.

The Forest Services will continue to play a leadership role with respect to encouraging and coordinating the activities of other collaborating institutions, and will facilitate contacts with the CATIE Center. This arrangement has worked well for years. CATIE Project Coordinators have been stationed in the Forest Services of each country. These individuals are essential to the Project's success because of their relative freedom from the constraints of the local bureaucracy, their links to CATIE, and their control of Project funds. Although these positions create a Project expense, it would be unrealistic to eliminate them and expect the counterpart institutions to assume this responsibility. If these Coordinators were to remain in the Forest Services, however, they would be unable to give sufficient attention to the other institutions of the Network. This Amendment therefore will transfer the Country Coordinators to the CATIE Representation Office in each country, from which they can deal more easily with the diverse Network institutions.

In addition to MUCHALEÑA, these Coordinators also will work with the Watershed Component of RENARM. The tasks are related, and some of the collaborating institutions are the same. This amalgamation will respond to the CATIE External Review which calls for increased collaboration between the Tree Crop and Watershed Projects. To assure the Coordinators' undivided attention to these two projects, CATIE will confirm that these Coordinators, who are technicians, will not be distracted by other tasks of the Representation Offices, and that the administrative assistants of the Representation Offices will take care of routine administrative matters.

The Coordinators will maintain control over Project funds, including operating funds, travel and per diem, and funds for training events and specialized materials. Funds for these uses will be transferred from CATIE to the Project accounts in each country via the CATIE Representatives. Since the ROCAP funding for this Amendment is not sufficient to cover all the Project intends to do, a new job for the CATIE Representatives will be to obtain funding from bilateral A.I.D. Missions and other donors. This will require Project activities to be responsive to the criteria of a range of potential donors. After two years, the Project will demonstrate to the satisfaction of ROCAP that a demand exists for the services provided under this Amendment, as indicated by additional collaboration or funding from non-ROCAP sources, or else ROCAP funding of the Country Coordinators will terminate.

The institutions of the network will be responsible for obtaining their own financing for operational projects, but CATIE will assist them in making contacts and preparing funding proposals. As with MADELEÑA, CATIE will sign or revalidate agreements with each of the collaborating institutions in the Network. These agreements will cover the following points:

- 1) The present MADELEÑA counterpart institutions (the Forest Services) will assume the leadership in coordinating the Network in each country.
- 2) The activities to be implemented by the Project will be included in the work plans of the institutions of the Network.
- 3) Network institutions will assign specific personnel to Project activities, not to be reassigned without agreement between the institution and CATIE.
- 4) The CATIE Country Coordinators will manage ROCAP/CATIE funds, vehicles and equipment.

CATIE will select and recruit personnel to be stationed at the Center in Turrialba. Recruitment will be based on wide advertising of the positions and objective selection criteria.

6.3 PROCUREMENT

A plan for procurement activities is found in Table 3. After ROCAP has reviewed and certified CATIE's procurement capability, CATIE will serve as its own procurement and contracting agent for all commodities, personnel, training and technical assistance to be procured under this Activity. In the event that CATIE cannot be certified, or can only be certified up to a certain US dollar limit, ROCAP will undertake all procurement for which CATIE is not authorized.

The nationality of technical services authorized under RENARM is Code 941, and the Source/Origin of all commodities is Code 000 (the U.S.). The justification for Code 941 technical assistance eligibility in the RENARM PP (page 105) was based on the often unique competence of technical specialists in the developing world in dealing with tropical environmental matters; the long-term desirability of strengthening local and regional institutions by permitting them to draw on a wider pool of tropical environmental specialists; and in many cases the unavailability of the required services in the United States. This nationality determination will apply to this Amendment.

The authorized Source/Origin of commodities to be procured under this Activity will be Code 000. A detailed breakdown of both services and commodities to be procured during implementation is attached as Annex C. Pursuant to "Buy America" procurement guidance contained in 90 State 410442, the grant agreement between A.I.D. and CATIE governing implementation of this Activity will contain specific provisions requiring that: For local procurement (i.e., commodities procured in Central American Common Market countries), (1) all commodities with a value in excess of US\$ 5,000 per transaction will be of U.S. origin; and (2) all commodities with a value in excess of US\$ 100,000 will be of both US source and origin. For offshore procurement, all commodities with a value in excess of US\$ 5,000 will be of both U.S. source and origin.

There will be opportunities for minority and small business consulting firms to participate as contractors of CATIE, as CATIE international personnel budgeted for the Project, and/or as short-term consultants. These contracts will include a variety of assignments related to silviculture and tree crop

production, management information systems, and socio-economic analysis. The RFPs for these actions, drafted by CATIE, will assure that small and minority firms are given the maximum practical consideration for contracting and subcontracting opportunities.

Table 3

Procurement Plan

<u>Services Required</u>	<u>Duration</u>	<u>Start Date</u>	<u>Procurement Mode</u>
International Personnel	5 yrs.	3-91	HC
National & Admin. Support	5 yrs.	9-91	HC
International Consultants	5 yrs.	7-91	HC
Equipment	4 yrs.	4-91	HC

6.4 TRAINING

A training plan for the RENARM Tree Crop Dissemination Activity is attached as Annex D. At a bilateral buy-in level of US\$ 600,000, an estimated 139 training activities would take place and 1724 persons would be trained (1291 men and 433 women) by the EOP. With the exception of 12 M.Sc. degrees and nine on-the-job training stipends, where training may occur either in Central America or the United States, all other training will occur in Central America.

6.5 OVERSIGHT

Oversight will be exercised through site inspections, informal contacts, formal reviews, periodic reports, and audits and evaluations. Oversight will also be exercised at several levels: Network members overseeing staff activity and effectiveness, CATIE offices watching Network members' performance, and ROCAP monitoring of operating procedures, use of funds, and joint ROCAP/USAID evaluations of national and regional problems and overall progress.

The ROCAP Project Manager for CATIE activities will work directly with the CATIE Project Leader. Both individuals will communicate regularly with

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bilateral Mission RENARM representatives to continue the relationship established under LEÑA and MADELEÑA. Additionally, a ROCAP financed "end use" contractor will be employed under the RENARM Project to review commodity procurements and disposition.

6.6 EVALUATIONS AND AUDITS

Evaluations and audits of the Tree Crop Dissemination activity will follow the same plans and procedures as the rest of the RENARM Project. One evaluation and two audits are planned. The first evaluation will occur at the end of the third year. A final evaluation will be conducted in conjunction with the overall evaluation of the RENARM Project as described in the original Project Paper. The audits will be conducted during the third and fifth year of the Project. Both the evaluations and the audits will be conducted by independent contractors. These evaluations will involve not only an assessment of progress toward meeting outputs and objectives under each component, but also will determine the extent to which CATIE, the national forestry agencies and other participating organizations have performed and strengthened their capacity and effectiveness in carrying out reforestation and tree crop production activities. Audit coverage will include the requirement for CATIE to have an annual comprehensive external audit of all resources at the end of their regular fiscal year. The audits will be done in accordance with OMB Circular 133, based on a generic scope of work prepared by the IG, and will use a firm approved by the IG. CATIE will contract the firm.

7.0 ISSUE: LIFE AFTER A.I.D

What are the post-A.I.D. prospects for MADELEÑA and MIRA? Given the condition of Central American treasuries today, the reforestation and tree crop services offered by CATIE will be financially self-sustaining, i.e. paid for by users, only when private planters decide they are worth buying. This will come to pass if there is money to be made in trees. If CATIE's services lead to generation of income, large planters will buy trees (from private or public sources, as in the case of El Salvador), small planters may band together to buy trees, and CATIE could then recoup some of their costs, through buy-ins, provision of Technical Assistance or Training. But like any new product, it takes time to create demand. AID support--the equivalent of corporate headquarters funds--is essential during this promotional, money-losing period. CATIE's supply side--the information and outreach systems--is largely in place but the demand side--demand from users for information--is still nascent. This will be developed through the presence, persuasion, and patience of local technical advisors. This presence, and AID support for it, may still be needed in 1996 and thereafter.

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Annexes

RENAEM Tree Crop Dissemination Activity

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Outputs:	Magnitude of Outputs:		Assumptions for achieving outputs:
NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Sector Goal:	Measures of goal achievement:		Assumptions for achieving targets:
To help produce, with the citizens of Central America, the conditions for the sustained utilization of natural resources, to minimize damage to the environment, protect bio-diversity, and provide the means for equitable and sustainable economic growth.	1. Increased welfare of local population attributable to land use.	1. Economic indicators.	1. Political stability. 2. Relative security in Central America. 3. No catastrophic economic crisis.
Project Purpose:			Assumptions for achieving purpose.
Create the conditions for public and private institutions to generate, transfer and apply the information and technology essential for the sustained use of natural resources.	Conditions that will indicate purpose has been achieved: End of project status		1. Political will to address natural resource concerns. 2. Continuing market demand for forest products of the region.
Amendment Sub-purpose:			
Wide spread planting, management and utilization of multi-purpose trees on small and medium-size farms.	Incorporation of 14 priority tree species into private and public sector Network outreach programs.	Workplans, progress reports of outreach Network institutions. Monitoring and Evaluation activity reports tracking key environmental indicators.	

NARRATIVE SUMMARY

OBJECTIVELY VERIFIABLE INDICATORS

MEANS OF VERIFICATION

IMPORTANT ASSUMPTIONS

Outputs:

A. Outreach

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A1. Extension services in 25 institutions of the collaborating network are technically and organizationally qualified in tree crop production and are getting this message out to their clientele of farmers.

Magnitude of Outputs:

1. Six national counterpart lead institutions reaching farmers and other institutions with extension programs on tree crop production.
2. At least 25 institutions are actively participating in the activities of the network.
3. 1,135 persons trained through a total of 695 days of short courses and workshops.
4. 12 graduates with Masters degrees in subjects related to extension.

1. Signed agreements with CATIE.
2. Project reports.
3. Field visits.

Assumptions for achieving outputs:

1. Demand for reforestation increases in C.A.
2. Countries willing to cooperate.
3. Agencies receptive to receiving advice and assistance.

A2. Training and extension materials adequate in quality and quantity to meet the tree crop production needs of the institutions collaborating in the network.

1. An analysis and evaluation of the effectiveness of past extension materials.
2. A production plan for extension materials used by institutions of the network.
3. 20 sets of printed extension materials produced and distributed to the institutions of the network (folders, flip charts, booklets, posters, etc.).
4. 52 chapters of radio programs with tree crop production messages, produced and broadcast by at least 3 radio stations in each country.

1. Collections of materials.
2. Consultant's reports.
3. Project reports.
4. Project evaluations.

1. Institutions are interested and willing to receive assistance.

A3. Multipurpose tree seed sources of good genetic quality increased by 50 ha of managed seed stands of 14 species.

1. 50 ha of new technically managed seed stands covering 14 species.

1. Project reports.
2. Field visits.

NARRATIVE SUMMARY

OBJECTIVELY VERIFIABLE INDICATORS

MEANS OF VERIFICATION

IMPORTANT ASSUMPTIONS

Outputs:

B. Information Management

Magnitude of Outputs:

Assumptions for achieving outputs:

=====
B1. An information management system (MIRA), covering silvicultural and socioeconomic aspects, is up to date and being widely applied to the transfer of information on tree crop production.

1. All silvicultural experimental plots established by the Tree Crop Production Project and by the RENARM Amendment are registered and up to date in the MIRA system.
2. All pertinent socioeconomic data compiled by the Tree Crop Production Project and by the RENARM Amendment are registered and up to date in the MIRA system.
3. At least 10 software applications based on the MIRA system in operation in the countries.
4. One technical manual on the management of forestry information.

1. Project reports.
2. Computer printouts.
3. Project files.
4. Visits to MIRA branches in collaborating institutions of the network.

1. The trend of increasing plantation of multi purpose trees continues in CA.
2. The increase in the rate of planting causes an increased demand for information.

B2. A bibliographic documentation service about tree crop production, accessible to the institutions of the network and being widely consulted.

1. All relevant silvicultural and socioeconomic documents produced and used by the project are registered in the bibliographic data base
2. 200 on-line bibliographic searches per year carried out by Central American users.

1. Project reports.
2. Computer printouts.
3. Visits to collaborating institutions.

1. National documentation centers are receptive to giving services on tree crops.

B3. A network of institutions offering computerized information services about tree crop production, for use in planning, extension and training.

1. At least two institutions in each country have the MIRA system installed, operated by qualified staff and are using it widely.
2. At least 672 person-days of training through 21

1. Visits to institutions.
2. Project reports.
3. Project evaluation.

1. The economic situation of the institutions and the governments maintains a reasonable level.

NARRATIVE SUMMARY

Outputs:

OBJECTIVELY VERIFIABLE INDICATORS

MEANS OF VERIFICATION

IMPORTANT ASSUMPTIONS

- Magnitude of Outputs:
- Short courses offered to staff from the institutions of the network.
 - The MIRA system is consulted by at least 5 project or program planning missions annually in each country.

- Assumptions for achieving outputs:
- New forestry projects continue to be designed in CA.

04.A service supporting the development and maintenance of the computerized information management systems of the network.

- A cadre of personnel qualified in information management in each of the institutions where MIRA is installed.
 - Technical manuals available for operation of data base.
 - Three Masters degree graduates in computerized information management working in the network.
- Project reports.
 - Visits to the institutions.
 - Project evaluations.

- The economic situation of the institutions and the governments maintains a reasonable level.

Inputs: (See Input Table)

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	RESPONSABLE
A. Disseminacion de Tecnologia						

OUTPUT A1: Servicios de extension en 25 instituciones de la red de colaboradores. son tecnicamente y organizativamente calificados en el cultivo de arboles de uso multiple, y estan disseminando este mensaje activamente a su clientela de agricultores.						
A1.1	xxxxxx					!Extensionista & Coordinadores Nacionales
A1.2	xxxxxx					!Lider Proyecto & Coordinadores Nacionales
A1.3		ppcopp	pppppp	pppppp	pppppp	!Extensionista & Coordinadores Nacionales
A1.4		pppppp	pppppp	pppppp	pppppp	!Extensionista
A1.5	xxx	xxxxxxx	xxxxxx	xxxxxx	xxxxxx	!Silvicultor & Economista & Coordinadores Nacionales
A1.6	ppp	ppcopp	pppppp	pppppp	pppppp	!Extensionista
2 Cursos por año de extensión 1 Taller de 3 días por país 2 Talleres regionales de 5 días 1 Seminario por país de sistematización de la extensión forestal						
A1.7		xx				!Extensionista
A1.8	xx	xx	xx	xx		!Silvicultor
A1.9		xx	xx	xx	xx	!Economista
A1.10	xx	xx	xx	xx		!Extensionista
Refinar y ofrecer el curso corto regional de Extensión Forestal y gradualmente conseguir apoyo financiero externo para que se ofrezca regularmente, preferiblemente en colaboración con una institución de enseñanza.						
A1.11	pppppp	pppppp	pppppp	pppppp	pppppp	!Extensionista & Silvicultor & Economista
A1.12	pppppp	pppppp	pppppp	pppppp	pppppp	!Extensionista & Econom.& Silvicultor
A1.13	xxx	xxxxxxx	xxxxxx			!Lider Proyecto
A1.14		pppppp	pppppp	pppppp	pppppp	!Extensionista &

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	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	RESPONSABLE
mediante el intercambio de visitas de extensionistas y agricultores.	!	!	!	!	!	Coordinadores Nacionales
A1.15 Evaluar el avance e impacto de la extensión y la capacidad de las instituciones para continuarla.	!	!	xxx!	!	!	Consultor

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	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	RESPONSABLE	
OUTPUT A2: Materiales de capacitación y de extensión adecuados en calidad y cantidad para satisfacer las necesidades de las instituciones de la red en cuanto a cultivo de arboles.							
A2.1	xx					Consultor	
A2.2	xxxxxx	xxxxxx	xxxxxx			Extensionista	
A2.3		ppp	pppppp	pppppp	pppppp	pppppp	Extensionista & Coordinadores Nacionale
A2.4			pppppp	pppppp	pppppp	pppppp	Extensionista & Coordinadores Nacionale
A2.5		xxx	xxxxxx	xxxxxx	xxxxxx		Extensionista & Coordinadores Nacionale
A2.6		xxx	xxxxxx				Extensionista
A2.7	xxxxxx	xxxxxx					Extensionista & Silvicultor & Economista
A2.8				xx	xxxx		Silvicultor
A2.9		pppppp	pppppp	pppppp	pppppp		Extensionista
A2.10		xxxxppp	pppppp	pppppp	pppppp		Extensionista & consultor
A2.11			xxxxxx	xxxxxx			Lider Proyecto
OUTPUT A3: Aumento por 50 ha en los rodales semilleros manejados, como fuentes de semilla de buena calidad genetica, de AUM.							
A3.1		pppppp	pppppp	pppppp	pppppp	pppppp	Coordinadores Nacionales
A3.2	xx						Silvicultor & Coordinadores Nacionale
A3.3		xxxx					Silvicultor & Coordinadores Nacionale
A3.4		xxx	xxxxxx	xxxxxx	xxxxxx		Coordinadores Nacionales
A3.5			pppppp	pppppp	pppppp		Coordinadores Nacionales

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	RESPONSABLE
B. Manejo de información con apoyo a la extensión forestal						
<hr/>						
OUTPUT B1: Un sistema de manejo de información silvicultural y socioeconómico (MIRA) actualizado y siendo utilizado para aplicaciones específicas de transferencia de tecnología sobre AUM.						
B1.1	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	MIS & Cor. Nacionales
B1.2	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	MIS & Cor. Nacionales
B1.3	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	MIS & Cor. Nacionales
B1.4		xxxxxx	xxxxxx	xxxxxx	xxxxxx	MIS & Lider Bosques Nat.
B1.5	xxxxxx	xxxxxx				MIS & Cor. Nacionales
B1.6	xxxxxx	xxxxxx				MIS & Analista Sistemas
B1.7	xx					Consultor Silvicultura
B1.8	xx					Consultor Economía
B1.9	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	MIS, Silvicultor, Economista
B1.10	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	MIS & Economista
B1.11	xxx	xxx				Economista & Consultor
B1.12	xxx	xxxxxx	xxx			MIS & Prov. Cuencas
B1.13				xxxxxx	xxxxxx	MIS & Consultor

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	RESPONSIBLE
OUTPUT B2: Un servicio de documentación bibliográfica sobre AUM accesibles a las instituciones de la red y siendo ampliamente utilizado.						
B2.1 Equipar el centro de documentación forestal de INFORAT para permitir el acceso "on line" desde Centro America.	xxx!					INFORAT
B2.2 Seleccionar centros de documentación en los países para vincularlos via computadora a INFORAT, y firmar acuerdos con ellos (incluir centros de Madeleña).	xxx!xx					INFORAT & Cor. Nacionales
B2.3 Capacitar personal de los centros de documentación participantes en la operación de búsquedas.		!xxxx				INFORAT
B2.4 Fomentar el uso del servicio de documentación "on line" entre las instituciones y profesionales de la region.		!ppppp	!cccccc	!ppppp	!ppppp	INFORAT
B2.5 Utilizando el mismo equipo y vinculos, establecer el acceso a otras bases de datos en el CATIE (Cuencas, MIP, Biblioteca Orton).			!xxxxxx!			INFORAT
B2.6 Producir bibliografias especializadas sobre temas de interés para los extensionistas de la región.	!ppppp	!ppppp	!cccccc	!ppppp	!ppppp	INFORAT
B2.7 Continuar a incorporar nuevos materiales bibliográficos a la base de datos de INFORAT.	!xxxxxx!	!xxxxxx!	!xxxxxx!	!xxxxxx!	!xxxxxx!	INFORAT

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	RESPONSIBLE
OUTPUT B3: Una red de instituciones brindando servicios computarizados de información sobre AUM, para la planificación, extension y capacitación.						
B3.1 Confeccionar y mantener listados de usuarios potenciales de los servicios de información (MIRA & bibliografica).	xxx!xxxxxx!	!cccccc	!ppppp	!ppppp	!ppppp	MIS & INFORAT
B3.2 Formar personal de las instituciones vinculadas al manejo de información forestal a nivel de posgrado en CATIE.		!xxxxxx!	!xxxxxx!	!xxxxxx!	!xxxxxx!	Posgrado
B3.3 Capacitar personal de las instituciones vinculadas al manejo de información forestal mediante cursos cortos, talleres, seminarios y capacitación en servicio.	!xxxxxx!	!xxxxxx!	!xxxxxx!	!xxxxxx!	!xxxxxx!	MIS
B3.4 Confeccionar y mantener un inventario de profesionales ligados a las actividades forestales en la región.		!xxxxxx!	!ppppp	!ppppp	!ppppp	MIS
B3.5 Prestar servicios de información a los Planes de Acción Forestal de los países de CA, e incorporar información generada por ellos.	!ppppp	!ppppp	!ppppp	!ppppp	!ppppp	MIS

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	RESPONSABLE
OUTPUT B4: Un servicio de asistencia para el desarrollo y mantenimiento de sistemas de manejo computarizado de información forestal, sirviendo la red.						
B4.1 Coordinar el intercambio de información con sistemas de manejo de información forestal fuera de Centro America.	ooooo	ooooo	ooooo	ooooo	ooooo	MIS
B4.2 Desarrollar mecanismos para el financiamiento y la sostenibilidad de los servicios de manejo computarizado de información.	xxx	xxxxxx	xxxxxx			MIS
B4.3 Asistir en el manejo e intercambio de información dentro del marco de los Planes de Acción Forestal Tropical en America Central.	ooooo	ooooo	ooooo	ooooo	ooooo	MIS
B4.4 Preparar formatos estandarizados para el registro computarizado de las actividades de extensión.	xxxxxx	xxxxxx				MIS
B4.5 Mantener equipo de computo y audiovisual.	ooooo	ooooo	ooooo	ooooo	ooooo	MIS
B4.8 Producir un manual técnico de manejo computarizado de información forestal.			xxxxxx			MIS

RENARD Project (596-0150): Tree Crop Dissemination Amendment -- AID DISBURSEMENT PLAN

CODE	ITEM	UNIT	COST/ UNIT US\$000	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5		TOTAL ROPAP		BOY-INS
				NO. UNITS	COST/ YEAR US\$000	NO. UNITS	PROJECT COST US\$000									
COMPONENT 0: GENERAL OPERATIONS																
2 1	National Coordinators (6)	pn	1.500	40	60.0	18	27.0	0	0.0	0	0.0	0	0.0	56	87.0	
1 1	Silviculturist	pn	5.000	12	60.0	12	60.0	12	80.0	0	0.0	0	0.0	36	180.0	350.4
1 1	Economist	pn	5.000	4	20.0	12	60.0	12	80.0	0	0.0	0	0.0	28	140.0	
1 1	Assistant silviculturist	pn	1.500	4	6.0	12	18.0	12	18.0	12	18.0	12	18.0	52	78.0	
1 1	Assistant economist	pn	1.500	4	6.0	12	18.0	12	18.0	12	18.0	12	18.0	52	78.0	
1 1	Admin Assistant	pn	1.500	4	6.0	12	18.0	12	18.0	12	18.0	12	18.0	52	78.0	
1 1	Technical Assistant	pn	1.500	12	18.0	12	18.0	12	18.0	12	18.0	12	18.0	52	78.0	
1 1	Field Assistant	pn	0.417	12	5.0	12	5.0	12	5.0	12	5.0	12	5.0	60	90.0	
1 1	Driver	pn	0.417	12	5.0	12	5.0	12	5.0	12	5.0	12	5.0	60	25.0	
1 1	Photocopy Operator	pn	0.417	12	5.0	12	5.0	12	5.0	12	5.0	12	5.0	60	25.0	
1 1	Executive Secretary	pn	0.525	12	6.3	12	6.3	12	6.3	12	6.3	12	6.3	60	25.0	
1 1	Typist	pn	0.417	36	15.0	36	15.0	36	15.0	36	15.0	36	15.0	180	75.0	
2 3	Travel & per diem nat'l. counterparts	trip	1.000	6	6.0	6	6.0	6	6.0	6	6.0	0	0.0	24	24.0	
1 3	Travel & per diem outside C.A.	trip	2.000	1	2.0	1	2.0	1	2.0	1	2.0	0	0.0	4	8.0	43.2
2 3	Travel & per diem in C.A. HQ staff	trip	1.000	5	5.0	5	5.0	5	5.0	5	5.0	0	0.0	20	20.0	
2 3	In-country travel&perdiem counterparts	days	0.025	1296	32.4	1296	32.4	648	16.2	648	16.2	324	8.1	4212	105.3	25.6
1 5	Communications			6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	0	30.0	
1 5	Electronic mail			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0	15.0	
2 4	Vehicles	each	15.000	4	60.0	0	0.0	0	0.0	0	0.0	0	0.0	4	60.0	100.0
2 6	OMV of additional vehicles	each	2.000	4	8.0	0	0.0	0	0.0	0	0.0	0	0.0	4	8.0	14.4
2 6	OMV of existing vehicles (12)	each	3.000	2	6.0	4	12.0	2	6.0	2	6.0	2	6.0	12	36.0	170.4
1 4	Photocopy machine	each	10.000	1	10.0	0	0.0	0	0.0	0	0.0	0	0.0	1	10.0	
1 4	Central UPS	each	10.000	1	10.0	0	0.0	0	0.0	0	0.0	0	0.0	1	10.0	
1 4	Air condition (Computer&AV prot.)	each	1.500	2	3.0	0	0.0	0	0.0	0	0.0	0	0.0	2	3.0	
1 9	Project evaluations	each	50.000	0	0.0	0	0.0	1	50.0	0	0.0	0	0.0	1	50.0	
1 9	Project audits	each	30.000	0	0.0	0	0.0	1	30.0	0	0.0	1	30.0	2	60.0	
SUBTOTAL COMPONENT 0					363.7		321.7		352.5		152.5		161.4		1,351.8	841.6

CODE	ITEM	UNIT	COST/ UNIT US\$000	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5		TOTAL BOCAP		BUY-INS
				NO. UNITS	COST/ YEAR US\$000	NO. UNITS	PROJECT COST US\$000									
COMPONENT A: OUTREACH																
OUTPUT A0. GENERAL OPERATIONS FOR OUTREACH																
Personnel																
1 1	Principal extensionist	pm	5.000	12	60.0	12	60.0	12	60.0	12	60.0	12	60.0	60	300.0	
1 3	Travel in CA	trips	0.450	8	3.6	8	3.6	8	3.6	8	3.6	8	3.6	40	18.0	
1 3	Per diem in CA	days	0.100	80	8.0	80	8.0	80	8.0	80	8.0	80	8.0	400	40.0	
1 3	Travel & per diem outside CA	trips	2.000	1	2.0	1	2.0	0.0	1	2.0	0.0	0.0	3	6.0		
2 2	Support field days & demor			5.8	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	11.6	58.9	
SUBTOTAL OUTPUT A0					79.4	79.4	71.6	73.6	71.6	73.6	71.6	73.6	375.6		58.9	
OUTPUT A1. EXTENSION SERVICES STRENGTHENED																
2 2	National short courses & workshops	each	2.000	2	4.0	2	4.0	2	4.0	0	0.0	0.0	0.0	6	12.0	38.4
2 2	Regional course extension	each	30.000	0.0	0.0	1	30.0	0.0	0.0	0.0	0.0	0.0	1	30.0	48.0	
2 2	HS Scholarships extension	each	25.000	0	0.0	1	25.0	0.0	0.0	0.0	0.0	0.0	1	25.0	220.0	
1 2	Stipend for on-the-job training	partic.	1.500	2	3.0	3	4.5	2	3.0	2	3.0	0.0	0.0	9	13.5	
2 2	Study trips extensionists & farmers	trips	8.000	0.0	0.0	1	8.0	0	0.0	0	0.0	0.0	0.0	1	8.0	28.8
1 2	Support for student theses	student	1.000	2	2.0	3	3.0	3	3.0	2	2.0	2	2.0	12	12.0	
1 2	Intern. study trips & seminars	partic.	2.000	0.0	0.0	6	12.0	2	4.0	2	4.0	0.0	0.0	10	20.0	
2 4	Audiovisual equipment			12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	12.0	48.0	
SUBTOTAL OUTPUT A1					21.0	84.5	14.0	9.0	2.0	2.0	2.0	2.0	130.5		383.2	
OUTPUT A2. PRODUCTION OF MATERIALS																
Personnel																
1 1	Media specialist	pm	1.500	12	18.0	12	18.0	12	18.0	12	18.0	12	18.0	60	90.0	
1 1	Editor	pm	1.500	12	18.0	12	18.0	12	18.0	12	18.0	12	18.0	60	90.0	
1 1	Assistant editor	pm	1.000	9	9.0	12	12.0	12	12.0	12	12.0	12	12.0	57	57.0	
1 1	Desktop publishing specialist	pm	1.000	9	9.0	12	12.0	12	12.0	12	12.0	12	12.0	57	57.0	
1 1	Consultant Evaluation Materials	per.day	0.250	20	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20	5.0	
1 1	Consultant Assessment Ext. Needs	per.day	0.250	15	3.8	15	3.8	0.0	0.0	0.0	0.0	0.0	0.0	30	7.5	
1 1	Consultant Impact Evaluation	per.day	0.250	0.0	0.0	0.0	0.0	45	11.3	0.0	0.0	0.0	0.0	45	11.3	
1 1	Consultant Sociology	per.day	0.200	0.0	0.0	20	4.0	20	4.0	0.0	0.0	0.0	0.0	40	8.0	
1 3	Travel in CA for consultants	trips	1.000	2	2.0	2	2.0	2	2.0	0.0	0.0	0.0	0.0	6	6.0	
1 3	Per diem for consultants		0.100	35	3.5	35	3.5	85	8.5	0	0.0	0	0.0	135	13.5	
1 2	Translation services			0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	15.0		
2 5	Contract production radio progr.	progrn.	0.885	0.0	0.0	12	10.4	0	0.0	0	3.0	2.0	0	15.0		
2 5	Contract production printed materials			20.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	12	10.4	38.0
2 5	Contract prod. audiovisuals			21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	20.0	80.0	
					21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	21.0	84.0	

RENARD Project (596-0150): Tree Crop Dissemination Amendment -- AID DISBURSEMENT PLAN

CODE	ITEM	UNIT	COST/ UNIT US\$000	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5		TOTAL BOGAP		BUY-INS	
				NO. UNITS	COST/ YEAR US\$000	NO. UNITS	PROJECT COST US\$000										
2 2	Inputs for demonstrations			2.0	2.0			2.0	0.0			0.0	0	6.0		16.0	
2 2	Regional short courses & workshops	each	12.000	0.0	0.0	0	0.0	0.0	1	12.0		0.0	1	12.0		19.2	
1 4	Desk top publishing equip.& softw	each	30.200	1	30.2		0.0	0.0		0.0		0.0	1	30.2			
SUBTOTAL OUTPUT A2				141.5		90.6		90.8		75.0		62.0	0	459.8		235.2	

OUTPUT A3. SEED SOURCES																	
2 3	Travel & per diem within countries	days	0.025	50	1.3	100	2.5	100	2.5		0.0		0.0	250	6.3		5.0
1 3	Travel & per diem in CA	trip	1.000	2	2.0	3	3.0	3	3.0		0.0		0.0	8	8.0		
2 6	Selection & mgt of seed stands	per ha	0.080	10	0.8	30	2.4	50	4.0	50	4.0	50	4.0	190	15.2		12.2
SUBTOTAL OUTPUT A3				4.1		7.9		9.5		4.0		4.0		29.5		17.2	

SUBTOTAL COMPONENT A				245.9		262.4		185.9		161.6		139.6		995.4		694.5	

CODE	ITEM	UNIT	COST/ UNIT US\$000	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5		TOTAL BOCAP		BGT-INS		
				NO. UNITS	COST/ YEAR US\$000	NO. UNITS	PROJECT COST US\$000											
COMPONENT B. INFORMATION MANAGEMENT																		
OUTPUT B0. GENERAL OPERATIONS FOR INFO MGT.																		
Personnel																		
1	1	Management Information Specialist	pm	5.000	5	25.0	12	60.0	12	60.0	12	60.0	12	60.0	53	265.0		
1	1	Biometrician (growth modeling)	pm	4.000		0.0	12	48.0	12	48.0		0.0		0.0	24	96.0		
1	1	Data Entry Assistant (Silv.)	pm	0.500	5	2.5	12	6.0	12	6.0	12	6.0	12	6.0	53	26.5		
1	1	Data Entry Assistant (Econ.)	pm	0.500	5	2.5	12	6.0	12	6.0	12	6.0	12	6.0	53	26.5		
1	1	Data Base Operator	pm	0.750	5	3.8	12	9.0	12	9.0	12	6.0	12	6.0	53	39.0		
1	1	System Analyst	pm	1.000	5	5.0	12	12.0	12	12.0	12	9.0	12	9.0	53	53.0		
1	1	Programmer	pm	0.750	8	4.5	12	9.0	12	9.0	12	12.0	12	12.0	42	31.5		
2	3	Travel & per diem nat'l. counterparts	trips	1.000	2	2.0	4	4.0	2	2.0	2	2.0						
1	3	Travel & per diem outside C.A.	trips	2.000	2	4.0	2	4.0	2	4.0	1	2.0	2	2.0	12	12.0	43.2	
1	3	Travel & per diem in C.A. (HQ staff)	trips	1.000	18	18.0	18	18.0	18	18.0	18	18.0		0.0	7	14.0		
2	3	In-country per diem for counterparts	day	0.025	259	6.4	250	6.5	259	6.4	259	6.4	259	6.4	1296	32.1	129.8	
SUBTOTAL OUTPUT B0						73.7		182.5		180.4		130.4		101.4		688.4		172.8
OUTPUT B1. MGT. INFO SYSTEM																		
Consultants (Central Amer.)																		
1	1	Consultant Yield Modeling	per day	0.200		0.0	15	3.0	15	3.0		0.0		0.0	30	6.0		
1	1	Consult. Outreach Economic Results	per day	0.200	30	6.0		0.0		0.0		0.0		0.0	30	6.0		
1	1	Consult. Outreach Silvicult. Results	per day	0.200	30	6.0		0.0		0.0		0.0		0.0	30	6.0		
1	1	Consultant Soils Interpretation	per day	0.200	30	6.0		0.0		0.0		0.0		0.0	30	6.0		
1	1	Consultant unspecified	per day	0.200		0.0	15	3.0	15	3.0	15	3.0		0.0	45	9.0		
Consultants (from outside CA)																		
1	1	Consultant GIS Analysis	per day	0.250	15	3.8	15	3.8		0.0		0.0		0.0	0	0.0		
1	1	Consultant Development Appl.	per day	0.250		0.0	20	5.0		0.0		0.0		0.0	20	5.0		
1	3	Travel for consultants	trips	1.000	4	4.0	4	4.0	2	2.0	1	1.0		0.0	11	11.0		
1	3	Per diem for consultants	days	0.100	105	10.5	65	6.5	30	3.0	15	1.5	0	0.0	21	21.5		
2	8	Plot measurement & maintenance				10.0		10.0		10.0		10.0		10.0	0	50.0		200.0
1	4	Computer equipment CAYIE				40.0		5.0		5.0		5.0		0.0	0	55.0		
1	4	GIS Equipment				15.0		0.0		0.0		0.0		0.0	0	15.0		
1	5	Software (GIS & other)				10.0		5.0		5.0		5.0		0.0	0	25.0		
1	8	Computer maintenance insure. EQ				7.0		7.0		7.0		7.0		7.0	0	35.0		
2	8	Computer maint. insure. in countries				1.5		1.5		1.5		1.5		0.0	0	4.5		18.0
1	8	Maintenance office equip.				5.0		5.0		5.0		5.0		5.0	0	25.0		
SUBTOTAL OUTPUT B1						124.8		58.8		44.5		37.5		22.0		287.5		218.0

BEWARE Project (596-0150): Tree Crop Dissemination Amendment -- AID DISBURSEMENT PLAN

CODE	ITEM	UNIT	COST/ UNIT US\$000	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5		TOTAL RCAP		BUY-INS	
				NO. UNITS	COST/ YEAR US\$000	NO. UNITS	PROJECT COST US\$000										
OUTPUT B2. BIBLIOGRAPHIC INFO																	
Personnel																	
1 1	Documentationalist	pw	1.000	12	12.0	12	12.0	24	24.0	24	24.0	24	24.0	96	96.0		
1 1	Bibliographic Data Base Operator		0.417	24	10.0	24	10.0	24	10.0	24	10.0	24	10.0	120	50.0		
1 4	Computer network server 386/25	each	7.500	1	7.5		0.0		0.0		0.0		0.0	1	7.5		
1 5	Diverse communications software				10.0		0.0		0.0		0.0		0.0	0	10.0		
1 5	PC File Transfer Software for El Mail				8.0		0.0		0.0		0.0		0.0	0	8.0		
1 5	PC Communications cards	each	0.200	13	2.6	13	2.6		0.0		0.0		0.0	26	5.2		
1 4	Photocopy machine	each	7.000	1	7.0		0.0		0.0		0.0		0.0	1	7.0		
1 4	Office equip.& furniture				2.0		1.1		0.0		0.0		0.0	0	3.1		
2 3	Travel & perdiem in C.A (HQ staff)	trips	1.000	1	1.0	1	1.0	0	0.0	0	0.0		0.0	2	2.0	4.0	
1 7	Materials				5.0		5.0		5.0		5.0		0.0	0	23.0		
1 5	Aquisition of publications				5.0		15.0		15.0		5.0		0.0	0	40.0		
SUBTOTAL OUTPUT B2					70.1		46.7		54.0		44.0		37.0		251.8	4.0	
OUTPUT B3. NETWORK OF INSTITUTIONS																	
2 2	Short-course statistical anals.	each	3.000	1	3.0	1	3.0	0	0.0		0.0		0.0	2	6.0	21.6	
2 2	HIS Training	each	10.000	0	0.0	1	10.0	0	0.0	0	0.0		0.0	1	10.0	19.2	
2 2	H.S. Scholarships HIS	each	25.000	0	0.0	0	0.0	1	25.0		0.0		0.0	1	25.0	120.0	
1 2	Support for student theses		1.000	2	2.0	2	2.0	2	2.0	2	2.0		0.0	8	8.0		
SUBTOTAL OUTPUT B3					5.0		15.0		27.0		2.0		0.0		49.0	160.8	
OUTPUT B4. SERVICE FOR THE INFO NETWORK																	
1 2	Participation in intl.workshop	partic.	2.750	2	5.5	2	5.5	2	5.5		0.0		0.0	6	16.5		
SUBTOTAL OUTPUT B4					5.5		5.5		5.5		0.0		0.0		6	16.5	
SUBTOTAL COMPONENT B.					279.0		308.5		311.4		213.9		160.4		1,273.2	555.6	
PROJECT SUBTOTAL					886.6		892.6		849.8		528.0		461.4		3,620.3	2,091.7	
10 CONTINGENCY & INFLATION				0.10	88.9		89.3		85.0		52.8		46.1		362.0	289.2	
8 CAYIE ADMIN COST				0.13	127.1		127.8		121.5		75.5		66.0		517.7	299.1	
PROJECT TOTAL					1,104.5		1,109.5		1,058.2		656.3		573.5		4,500	2,600	

ANNEX D
TRAINING PLAN

Type of Training	No. of events	Total trained	Men	Women	Venue
1. General Operations for Outreach					
a. Support field days & demonstrations	N/A	N/A	N/A	N/A	Central America
2. Extension services					
a. National short courses/workshops	24 courses	720	540	180	Central America
b. Regional course silviculture	4 courses	80	60	20	Central America
c. Regional course economics	4 courses	80	60	20	Central America
d. Regional course extension	4 courses	80	60	20	Central America
e. MS Scholarships extension	6 participants	6	4	2	C.A./U.S.
f. Stipend for on-the-job training	9 participants	9	7	2	C.A./U.S.
g. Study trips exten. & farmers trips	6 trips	48	36	12	Central America
h. Support for student theses	12 theses	12	9	3	Central America
i. Intern. study trips & seminars	10 trips	10	7	3	Central America
3. Production of Materials					
a. Translation services	N/A	N/A	N/A	N/A	Central America
b. Inputs for demonstrations	N/A	N/A	N/A	N/A	Central America
c. Regional short courses & workshops	2 courses	40	30	10	Central America
d. National short courses & workshops	12 courses	360	270	90	Central America

4. Bibliographic Information					
a. Regional short course in CATIE	1 course	20	15	5	Central America
5. Network of Institutions					
a. Short-course statistical analysis	9 courses	135	101	34	Central America
b. Intern. Seminar Data Base Mgt.	2 seminars	16	12	4	Central America
c. MIS Course in CATIE for network	2 courses	16	12	4	Central America
d. MIS On-the-job training in countries	12 courses	72	54	18	Central America
e. Training unspecified	To be determined	To be determined	To be determined	To be determined	Central America
f. M.S. Scholarships MIS	6 participants	6	4	2	C.A./U.S.
g. Support for student theses	8 theses	8	6	2	Central America
6. Service for Information Network					
a. Participation in intl. workshop	6 participants	6	4	2	U.S.
TOTAL		1724	1291	433	

Project Paper Supplement

RENARM PESTICIDE MANAGEMENT ACTIVITY

**Regional Office for Central American Programs
(ROCAP)**

December 1990

Project Paper Supplement

RENARM PESTICIDE MANAGEMENT ACTIVITY

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List of Acronyms

AA.	Assistant Administrator (A.I.D.).
A.I.D.	United States Agency for International Development.
APHIS.	Animal Plant Health Inspection Service
BOSCOSA.	USAID/Costa Rica forestry project.
CATIE.	Tropical Agricultural Center for Research and Education.
CINDE.	Costa Rican Coalition for Development Initiatives
CODEFORSA.	Honduran Corporation for Forestry Development
DGF.	Director General of Forestry
DIGEBOS.	Direction General of Forestry
EOP.	End of Project.
EPA.	United States Environmental Protection Agency.
ESNACIFOR.	National School for Forestry Sciences (Honduras)
FDA.	Food and Drug Administration
FECCOPIA.	Federation of Agricultural Producers Organizations for Central America and the Caribbean
FHIA.	Honduran Foundation for Agricultural Investigation
FORESTA.	USAID/Costa Rica forestry project.
GIS.	Geographic Information Service.
GOES.	Government of El Salvador.
ICAITI.	Central American Research and Technology Institute for Industry
INCAP.	Institute of Nutrition for Central America and Panama
INCIENSA.	Costa Rican Institute for Nutrition and Health Research and Training
INFORAT.	CATIE's Technical Forestry Information Center
IPM.	Integrated Pest Management
LAC.	A.I.D. Bureau for Latin America and the Caribbean.
LEÑA.	ROCAP Fuelwood and Alternative Energy Sources Project.
LOP.	Life of Project.
LUPE.	Land Use Productivity Enhancement (Honduras)
MADELEÑA.	ROCAP Tree Crop Production Project.
MIRA.	Tree Resources Information Management System (=TRIM).
MIS.	Management Information System.
NGO.	Non-governmental organization.
PACD.	Project Activity Completion Date.
PASA.	Participating Agency Service Agreement.
PIRAMIDE.	CATIE reforestation project.
PROFOR.	Swiss forestry project in Columbia.
PVO.	Private voluntary organization.
RENARM.	Regional Environmental and Natural Resources Management Project.
RPMS.	Regional Program Management System
TFAP.	Tropical Forestry Action Plan.
TFAPS.	Tropical Forestry Action Plans
USAID.	United States Agency for International Development (bilateral Mission).
WHO.	World Health Organization

Project Paper Supplement

RENARM PESTICIDE MANAGEMENT ACTIVITY

1.0 SUMMARY

The destructive consequences of pesticide misuse in Central America are both increasingly serious and increasingly recognized. ROCAP and the Central American USAID Missions are addressing this situation in part through support to integrated pest management (IPM) programs, thereby seeking to properly place pesticides in the context of overall pest control efforts. Nonetheless, IPM research results to date, even if applied universally, would not solve or even address all pest problems encountered by Central American farmers. The excessive, widespread and virtually unrestrained use of pesticides in the region clearly merits a special and focused effort to introduce needed elements of control and discipline.

The fundamental problem is ignorance: of why, whether, when, and how to use pesticides. The damages are felt by farmers at all levels, their families, their communities, their countries, and the consumers of their produce at home and abroad. To overcome this pervasive ignorance, ROCAP and the USAID Missions in Central America propose campaigns in general awareness, training, and technical assistance directed at every involved level of the public and private sectors, from the smallest farm to the largest exporter to the formulators of national policy and legislation.

The Pesticide Management Activity under the RENARM Project's Component No. 3 (Sustainable Agriculture and Forestry) will run for five years, through the September 30, 1995 RENARM PACD, and is expected to cost approximately \$6.5 million. Four million will be covered by RENARM, and \$2.0 million by the bilateral Missions. The RENARM Analyses--Institutional, Technical, Social and Economic--support this Activity which the Project Paper forecast as a 1990 Amendment.

2.0 BACKGROUND

RENARM includes an integrated pest management (IPM) project with CATIE and the Pan American Agricultural School (EAP or Zamorano) that addresses appropriate pesticide use, as does the AID Central America Environmental and Natural Resource Strategy. As was brought out in a General Accounting Office (GAO) study and in a regional meeting of ADOs in March 1989, however, this alone is not sufficient. After the ADO meeting, it was agreed that ROCAP address the problems of pesticide use and misuse in Central America. The RENARM PP of August 1989 notes that "concerns about food safety, environmental

contamination and worker protection are creating support for more aggressive programs to educate applicators and regulate the sale, storage, distribution and application of pesticides". It proposes a program directed towards: (1) awareness and understanding of the pesticide problem in Central America; and (2) building the capacity of private and public agencies to develop, disseminate and adopt improved pesticide management strategies.

2.1 PESTICIDES IN CENTRAL AMERICA

2.1.1 Sources: Manufacture and Distribution

Central America uses 40-50 million kilograms of pesticides each year, at a cost of US\$ 120-150 million. Virtually all of the world's major international agrochemical companies sell in Central America. This product is either packaged at the source (U.S. or Europe); shipped in bulk and re-packaged locally; imported as ingredients and formulated locally; or in a few cases manufactured (synthesized) locally. Some material is also imported from secondary sources (e.g., Pacific rim countries) and formulated and re-packaged, and there is some movement of contraband materials between Central American states.

The distribution system is not as rigid as in developed countries. The "normal" system is that one company distributes to warehouses, who in turn sell to smaller stores, who in turn sell to the end user. But some manufacturers sell directly to large farmers or to wholesalers who resell to large stores, or they may re-package and distribute to smaller stores; some producers also still import directly. There are numerous small distributors in rural areas, up to 400 in some countries, and approximately 500 generic products are distributed under a wide variety of labels. In short, there is no formal, standardized, and supervised distribution system in Central America--a wide range of pesticides is accessible to whomever wishes to buy them.

2.1.2 Uses: Domestic and Export Market Applications

The use of pesticides in substantial quantities in Central America began with cotton plantations in the 1950's. Although today cotton production has been drastically reduced, the total use of pesticides has increased due to the expansion of other crops, new pest problems and increased use of "modern" production technologies.

The majority of chemicals sold in Central America are used on traditional export crops--bananas, coffee, sugar cane and cotton--and to some extent on basic grains. All of these crops have pest and disease problems and, in spite of new disease-resistant varieties and increasing use of integrated pest management (IPM) practices, most normally require some sort of chemical control to be produced profitably on a commercial scale. Most pesticides are older generation chemicals, which are easier to manufacture and are sold and used in large volumes. As the domestic and export markets for vegetable crops increase, new generation chemicals are needed and old chemicals are used in different ways.

The only control exercised over the use of pesticides for domestic crops is the producer's purse--to save money producers will use less or try newer

formulas with smaller applications, but they will use anything they can as often as necessary to produce a crop. This process is exacerbated by the premium paid in foreign markets for Central American vegetables grown out of season. Growing year around, as is the case for some crops, breaks the crop cycles which naturally reduce or eliminate damage from many pests.

When the first growers began to export they used the same methods to produce export crops as domestic crops. In the early 1980's, however, Guatemalan shipments were stopped because they contained illegal pesticides--and Central Americans were introduced to U.S. regulations. Since then, growers have learned the rules but often by losing valuable produce found to contain non-EPA registered pesticides or residues higher than acceptable tolerance levels. No single country or crop has been exempt: from snow peas in Guatemala to chayote in Costa Rica to cucumbers in Honduras, producers have learned--and paid--through their wallets.

During the 1988-1989 export season, Guatemalan snow peas were under automatic detention in the United States due to consistent nonacceptable levels of dithiocarbamate fungicides. The use of methamidophos and chlorpyrifos during this same period led to the rejection of melons as well. Pesticide residue violations in export crops destined for the US market still constitute a problem. The average annual frequency of violations for agricultural products in the United States is 3%; during the 1988-89 season, violations were 9.8% for Guatemala, 5.1% for Costa Rica and about 5.0% for the rest of Central America.

2.1.3 Regulation and Behavior

The modern technology and commercial production practices which have driven Central America's agricultural growth are now in conflict with worldwide concern for the protection of consumer health and the environment. This concern is felt throughout the region, where national governments are increasingly placing emphasis on environmental conservation. Guatemala passed legislation to protect 44 critical areas for natural forest conservation and endangered area protection. Costa Rica negotiated US\$70.0 million in "debt for nature" swaps, and designated approximately 25% of its territory as "protected areas". Honduras gives importance to conserving and replanting its forests, and recently passed legislation establishing 27 new wildlands. That the five presidents of Central America also created CCAD--the Central American Environmental Development Commission--to propose regional environmental legislation underscores a growing political will to address environmental issues. While economic growth must remain the most pressing item on the agenda of the region's nascent democracies, they increasingly accept the need to protect the resource base for future generations.

Pesticide use is included in this agenda. All the countries in the region have an updated registration system based on an FAO model, and a system for banning toxic chemicals based on the EPA or WHO list. EPA registration guidelines are almost universally employed. Although there are instances of products entering a country that were not formally registered there, i.e., "special treatment", this has diminished over the last few years and there are fewer cases of decoy countries of origin, mislabeling and other deceptions of the past.

To some extent, proper pesticide use in the region is being practiced through integrated pest control programs and in compliance with specific pesticide residue quality standards for food export products. As this trend continues, overall usage could therefore drop through the elimination of pesticides for which there are no registered substitutes. Nevertheless, though a system is in place for registration and control of sales, in all countries there are breakdowns resulting either from lack of enforcement or lapses in political will. All of the countries of the region have developed legal frameworks which, if complied with, would contribute to better pesticide use. As an example, all forbid repackaging and relabeling outside certain technical and logistical norms that guarantee product quality. Nonetheless, small formulators or distributors may repackage without these formalities.

The national agrochemical organizations recently formed a regional Federation--the Central American/Caribbean Federation of Organizations of Agricultural Industry Producers or FECCOPIA--to (1) assist local health officials in toxicological studies and treatment of pesticide poisoning; (2) educate users in the correct handling of pesticides; and (3) start a public awareness campaign. This group will also work to develop self-regulation in enforcing the pesticide laws, something that legitimate agrochemical manufacturers view favorably.

2.1.4 Consequences and Prospects

The economic growth of the region depends to a large extent on the productive capability of its agriculture. The agricultural sector must provide food and earn foreign exchange, and pesticides will continue to be required to sustain productivity levels and obtain the product quality that exports demand.

While A.I.D. supports development of disease-resistant crop varieties in Central America, the benefits of pesticide use remain well documented. Essentially, most high value export crops cannot be grown on a commercial scale in Central America without some type of pesticide. Shifting from basic grains to non-traditional exports has raised the living standards of many small farmers, as well as the living standards of producers of traditional export crops like coffee and cotton which are almost impossible to grow commercially without pesticides.

Introducing crops that are not indigenous to an area or culture (e.g., snow peas in the corn-producing highlands), and massive, intensive planting in a single area (e.g., cotton on the Pacific coast), have caused pests to emerge that are not the traditional pests on those crops, fostered pest resistance, and caused outbreaks of insect populations and diseases. All of these have led to increased pesticide use. The picture has improved with the advent of IPM programs, usage controls indirectly enforced by FDA, the increasing costs of multiple pesticide applications, and a general awareness of the need to cut back on pesticides. Large areas of land, however, have had to be taken out of agricultural production due to pesticide overuse and incipient pest problems.

The use of pesticides is and will continue to be as important as fertilizers and improved genetic varieties in maintaining agricultural growth. Agriculture is the productive activity that has best resisted inflationary

impact on the region, that responds most positively and rapidly to economic incentives, and that holds a primary sociopolitical role in the lives of Central Americans.

2.2 AID AND OTHER DONOR INTERESTS

2.2.1 Other Agencies

The upsurge in pesticide use drew little official attention until the late 1980s, and Central Americans and donor agencies were unprepared to deal with the consequent problems. Local trade groups and donor agencies now are reacting, but no other donors are offering substantial, effective support to pesticide management programs. A sample of current pesticide-related donor activities include:

- GIFAP, the international guild of agrochemical manufacturers, provides pesticide training courses and manuals on correct pesticide use. This program, although impressive in design, has had little impact to date.

- FAO has developed a code of conduct for pesticide use and models for registration laws, as well as sponsoring hemispheric conferences to address pesticide problems.

- GTZ, the German aid organization, has provided minimal assistance in every country except Costa Rica where they donated pesticide laboratory equipment, the services of a chemist to install the equipment, and funds to train the technicians. Unfortunately, bureaucratic infighting as to where the equipment should go or to whom it should belong has delayed this process for almost two years; only recently has the equipment been installed within the Costa Rican Plant Protection agency.

- PAHO, the Pan American Health Organization, has provided many laboratories within the region with technical assistance in pesticide residue analysis, but not for large volume, systematic, commercial-scale testing.

- CABEI and IDB have pesticide restrictions built into their lending systems, but they are often ignored or unenforceable.

- ICAITI has a laboratory that tests and analyzes meats and industrial products. Although capable of quality control and pesticide residue testing, they carry out neither on a commercial scale.

2.2.2 Bilateral USAIDs

Alar on apples and the famous Chilean grape scare, coupled with an increase in automatic detentions of agricultural products, sparked an immediate interest in pesticide programs among the region's USAIDs. All have since incorporated some type of pesticide management activity within existing projects; most are aimed at increasing awareness of U.S. pesticide regulations among the producers of export crops, and in complying with 22 CFR Part 216 (AID HB 3, App. 2D) regulations. Quality control programs aimed at

agricultural producers, upgrading of pesticide residue labs, and pesticide training programs now appear commonly in bilateral AID projects.

In Costa Rica, for example, CINDE is in the process of designing a quality assurance program that would include a pesticide residue laboratory, and the Ministry of Agriculture is setting up a pesticide residue lab with assistance from GTZ and partial funding from CINDE. There are also two other labs in Costa Rica, one in the University that conducts pesticide quality checks and the other at INCIENSA that conducts limited pesticide residue testing. In Honduras, the FHIA laboratory indirectly receives funding from A.I.D. as it is part of the larger FHIA project; the pesticide residue portion of this laboratory, however, is self financed. USAID/Honduras is also working on a quality control program that would either upgrade FHIA lab capabilities or develop a new laboratory. In addition, the Ministry of Natural Resources has received an offer from the Japanese government to provide additional laboratory equipment, but it is currently uncertain when funds would be available or in which laboratory the equipment would be placed.

In El Salvador, A.I.D. has designed an improved laboratory/quality control program through the FUSADES project for which construction is slated to begin in early 1991. In Guatemala, there presently exist two government laboratories that have performed pesticide residue analysis in the past; neither, however, is presently capable of offering quality service. And, while a number of private export enterprises in Guatemala have installed small laboratories for their own use, most would not conduct in-house testing if other services were available.

2.2.3 ROCAP and RENARM

When AID/W reviewed and approved ROCAP's 1989-1993 RDSS, ROCAP was invited to formulate a strategy to guide AID contributions to Central American environmental and natural resources management programs. The resulting Regional Environmental and Natural Resources Management Strategy for Central America, prepared in collaboration with AID/W and Central American USAIDs, was approved by the AA/LAC in February 1989. This Strategy identifies key constraints and actions required to restore and protect the natural resource base of Central America. Its first priority (of five) addresses pests and pesticide management. Two ROCAP projects zero in on this theme:

(1) The Integrated Pest Management (IPM) project with CATIE/Zamorano, which originally focused on local-market grains and vegetables and now is moving into non-traditional exports; and

(2) The the Non-Traditional Agricultural Export Support (PROEXAG) project, which identifies new crop opportunities and the problems associated with pesticide residues on exports.

PROEXAG may be the most effective AID effort in pesticide management in Central America to date, largely because its flexibility has allowed it to react quickly to the pesticide problem, issue pesticide bulletins, maintain links between U.S. agencies and the regional producers associations, and distribute pesticide-related information.

RENARM's response to the need for follow through is a pesticide management activity specifically designed to promote and support rational pesticide use--and to cover all aspects of pesticide supply and use, from product registration, formulation, packaging, labeling and distribution to equipment calibration and disposal.

2.3 PROBLEM STATEMENT

Pesticides, properly used, permit sustainably high production levels, lower production losses to pests, attainment of desired quality levels, and adequate economic returns on farmer investment. Improperly used, pesticides increase production costs, reduce or eliminate product marketability, endanger the health of consumers and applicators, induce tolerance or resistance among pests and pathogens, and in general harm the environment and quality of life.

Ignorance of pesticide characteristics, properties and effects is the main cause of inappropriate use. At the farm owner level, there is inadequate knowledge of international market regulations that determine the types of pesticides and levels of residues allowed. Knowledge diminishes further as the process gets closer to the final applicator of pesticides--the laborer or campesino who makes erroneous decisions as to whether to apply pesticides, what to apply, dosages and times of application, calibration of equipment, safety measures during transportation, storage and handling, and the elimination of containers and residues. This leads to the use of unregistered pesticides for a given crop and/or buildup of residue levels beyond allowed tolerances. Pesticide salesmen often promote overuse, and agricultural extension programs and training are oriented towards production that is dependent on pesticides. There exists, furthermore, a series of special problems in Central America:

- Increasing restrictions in the U.S., Europe and Japan (the major markets) on agricultural export products with pesticide residue;
- Withdrawal, from the market or from the EPA-approved registration list, of pesticides used in the region for crop protection;
- Deficient, or almost non-existent, communication and information dissemination systems for notifying users of regulatory decisions;
- Lack of computerized, standardized national pesticide registration systems;
- A shortage of laboratories capable of providing efficient, timely, trustworthy pesticide residue analyses;
- Growing concern by the Central Americans for consumer health, coupled with a lack of knowledge of pesticide intoxications and treatment;
- A need for better protection of pesticide users; and
- General recognition of the present and potential negative impacts that pesticides have on the environment.

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This is an impressive array of linked problems and consequences. The fundamental problem, however, is simple ignorance: of why, whether, when, and how to use pesticides. Misuse occurs among farmers at all levels and health damages are felt, sooner or later, by farmers, their families, their communities, their countries and their customers at home and abroad. The economic losses resulting from this misuse, moreover, hit the entire production and distribution chain almost immediately.

2.4 AMENDMENT RATIONALE

The RENARM financed CATIE/Zamorano IPM Activity focuses on pesticide problems in order to expand the knowledge required to significantly improve pesticide use in the region. IPM research to date cannot provide non-traditional and exotic, high-value export crops the protection they require. Pesticides have both positive and negative effects, and the RENARM Pesticide Management Activity will contribute to minimizing the costs and hazards of these tradeoffs.

3.0 THE AMENDMENT

3.1 GOAL AND PURPOSE

The Goal of the RENARM Pesticide Management Activity is the rational use of pesticides in Central America. The Purposes of the Activity are: (1) to enhance general awareness of, and to educate users (the producer, applicator and exporter) on, the costs of misusing pesticides and the benefits of proper pesticide handling, usage and disposal; and (2) to improve public and private sector pesticide management.

3.2 ACTIVITIES

Specific interventions to be undertaken in the RENARM Pesticide Management Activity fall into three general programs: Awareness and Education, Private Sector Support, and Public Sector Support.

3.2.1 Awareness and Education Program

One of the central themes of the Awareness and Education Program is a unified message. PROEXAG aside, too often the message of proper pesticide use has been delivered in a haphazard, ad hoc fashion to an audience receiving confusing advice or no useful information at all.

The Awareness and Education Program will coordinate the message and the messenger. Initially, the philosophy, language and characterizations used in the EAP/Zamorano Pesticide Certification course and manual will be adapted for the text and drawings in posters and handouts that will be used by FECCOPIA members to reach pesticide sellers, buyers and other audiences (e.g., housewives, school children). With these posters and manuals as a guide, radio spots will then be developed with the same message and in the same terminology. Peace Corps Volunteers (PCVs) will spread the message, developed around the Zamorano course, and pesticide users will attend courses on

pesticide use from Zamorano-trained and -certified extensionists. Central Americans will see posters in their local stores providing the exact same message; they will hear that message on the radio; they will see it in pamphlets and on pesticide containers; and for those wanting greater information the message will be described in detail in a manual developed by the agrochemical manufacturers and/or Ministries of Agriculture.

Most FECCOPIA members, bilateral Missions and Ministries of Agriculture or Health all have some type of media messages on safe pesticide use, yet they have never been coordinated. This Activity will support massive distribution of uniform, mutually agreed upon messages using all available media. The major groups to be involved in or affected by this Awareness and Education Program are the agrochemical industry, rural communities and medical communities.

The Agrochemical Industry. Some elements within the trade see pesticide management as a threat, since lower usage means lower sales. Manufacturers, particularly the large international firms, take a long term view, however, and are insisting that their distributors jump onto the bandwagon. Individual companies have put out posters and leaflets about proper usage, but their messages are not always uniform and distribution is scanty. Technical assistance will be offered to FECCOPIA in carrying out its public education and information program, and to any local associations in the pesticide business requesting it. In addition, individual importers, formulators and distributors will be invited to participate in a range of technical research and dissemination exercises.

Rural Communities. This target group includes laborers, small farmers and the campesinos tending a family garden. Working at the village level in collaboration with government extension agents, local NGOs and community organizations, PCVs will offer guidance in handling pesticides within the domestic environment--storage, use in home gardens, disposal of containers, laundering of contaminated clothing and keeping chemicals away from children, pets, and farm animals. This group will also be the target of an information and awareness media campaign.

Medical Communities. Formal medical training in recognition and treatment of pesticide poisoning is almost non-existent in Central America. There are tales, throughout the region, of patients having ingested pesticides and being treated for something else, sometimes with fatal results. INCAP, the Central American Institute for Nutrition, has developed a successful course for doctors in urban and rural areas in the recognition and treatment of malnutrition in children and this Activity will provide funds for development of a similar course in recognition and treatment of pesticide poisoning. EPA does not have extensive experience in this subject, but many states have such programs and EPA and the agrochemical industry have agreed to provide specialists to help INCAP in course design.

3.2.2 Support to the Private Sector

Demand for pesticide testing services currently outstrips supply in Central America, and it is clear that that demand will continue to grow. It is also clear that economic limitations will continue to severely

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constrain the ability of public sector entities to meet this demand effectively and sustainably. The public sector has a role to play--through regulations and establishment of a regional reference laboratory--but private sector laboratories are demonstrably more effective, efficient and sustainable. Supporting efforts to help the private sector meet increasing demand for testing services, and supporting minor crop research by the private sector, will be essential to attainment of purpose- and goal-level objectives.

Quality Control Laboratories. A certified quality control laboratory, analyzing pesticide residue levels, offers a form of insurance. The importance of these labs in assuring product acceptance (and therefore cutting financial losses) is increasingly recognized by producers, exporters and governments alike. There exist laboratories in each country capable of pesticide residue analysis, but most technicians are not trained in current laboratory techniques and labs need better equipment and stocks of solvents, reagents and standards. (Public sector laboratories also need improved equipment and staff, as well as training in residue analysis, before they can assume any major responsibility for monitoring pesticides on food crops.)

Increasing concern about pesticides has led to an array of recent bilateral activities that support pesticide testing in the region. In the last year alone, existing laboratories have been upgraded (e.g. FHIA in Honduras), lab equipment has been installed (e.g. Guatemalan frozen broccoli producers and MAG-Costa Rica), and new quality control lab programs have been established or are under design (e.g. in Costa Rica, Honduras and El Salvador). No labs in the region, however, are currently capable of producing consistently high quality laboratory analysis on a commercial scale.

The potential demand for pesticide testing services is far greater than present capacity, both in the volume and types of analysis required. It is clear that to meet that demand, two types of laboratories are needed: (1) in-country Quality Control/Pesticide Residue (QCPR) Labs, which check for key known chemicals used on crops, and (2) a Regional Reference Lab to serve as a quality check on the other labs. The nature of the role that Regional Reference labs play demands that they function as regional public sector institutions; conversely, experience has shown that the effectiveness, efficiency and financial sustainability of private sector QCPR labs are demonstrably far superior to those in the public sector. Both are needed in an integrated system.

USAID bilateral missions, other donor agencies and international private sector entities are currently pumping significant financial resources into pesticide testing laboratories in Central America. Inadequate data currently exist, however, to help these organizations make consistently rational financial investments in this area. Key unknowns include: (1) the nature of current and projected demand for pesticide testing services in the region (i.e., sources, geographical distribution, and timing of demand; throughput requirements; variation in demand as a function of pesticide type, produce type and export point; etc.); (2) the capabilities and capacities of existing laboratories in the region; and (3) constraints on the private sector's ability to meet the demand for pesticide testing services.

To fill these key informational gaps, the RENARM Pesticide Management Activity will fund a regional market analysis of the supply of and demand for pesticide

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testing services in Central America. The findings of this analysis will help public and private sector entities better focus financial resources designed to promote "FDA-caliber", private sector pesticide residue laboratories. These findings are expected to be of special value to bilateral USAIDs in the region, providing them the information necessary to refine their pesticide- and agricultural export-related projects and programs.

The regional market analysis for pesticide testing services will have the following three components:

Regional Demand and Alternatives Assessments. A regional assessment of demand for crop-specific pesticide residue testing services will be undertaken in the first six months after approval of the Amendment. Focusing on growers and exporters of agricultural crops, this assessment will analyze current and projected demand for pesticide testing services based on an assessment of the costs and benefits of accepting current and projected crop rejection levels. The team conducting this demand assessment will concurrently evaluate alternative methods of meeting that demand. This assessment will focus on four specific alternatives--increased public sector testing, private sector (contract) testing, in-house laboratory testing, and/or testing through establishment of cooperative ventures--and will concentrate on the acceptability and costs and benefits of those alternatives.

Regional Inventory of Pesticide Testing Laboratories. On the supply side, a regional inventory of public and private sector organizations with pesticide testing laboratories will be undertaken. This inventory will detail the current capabilities, capacities and constraints of these organizations.

Private Sector Constraints Analysis. After completion of the demand/alternatives assessments and regional inventory, and building upon their findings, a regional analysis of constraints facing private sector entities wanting to enter into the pesticide testing services business will be undertaken. This analysis will evaluate potential constraints identified during both initial studies, and will make clear recommendations for means of supporting increased private sector expansion into this industry.

Minor Crop Pesticide Research. Central America is seriously affected by the withdrawal of pesticides of special local interest from the market or from the approved EPA registration list. As registrations and special reviews take place within EPA, minor-use crop registrations* may disappear and tolerances may change or remain unestablished for tropical crops with good potential in US markets. Under this activity, minor crop field research on uses that interest local producers will be carried out by crop associations, independent producers and/or export federations, but outside consultants will be needed to design research protocols.

It is envisioned that field trials will be set up for different pesticides and different crops, and that EPA oversight/quality control will result in a level of quality control sufficient to ensure that findings are accepted by EPA as valid for the region. EPA will either provide these consultants or assist ROCAP and the bilateral Missions in locating competent specialists. ROCAP,

Pesticide registrations for export crops which are relatively unknown in the U.S. and European markets.

with direct input from the Project Manager and Regional Pesticide Management Specialist funded under RENARM, will provide research expertise and financing on a cost-sharing basis when indicated to crop associations and other private sector entities to conduct specific crop/pesticide investigations. These grants will fund outside consultants to prepare and/or validate the research and pesticide protocols and provide for the funding of local plot supervision.

3.2.3 Support to the Public Sector

While economic limitations will continue to severely constrain the ability of the public sector to meet the demand for pesticide testing in Central America effectively and sustainably, the public sector has and will continue to play a significant role in improving pesticide management. Two key constraints to improving public sector performance in this respect are (1) the absence of a high quality regional pesticide Reference Laboratory, and (2) weak and discordant national pesticide regulations.

Regional Reference Laboratory. The RENARM Pesticide Management Activity will support the upgrading of ICAITI's pesticide laboratory into a high quality regional Reference Laboratory that will act as a distribution center for information from EPA and other U.S. institutions. ICAITI is, by Treaty, the official standards agency for Central America and is recognized as such by the Governments of Central America. ICAITI will also serve as the channel for obtaining training for Central American lab technicians with FDA and EPA laboratories and provide technical advice and evaluation of national laboratories. Procurement of commodities and technical assistance will support this transformation. The FDA laboratory in Los Angeles has already offered assistance in training technicians to use the "Luke multi-residue" testing method (the standard method for all FDA laboratories), and additional FDA and EPA assistance will be procured as necessary. The laboratory survey portion of the regional private sector market analysis described above will also evaluate what is required to establish ICAITI as the regional Reference Laboratory and repository for standards and reagents.

ICAITI will also serve on the Regional Information Center for technical manuals and materials from EPA and FDA that pertain to lab procedures and management. Types of information will include "Good Laboratory Practices" (GLP's), Pesticide Analytical Manuals (PAM's), and sources of information on standard methods. ICAITI currently has offers from other donors to assist in upgrading its capability for pesticide residue testing. ROCAP will work with the donors required to ensure that this materializes.

Regulatory Assistance. Each Central American government has in place some form of pesticide regulation. Upon request from the Missions, technical assistance will be offered to bring each system up to international standards and to harmonize regional requirements covering pesticide importation, formulation, packaging, labeling, distribution, storage and disposal. Technical assistance will also be offered to any government considering promulgation of legislation or regulations covering pesticide use, and to any government office having responsibility at any point in the pesticide use process. Public sector extensionists will be included in the pesticide certification program, and in the information campaigns.

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3.3 END OF PROJECT INDICATORS

At the end of the RENARM Pesticide Management Activity, the following outputs will have been realized:

- (1) Direct training of at least 1000 technicians through the Zamorano course in IPM, application procedures and pesticide management, with outreach capabilities of reaching 10,000 applicators, and training of 60 selected technicians who will instruct extensionists in proper pesticide management.
- (2) Through the Peace Corps and Zamorano, training of 275 host-country extensionists, 550 person-years (part-time) of PCV extensionist training, and the subsequent training of small farmers in pesticide management and IPM techniques;
- (3) Through the Peace Corps, training of 350 host-country home extensionist agents, and 350 person-years (part-time) of PCV activity providing instruction to housewives and children in proper pesticide handling;
- (4) Development and direct dissemination of over 20,000 pesticide safety/proper use posters and bulletins through government agencies, schools and agrochemical distributors;
- (5) Through INCAP, development and dissemination of a correspondence course in recognition and treatment of pesticide intoxications for approximately 5,000 of the 17,000 doctors in the region;
- (6) Improved communication and dissemination systems concerned with pesticide regulations and registrations for US and European countries, including computerized data base systems in national registry offices;
- (7) Improvement in the capabilities of laboratories to do pesticide residue testing, with a Regional Reference Laboratory established that meets EPA and FDA standards;
- (8) Improvement in government institutional capabilities to understand, legislate and enforce national pesticide regulations; and
- (9) In-region research on pesticide use on at least 15 crop/pesticide combinations.

4.0 SUMMARY COSTS AND FINANCIAL PLAN

Detailed cost breakdowns for the RENARM Pesticide Management Activity are attached as Annex B, and summary cost estimates, broken out by category of use, are found in Table 1. Breakouts of mission participation and/or buy-in levels by functional source are not estimated in this table, but will occur in all three major components of the Activity (Awareness and Education, Support to the Private Sector in minor crop research, and Support to the Public Sector in regulatory improvement). Projected expenditures by fiscal year are broken down in Table 2 for ROCAP expenditures. Bilateral buy-in estimates are also

Table 1

SUMMARY COST ESTIMATES AND FINANCIAL PLAN
(US\$ 000's)

<u>Use</u>	<u>Source</u>		<u>Totals</u>
	<u>ROCAP</u>	<u>USAIDS</u>	
Awareness & Education	1,529.5		
Private Sector Support	212.5		
Public Sector Support	1,095.0		
Project Management	530.0		
Audits/Evaluations	300.0		
Contingency/Inflation	333.0		
TOTAL	4,000	2,000	6,000

Table 2

PROJECTION OF ROCAP EXPENDITURES BY FISCAL YEAR
(US\$ 000's)

<u>Fiscal Year</u>	<u>Expenditures</u>
1991	1,677.0
1992	1,565.3
1993	521.9
1994	185.8
1995	50.0
TOTAL	4,000.0

omitted from Table 2, but are expected to increase gradually over the period of implementation. A funding schedule for the Pesticide Management Activity is attached as Annex E.

Because of the importance of improved pesticide management to regional economies, an unusually high level of bilateral Mission buy-ins to the RENARM Pesticide Management Activity is anticipated. These buy-ins will ensure the direct relevance of project-funded interventions to more country-specific bilateral activities (where most major progress will be made in improved pesticide management), and will set the stage for more precisely tailored, higher impact bilateral projects to follow. Thus, this Activity like other ROCAP endeavors can be seen as a form of joint venture, offering regional services and support to the development of ultimately more effective local bilateral efforts.

5.0 ANALYSES

5.1 INSTITUTIONAL

As with the rest of RENARM, the Pesticide Management Activity will draw on local and U.S. public sector agencies, NGOs, regional educational and research institutions, and private sector organizations. One of the most important roles will be played by Zamorano, whose interests, experience and competence are reviewed in depth in the RENARM Project Paper section on Institution Building and in the Institutional Analysis Annex. The U.S. public sector agencies (Peace Corps, EPA and FDA) and the NGOs active in Central America are known quantities. The pesticide manufacturers associations to be involved include FECCOPIA and the respective national associations with their memberships of importers, packers, and wholesale and retail distributors. Local associations may be offered technical assistance in their outreach and educational efforts.

5.2 TECHNICAL

Training, outreach, public awareness, technical assistance and policy dialogue have all been employed as agents of change in Central America, and are familiar to institutions that will participate in this Activity. CATIE and EAP/Zamorano, specifically, perform the types of activities to be undertaken: research programs, training courses, production of technical bulletins and literature, and outreach programs. The techniques to be used are both well known and proven.

5.3 SOCIAL

The RENARM Social Soundness Analysis identifies the direct beneficiaries of the Project as trainees (thousands), and all those who modify their agricultural techniques to promote sustainable natural resource use (hundreds of thousands). It specifically notes the benefit of decreased toxic residues on fruits and vegetables; comments on project impact on "marginal households, which are disproportionally headed by women"; and notes the importance of community-level outreach which will be addressed through NGOs and the Peace Corps. This PP Social Soundness Analysis is fully applicable to activities funded under the Pesticide Management Activity. The social impact of the Activity is expected to be very positive, and no specific groups should suffer significant adverse social impact as a result of implementation.

5.4 ECONOMIC

The Central American Environmental and Natural Resources Strategy and the RENARM Economic Analysis acknowledges the difficulty of quantifying and evaluating the economic benefits of environmental and natural resource sustainability projects, and settles for a favorable least-cost finding. The principles which led to this finding--action on a regional basis, institution building drawing on local expertise, and the use of private groups which hopefully will continue after the AID assistance ends--all apply to the Pesticide Management portion of this PP Supplement.

6.0 IMPLEMENTATION AND MONITORING

6.1 METHODS OF IMPLEMENTATION AND FINANCING

Methods of implementation and financing for the RENARM Pesticide Management Activity will follow those laid out in the "Methods of Implementation and Financing" table in the Summary and Recommendations Section of this PP Supplement. As obligation documents, PASAs will be signed with the EPA and Peace Corps; Grant Agreements will be signed (or amended) with EAP/Zamorano; and Grant Agreements will be signed with ICAITI and INCAP. A modest amount of funds will be reserved for the financing of services to be received from PVOs and other private groups, firms and individual sources not yet identified.

A critical element in administration of this Activity will be the full-time contract Project Manager working under the general supervision and oversight of ROCAP's Regional Agricultural Development Office. This individual must be well versed in the pesticides business, knowledgeable in the policies and practices of AID, able to work with businessmen and bureaucrats, and experienced in the region. The nature of the problem is universally accepted. The solution, however, will require a strong promotional effort: identifying where awareness, training, and technical assistance exercises are needed; lining up the requisite expertise; ensuring quality control over funded activities; and assuming responsibility for the realization of output-level objectives. The success of this Activity will depend on the catalytic capability of this individual.

6.2 PARTICIPATING ORGANIZATIONS AND PROCUREMENT

A Procurement Plan for the RENARM Pesticide Management Activity is attached as Annex C. Procurement of goods and services during implementation will occur through a variety of procurement mechanisms appropriate to the participating agencies. The choice of mechanism is based on A.I.D. procurement regulations, and on extensive ROCAP contracting experience with these organizations.

Prevailing problems with pesticide use and abuse in the region are manageable, and the pesticide industry and other private sector organizations seem ready to join the public sector in a common effort to address the issue. Private sector organizations involved include commodity production and export associations, major agrochemical guilds, local distribution and retail operations, research and educational organizations, and private development organizations (NGOs). Among this diverse array of public agencies, private organizations, firms and individuals which form the pool of services available to RENARM, the Pesticide Management Activity will procure technical assistance from four key U.S. Government organizations and three Central American research and educational centers:

U.S. Environmental Protection Agency. AID and the EPA share the goal of improving pesticide use in developing countries. With its proximity and increasing exports to the U.S., Central America offers an ideal location for AID-EPA collaboration. Based on its role in the comprehensive regulation of pesticide registration, labeling, training and use in the U.S., EPA has

extensive scientific, technical, and policy expertise in pesticides and pest management. A.I.D. has experience in dealing with the governments and the agricultural producers and exporters of Central America, but little knowledge of the ins and outs of the pesticide registration and regulation process. The proposed collaboration seems logical and obvious. The training and technical assistance program to be developed is intended to yield not only a sound pesticide policy framework for the region, but also a replicable model for use elsewhere. Because of this, a PASA agreement will be signed with EPA to provide the necessary technical assistance to national and regional pesticide institutions.

U.S. Food and Drug Administration. FDA services, including technical assistance in the form of staff consultations and training at FDA laboratories, will be contracted for or acquired through the EPA PASA.

U.S. Department of Agriculture. USDA will play a peripheral role in the Pesticide Management Activity, but through their Animal and Plant Health Inspection Service (APHIS) it will be directly involved in quality control programs. While it is not currently anticipated that the Activity will require the procurement of technical assistance services from USDA, any procurement of USDA services identified during project implementation will be handled through a PASA arrangement.

Peace Corps. Peace Corps Volunteers deal with small farmers and their families in a consistent manner over a long period of time, often reaching (and being accepted by) people who are outside the range of other public and private organizations. The Peace Corps village-level pesticide management activity will be of direct benefit to the community, and will offer an opportunity for measurement of the benefits that improved pesticide management can bring. Starting in several spots in Guatemala and Honduras that are already included in bilateral mission projects, this PCV activity is expected to spread throughout Central America during the second or third years of implementation. Peace Corps has a large project in Costa Rica, and has plans to re-enter Nicaragua and Panama in early 1991. The program will hopefully serve as a model for replication in Peace Corps programs worldwide. Peace Corps services will be procured through a PASA agreement with ROCAP.

Pan American School at Zamorano, Honduras (EAP/Zamorano). Most people involved in pesticide use are not properly trained. Traditional educational programs within the region are theoretical, without practical training in the skills and mechanics of pesticide handling. At the same time there is a demand for intermediate level technicians to satisfy the growing need for inspection, the application of restricted pesticides, and the provision of technical assistance. Five years ago, Zamorano initiated a program in the theoretical and practical applications of IPM--this is the most significant training in the management of pests and the proper use of pesticides offered in the region. In addition, Zamorano conducts research in biological control, the effective use of pesticides, and life cycles of important pests. The information EAP provides to agricultural professionals, small farmers and students is oriented towards the integrated management of pest problems in grains and vegetables, and is highly regarded.

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ROCAP financed the development of a pesticide certification course at Zamorano, based on like programs in the U.S. and following EPA guidelines. This Amendment will finance repetitions of this course, and the development of other offerings as circumstances warrant. It is currently anticipated that these training services will be procured through a Handbook 13 non-competitive grant agreement: there is a strong rationale for waiving competition, since the course is unique and proprietary, Zamorano has predominant capability based on experience and its relationship with beneficiaries, and the activity is essentially a follow-on to continue developing an existing assistance relationship.

INCAP-Nutrition Institute for Central America and Panama. INCAP, in consultation with EPA and national Colegios Médicos (medical associations), will develop a short course covering the recognition and treatment of pesticide intoxication. This course will be offered to the medical profession in each country and to the network of rural clinics and health practitioners. INCAP's experience in teaching doctors about child nutrition will be relevant to this exercise, while informal-level instruction can be carried by radio throughout the country. Through an existing project with ROCAP, INCAP developed a similar course on child malnutrition under a Handbook 3 Limited Scope Grant Agreement; it is anticipated that the same mechanism will be employed to obtain INCAP services for this Activity.

ICAITI. ICAITI will receive technical assistance, but will it also be a purveyor of technical assistance as well as having special tasks such as operating the regional Reference Laboratory. ROCAP currently has a cooperative agreement with ICAITI which works well, and it is anticipated that ICAITI services for this Activity will be obtained employing the same mechanism.

FECCOPIA. FECCOPIA or a similar institution will coordinate the design, selection, printing and distribution of pamphlets, posters, radio spots, etc. Funding will be provided through Purchase Order arrangements.

Applicants for small-scale minor crop research grants will be selected and supervised by the Regional Pest Management Specialist (RPMS), and funds will be made available through purchase order arrangements to crop associations and other private sector entities working on minor crop research.

There may be opportunities for minority and small business consulting firms to participate as contractors and sub-contractors during implementation of this Activity; RFPs for these actions will assure that small and minority firms are given the maximum practical consideration.

The nationality of technical services authorized under RENARM is Code 941, and the Source/Origin of all commodities is Code 000 (the U.S.). The justification for Code 941 technical assistance eligibility in the RENARM PP (page 105) was based on the often unique competence of technical specialists in the developing world in dealing with tropical environmental matters; the long-term desirability of strengthening local and regional institutions by permitting them to draw on a wider pool of tropical environmental specialists; and in many cases the unavailability of the required services in the United States. This nationality determination will apply to this Amendment.

Services to be procured under this Activity are expected to include training services under the Awareness and Education Program, ICAITI technical assistance costs, and minor crop research grants.

Commodities to be procured are expected to include media materials and printing (US\$ 165,000) and laboratory equipment (US\$ 295,000). The authorized Source/Origin of commodities to be procured will be Code 000. Pursuant to "Buy America" procurement guidance contained in 90 State 410442, applicable agreements governing implementation of this Activity will contain specific provisions requiring that: For local procurement (i.e., commodities procured in Central American Common Market countries), (1) all commodities with a value in excess of US\$ 5,000 per transaction will be of U.S. origin; (2) all commodities with a value in excess of US\$ 100,000 will be of both US source and origin. For offshore procurement, all commodities with a value in excess of US\$ 5,000 will be of both U.S. source and origin. Laboratory equipment to be procured to support the establishment of a Regional Reference Laboratory at ICAITI and will be procured by A.I.D.

6.3 TRAINING

A Training Plan is attached as Annex D. An estimated 1,162 persons (921 men and 241 female) will be trained under the RENARM Pesticide Management Activity, all at Zamorano and other locations in Central America.

6.4 OVERSIGHT

Oversight will be exercised through site inspections, informal contacts, formal reviews, periodic reports, and audits and evaluations, with ROCAP monitoring operating procedures, uses of funds, national and regional problems and overall progress.

6.5 EVALUATION

Evaluation of this Amendment will follow the same plan and procedures as the rest of the RENARM Project. Two evaluations are planned. The first will occur at the end of the third year, and the final evaluation is scheduled for mid-1995 or approximately three months prior to the PACD. Both evaluations will be conducted by independent contractors.

Annexes

RENARM Pesticide Management Activity

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project
From FY-91 to FY-95

PROJECT TITLE: PESTICIDE MANAGEMENT

NARRATIVE SUMMARY

Goal
targets

Rational use of pesticides
in Central America.

OBJECTIVELY VERIFIABLE INDICATORS

Measures of goal achievement

1. Heightened public awareness of environmental concerns.
2. Changed pesticide laws and throughout regulations.
3. Good technical information on pesticides available to all who want it.
4. Standards established for all crops.
5. Farmers meeting standards.

MEANS OF VERIFICATION

Means of Verification

1. Project monitoring and evaluation records
2. Enforcement agency records, NGO records or project liaison with development activities, USAID records.
3. Field surveys.
4. EPA/FDA Documentation.
5. Crop pesticide analytical surveys.

IMPORTANT ASSUMPTIONS

Assumptions for achieving goal

1. Exposure to new pertinent information will foster behavioral change
2. New laws and policies will be enforced

**PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK**

Life of Project
From FY-91 to FY-95

PROJECT TITLE: PESTICIDE MANAGEMENT

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Purpose	Conditions that will indicate purpose has been achieved: (End of project status	Means of Verification	Assumptions for achieving purpose
(1) To enhance general awareness of, and to educate users on, the costs of misusing pesticides and the benefits of proper handling, usage and disposal; and (2) to improve public and private sector pesticide management.	<ol style="list-style-type: none"> 1. Heightened public awareness. 2. Strengthened public sectors institutions in pesticide testing, monitoring. 3. Increased private sector pesticide testing capacity. 	<p>Peace Corps Evaluation</p> <p>Evaluation</p> <p>Monitor labs</p>	
2. To improve governmental institutional capabilities to understand, legislate and enforce national pesticide regulations.	<ol style="list-style-type: none"> 4. Decreased Central American crop export rejection for pesticide related courses. 	FDA records annual report	

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project
From FY-91 to FY-95

PROJECT TITLE: PESTICIDE MANAGEMENT

PROJECT OUTPUTS

OBJECTIVELY VERIFIABLE INDICATORS

MEANS OF VERIFICATION

ASSUMPTIONS FOR ACHIEVING OUTPUTS

- | | | | |
|---|---|--|--|
| 1. Training of technicians through the Zamorano course in pesticide management; and a "Train the Trainers" course to instruct extensionists in proper pesticide management. | 1. Training of 1000 technicians through the Zamorano course in pesticide management; training of 60 select technicians to instruct extensionists with outreach capabilities of reaching 10,000 applicators. | 1. Zamorano records of courses taught. | |
| 2. Through Peace Corps and Zamorano, the training of PCV's and host-country extensionists; and the subsequent training of small farmers in pesticide management and IPM techniques | 2. The training of 275 host-country extensionists; 550 person-years (part-time) of PVC extensionists. | 2. Peace Corps, Zamorano and extensionist records. | |
| 3. Through Peace Corps, the training of host-country home extensionist agents and PCV's to instruct <u>housewives</u> and children in proper pesticide handling. | 3. The training of 350 host-country home extensionist agents and 350 person-years (part-time) of PVC activity. | 3. Peace Corps records. | |
| 4. Development and direct dissemination of pesticide safety and proper use posters and bulletins through government agencies, schools and agro-chemical distributors. | 4. Over 20,000 pesticide safety and proper use posters and bulletins published and distributed. | 4. Records of USAID number of posters & manuals printed. Willingness of industry, governments to agree on universal poster, manuals. | |
| 5. The development and dissemination of a correspondence course for doctors in recognition and treatment of pesticide intoxications. | 5. The development and dissemination of a correspondence course for approximately 5,000 doctors. | 5. INCAP records of doctors who complete course. | |
| 6. Improved communication and dissemination system concerned with pesticide regulations and registrations for both US and European countries, including assistance in setting up computerized data base systems in national registry offices. | 6. Improved communication and dissemination system concerned with pesticide regulations and registrations for both US and European countries, including assistance in setting up computerized data base systems in national registry offices. | 6. EPA will provide list of C.A. info. drop at PACD. At least one information system in each country. | |
| 7. Improvement in laboratories' capabilities to do pesticide residue testing; one regional reference Lab meeting EPA and FDA standards; support for opening of new testing Labs. | 7. Improvement in laboratories' capabilities to do pesticide residue testing; one regional reference Lab meeting EPA and FDA standards; support for opening of new testing Labs. | 7. An evaluation of at least eight laboratories. | |

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project
From FY-91 to FY-95

PROJECT TITLE: PESTICIDE MANAGEMENT

PROJECT INPUTS

MARRATIVE

OVI'S

MOV'S

ASSUMPTIONS

1. ROCAP Direct FX

ROCAP

- 1. Awareness & Education: \$1,529,500
- 2. Private Sector: 212,500
- 3. Public Sector: 1,095,000
- 4. Project Manager: 530,000
- 5. Audits/Evaluations: 300,000
- 6. Contingency/Inflation: 333,000

SUB-TOTAL: 4,000,000
=====

- 1. Contracts
- 2. PIO/Ts
- 3. PIO/Cs

- 1. AID/W PP Amendment Approval

2. USAID Buy-In FX

USAIDs

- 1. Buy-Ins: \$2,000,000
=====

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ANNEX B.
Detailed Costs Estimate
(ROCAP)

(US \$)
chart 1.

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Grand Total
1. Awareness and Education						
a. Government offices						
1. Workshops	20,000	20,000	15,000			55,000
b. FECCOPIA						
1. Media materials; printing	125,000	40,000				165,000
c. Peace Corps						
1. Peace Corps Operations	248,000	198,800	147,400	76,800		671,000
d. Pesticide Certification course						
1. EAP course/core salaries	75,000	75,000				150,000
2. Course "scholarships"	64,000	64,000	28,000			156,000
3. Other Training EAP (WID)	15,000	7,500				22,500
4. Train the trainers	15,000	15,000				30,000
e. INCAP pesticide course						
1. INCAP course	180,000	100,000				280,000
2. Support for Private Sector Actions						
1. Pesticide Lab survey	55,000					55,000
2. Research pesticides/crop	100,000	50,000	7,500			157,500
2. Support for Public Sector Actions						
1. EPA services	300,000	300,000	125,000			725,000
2. ICAITI: lab; equipment	30,000	265,000				295,000
b. Training	50,000	25,000				75,000
4. Project manager	250,000	175,000	105,000			530,000
5. Audits		100,000		100,000		200,000
6. Evaluations			50,000		50,000	100,000
7. Inflation	75,000	65,000	22,000	4,000		166,000
8. Contingencies	75,000	65,000	22,000	5,000		167,000
Total:	1,677,000	1,565,300	521,900	185,800	50,000	4,000,000

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chart 2.

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Grand Total
1. Technical Assistance	780,000	640,000	284,500	54,500	25,000	1,784,000
2. Training	727,000	597,300	228,000	120,400	20,000	1,692,700
3. Commodities	170,000	328,000	9,400	10,900	5,000	523,300
Total:	1,677,000	1,565,300	521,900	185,800	50,000	4,000,000

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ANNEX C.
Procurement Plan

Item	procurement	mode	location
1. Awareness and Education			
a. Government offices			
1. Workshops	6 workshops	purchase order	CA
b. FECCOPIA			
1. Media materials; printing	35,000 posters; manuals	purchase order	CA /USA
c. Peace Corps			
1. Peace Corps Operations		PASA	
d. Pesticide Certification course			CA
1. EAP course/course salaries		Handbook 13	
2. Course "scholarships"	39 regional courses	grant	
3. Other Training EAP (WID)	5 regional courses		
4. Train the trainers	4 courses at EAP		
e. INCAP pesticide course			
1. INCAP course		Handbook 3	
2. Support for Private Sector Actions		LSGA	CA
1. Pesticide Lab survey		Handbook 3	
2. Research pesticide/crop	16 pesticide/crop plots	purchase order	CA
2. Support for Public Sector Actions			
1. EPA services		PASA	USA
2. ICAITI: lab; equipment		LSGA	USA
b. Training	38 courses		USA
4. Project manager			
5. Audits			
6. Evaluations			
7. Inflation			
8. Contingencies			

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**ANNEX D.
Training Plan**

Item	number of events	total trained			location
		m	f		
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1. Awareness and Education					
a. Government offices					
1. Workshops	20 persons/wkshp	110	99	11	CA
b. FECCOPIA					
1. Media materials; printing					
c. Peace Corps					
1. Peace Corps Operations					
d. Pesticide Certification course					
1. EAP course/core salaries					
2. Course "scholarships"	22 persons/wkshp	858	780	78	CA
3. Other Training EAP (WID)	20 persons/wkshp	90	5	86	CA
4. Train the trainers	15 persons/wkshp	64	9	56	Zamorano
e. INCAP pesticide course					
1. INCAP course					CA
2. Support for Private Sector Actions					
1. Pesticide Lab survey					
2. Research pesticide/crop					CA
2. Support for Public Sector Actions					
1. EPA services					USA; CA
2. ICAITI: lab; equipment					Guate
b. Training	1 person/course	38	28	10	Guate
4. Project manager					
5. Audits					
6. Evaluations					
7. Inflation					
8. Contingencies					
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ANNEX E.
Funding Schedule

Item	start date/PIO/T	start date	end date	duration
1. Awareness and Education				
a. Government offices				
1. Workshops	01-May-91	01-Jun-91	01-Jun-93	2 years
b. FECCOPIA				
1. Media materials; printing	01-May-91	01-Aug-91	01-Aug-92	1 years
c. Peace Corps				
1. Peace Corps Operations	15-Feb-91	01-Apr-91	30-Mar-96	5 years
d. Pesticide Certification course				
1. EAP course/core salaries				
2. Course "scholarships"	01-Apr-91	15-Apr-91	14-Apr-94	3 years
3. Other Training EAP (WID)	01-Apr-91	01-Aug-91	31-Jul-93	2 years
4. Train the trainers	01-Apr-91	01-Aug-91	31-Jul-93	2 years
e. INCAP pesticide course				
1. INCAP course	01-Apr-91	01-Jul-91	30-Dec-91	1 years
2. Support for Private Sector Actions				
1. Pesticide Lab survey				
2. Research pesticide/crop	01-Jul-91	30-Aug-91	29-Aug-94	3 years
2. Support for Public Sector Actions				
1. EPA services	01-Mar-91	31-Mar-91	29-Mar-96	5 years
2. ICAITI: lab; equipment	01-Jun-91	31-Jul-91	30-Jul-94	3 years
b. Training	01-Jun-91	31-Jul-91	30-Jul-93	
4. Project manager	01-Feb-91	16-Feb-91	15-Feb-96	5 years
5. Audits	01-Apr-92	16-May-92	15-Jul-94	2 years
6. Evaluations	01-Apr-93	16-May-93	14-Nov-95	3 years
7. Inflation				
8. Contingencies				

chart 3.

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Grand Total
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Awareness & Education						
Info campaigns	125,000	40,000	0	0	0	165,000
TA & applied Training	597,000	465,300	295,400	76,800	0	1,434,500
Academic training	270,000	190,000	0	0	0	460,000
Private Sector						
Q.C. Lab Studies	55,000	0	0	0	0	55,000
M. C. Research	100,000	50,000	7,500	0	0	157,500
T.A.						
Public Sector						
Lab equipment	30,000	265,000	0	0	0	295,000
T.A.	350,000	325,000	125,000	0	0	800,000
Audits	0	100,000	0	100,000	0	200,000
Evaluations	0	0	50,000	0	50,000	100,000
Inflation	75,000	65,000	22,000	4,000	0	166,000
Contingencies	75,000	65,000	22,000	5,000	0	167,000
=====						
Total:	1,677,000	1,565,300	521,900	185,800	50,000	4,000,000