

CORECA

REGIONAL COUNCIL FOR
AGRICULTURAL COOPERATION



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INTER-INSTITUTIONAL GROUP
OF THE AGRICULTURAL SECTOR

FIRST AGRICULTURAL SECTOR MEETING OF THE CENTRAL AMERICAN GOVERNMENTS WITH COOPERATING GOVERNMENTS AND INSTITUTIONS

8

REGIONAL PROGRAM TO
STRENGTHEN PLANT AND
ANIMAL HEALTH SERVICES

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PEC/AS/91/8
PROJECT CAM/90/002
SPECIAL PLAN OF ECONOMIC COOPERATION
FOR CENTRAL AMERICA

The technical information for the First Agricultural Sector Meeting is presented in ten documents to facilitate reading by cooperating governments and institutions. The documents are:

- 1: Executive Summary
- 2: Importance of the Agricultural Sector. Technical and Financial Assistance. Summary of Project Profiles.

Documents 3 to 10 describe the eight regional programs on topics selected as being of priority by the Central American governments. The Programs are:

- PEC/AS/91/3: Regional Agro-alimentary Program.
- PEC/AS/91/4: Program on Irrigation, Drainage and Land Leveling.
- PEC/AS/91/5: Program on the Development of Biotechnology.
- PEC/AS/91/6: Program on Intra-regional Trade and Exports to Third Countries.
- PEC/AS/91/7: Program on Agroindustrial Development.
- PEC/AS/91/8: Program to Strengthen Plant and Animal Health Services.
- PEC/AS/91/9: Program on the Development of Border Areas.
- PEC/AS/91/10: Program to Strengthen Rural Enterprises.

Each Program consists of two components: one of regional scope and the other of national scope. The regional component involves cooperative projects and actions among the countries of the Isthmus, while the national component is made up of the investment projects to be carried out in individual countries.



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**REGIONAL PROGRAM
TO STRENGTHEN
PLANT AND ANIMAL
HEALTH SERVICES**

1991

PROJECT CAM-90-002 UNDP/PAHO/PEC

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INTRODUCTION

The economic and social problems posed by animal and plant diseases and pests in Central America and Panama, have sparked ongoing concern among the international organizations and in the affected countries. Viable solutions must be found to this critical problem plaguing the agricultural sector.

Insufficient animal health and plant protection actions have given rise to: a) a fall in export earnings; b) food shortages due to losses occasioned by diseases and pests; c) environmental damage due to indiscriminate pesticide use; d) contaminated foodstuffs, and e) a decrease in income for small- and medium-scale producers.

Improved plant and animal health services will have a notable impact on the region.

The ministries of agriculture of Central America and Panama have created institutions and mechanisms for preventing the introduction of exotic animal and plant diseases and pests. In conjunction with these agencies, they have carried out a number of activities, the most outstanding of which include:

1. Ongoing evaluation of plant and animal quarantine services
2. Training for technical and paratechnical personnel in plant and animal inspection and surveillance
3. Evaluation of the risk of introduction of exotic diseases and pests via ports equipped for international trade
4. Development and adaptation of methods for responding to plant and animal health emergencies

Despite the work carried out to date, efforts must continue to ensure animal health and plant protection in the isthmus.

The efforts and resources invested thus far, have clearly not sufficed to provide the plant and animal health services required for regional integration. This process calls for an efficient operating infrastructure, unified criteria for animal and plant protection in the region, standardized technical procedures and uniform laws which make it feasible to carry out more efficient joint actions.

This Program is a joint effort, undertaken by the countries and the specialized regional organizations in the area, to strengthen plant and animal health services.

I. FRAME OF REFERENCE

1. Macroeconomic Setting and Its Impact on the Program

During the 1970s, the countries of the isthmus witnessed an average 4.7 percent increase in gross domestic product (GDP). Between 1980 and 1985, however, GDP grew by only 0.3 percent.

Pests and diseases have a direct impact on crop and livestock productivity.

The rural population of Central America accounts for 57 percent of the total population. The region's agricultural sector is responsible for an approximate 23-percent share of GDP, and generates close to 60 percent of total employment. The effect of pests and diseases, however, has limited the supply of exports and has meant serious losses for the sector. It is estimated that 30 percent of all losses in agricultural production can be attributed to pests and diseases.

Central America and Panama boast climatic and ecological conditions extremely well-suited for highly diversified agricultural production (flowers, fruit, vegetables, grains, wood, medicinal plants, etc.). Accordingly, the region has a clear comparative advantage when it comes to increasing exports.

However, the region needs to define a policy on plant and animal health which would promote intraregional and extraregional exports and improve trade among the countries.

The new economic strategies adopted in the area aim at increasing and diversifying agricultural production through free market growth.

The Program to Strengthen Plant and Animal Health Services, fits in with this approach and is designed to improve the prevention and control of pests and diseases which jeopardize agricultural and livestock production.

2. Analysis of Production Options and of the Technical Environment

In recent years, agricultural production goals have sought a dual objective: to develop highly-specialized export agriculture along with food production for domestic consumption.

The aim is to develop an economy which is profitable at the domestic level and competitive at the international level.

The greatest challenge of designing improved animal health and plant protection services in the region, is to maintain agricultural activities which are both profitable at the domestic level and competitive at the international level, while, at the same time, conserving natural resources and the environment.

The crisis being experienced by the public sector in the area has limited its ability to improve these services. Therefore, public institu-

tions and the private sector must join forces, in order to deliver those services which are vital to agricultural development.

The most widespread problems in the region which the Program seeks to solve, include:

- Limited capacity to prevent, control and eradicate diseases and pests in the region, as well as an inadequate organizational structure to respond to emergency situations
- Limited biological material to develop, or strengthen, plant and animal health programs
- Limited laboratory equipment and material, resulting in little, if any, scientific research and, more specifically, causing a higher incidence of diseases and pests
- Limited equipment and material for quarantine inspection and interception services
- Limited information for producers and users concerning quarantine procedures and disease and pest management
- Lack of ongoing training programs for staff members of government plant and animal health services

A more efficient organizational structure is necessary for handling health-related emergencies.

Quarantine inspection and interception methods must be improved.

3. Socioeconomic Situation of Potential Beneficiaries

The countries in the region rely heavily on their traditional exports (coffee, bananas, cotton, sugar, cocoa and beef) as a source of foreign exchange; these products represent between 50 and 70 percent of total exports.

The rural population in this region is estimated at 15 million; the basic needs of 70 percent of this population are not being met. This situation is intimately linked to deteriorating employment and production conditions in the sector, which has failed to create enough jobs to absorb a growing rural population.

About 70 percent of the rural sector lacks access to services necessary for meeting basic needs.

Illiteracy in the region is close to 45 percent, except in Nicaragua and Costa Rica, where it is less than 11 percent; the infant mortality rate is an average 60 per 1,000 live births, except in Costa Rica where it is 20 per 1,000; 60 percent of the rural population in Panama and Costa Rica have access to the services required to meet their basic needs, compared to a mere 9.4 percent in Nicaragua. In the rest of Central America, only 30 percent of this sector enjoy similar access.

4. Institutional Conditions

All of Central America and Panama are faced with the same institutional problems, where the delivery of plant and animal health

services is concerned. What is most striking is the critical lack of budgetary resources at the institutional level to deliver the required services to the farmer.

However, the administrative structure in some countries enables them to operate with greater budgetary and financial freedom, and, as a result, provide better coverage. In the case of Costa Rica, all income from services paid by the user is deposited into a special account for implementing support programs and meeting unforeseen expenses in connection with plant and animal health activities.

In some Central American countries, budgetary constraints restrict plant and animal health activities

In other Central American countries, however, the budget for plant and animal health services figures under other activities. This makes it difficult, in some instances, to allocate sizeable amounts to important plant and animal health activities.

As for the delivery of plant and animal quarantine services, personnel often lack the necessary academic training, as well as the equipment required to perform their specific functions. Moreover, the physical infrastructure required to support these services is also inadequate.

The new strategy aims will promote joint action between the public and private sectors.

In order to bring about effective changes in the delivery of plant and animal health services, a new strategy must be devised which increases the capacity to respond to related problems in the region.

This new strategy must aim at enlisting greater private sector participation -- especially from farmers, agroexporters, industrialists, guilds, professional associations and other non-governmental institutions -- with a view to promoting joint actions with public-sector institutions concerned with plant and animal health.

5. Legal Framework

There are some features about the existing legal framework governing plant and animal health matters which are common to all the countries of the region; however, there are laws, decrees and regulations which tend to differ, making it difficult for these countries to reach agreement and honor their commitments.

The legal framework will be improved to standardize quarantine procedures

Through OIRSA, some efforts have been undertaken to establish a uniform legal framework, to facilitate international operations such as the trade of agricultural and livestock products and by-products. However, these efforts must be pursued even further with emphasis placed on the interpretation of quarantine measures in the different countries.

The legislation governing plant and animal health activities in the region was promulgated several years ago, but the spirit of these laws does not reflect the growing need for integration. This has

made it imperative to promulgate laws which standardize the countries' actions and incorporate those elements required to render them operational. It is vital to enact laws which establish a mechanism for organizing, securing and employing financial resources and to incorporate private enterprise into the decision-making process where plant and animal health is concerned.

6. The Program in the Context of Regional Integration

The Regional Program to Strengthen Plant and Animal Health Services will foster the trade of agricultural products in an expanded market, protected by common criteria for plant and animal health. However, this will only happen if joint activities are conducted with an eye to concerting efforts and establishing a technical cooperation network and information system which ensure superior control of plant and animal health problems.

Similar agroecological conditions, and agricultural and livestock production systems in these countries, suggest that they face the same plant and animal health problems. This will naturally facilitate the pursuit of these activities.

The first step to unifying these services is to recognize the need for a uniform organizational structure, for legislation in each country which promotes this regional undertaking, and for standardized communications via a Central American information network. Other urgent integration-related components include technology exchange which will upgrade the level of services delivered in each country.

To expand the intraregional and international market, better control must exist over health problems in the agricultural sector.

II. PROGRAM DESCRIPTION

1. Justification

The strengthening of appropriate programs for the prevention, control and eradication of pests and diseases, will reduce serious harvest losses and increase agricultural and livestock production.

According to estimates furnished by such international organizations as FAO and OIRSA, pest and disease mismanagement claims between 20 and 30 percent of agricultural production in the region each year. The value of these losses was calculated at US\$1.8 billion, or 20 percent of the 1987 agricultural GDP for Central America and Panama of US\$7.223 billion. Monetary losses of this magnitude weigh heavily on the regional economy.

Implementation of the Program will contribute to reducing the colossal losses currently sustained in agricultural production.

Development of the Program described herein is vital to reducing production and post-harvest losses , and to facilitating intrasubregional and international trade.

The Program will contribute to the reactivation of the subregion's agriculture sector and have a noteworthy impact on the following:

The proposed activities will generate increased foreign-exchange resources, additional income and jobs and will improve conservation of genetic stock

- Increase in the creation of jobs
- Generation of foreign exchange through an increase in the volume of agricultural exports
- Decreased losses because of improved product quality
- Increased income for small- and medium-scale producers, due to increased productivity on their farms
- Conservation and improvement of the agricultural genetic stock because of the safe exchange of genetic material
- Improved environmental conditions because of the appropriate use of pesticides
- Strengthening of regional integration based on coordinated plant and animal health activities

2. Objectives

General

Greater priority should be attached to prevention of exotic diseases and pests.

To improve plant and animal health services in Central America and Panama in order to benefit intraregional and international trade, to raise agricultural and livestock productivity, and to prevent the entry and establishment of exotic foreign diseases and pests

Specific

- To strengthen the organizational and operational structure of animal health and plant protection services
- To improve international plant and animal quarantine and emergency services
- To expand diagnostic services for plant and animal diseases and pests
- To carry out and strengthen actions for managing high-incidence plant and animal diseases and pests
- To implement the Central American Plant and Animal Health Information Network

3. Strategy*

The Program will be carried out over a three-year period and will cover six countries: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama.

The duration of the Program is three years.

A regional executing unit will be created and headquartered at OIRSA's head office in San Salvador. This unit will be managed by a coordinator and two assistants.

In pursuit of the Program's general and specific objectives, two types of actions will be carried out:

- a. Multinational actions directly implemented and coordinated by the regional executing unit
- b. National actions designed and undertaken by each of the countries. The Director of Animal Health and/or Plant Protection in each country, with the support of the regional executing unit, will be responsible for their implementation.

4. Components

The Program will consist of five components:

1. Institutional strengthening
2. Plant and animal quarantine and emergency services
3. Diagnosis of plant and animal diseases and pests
4. Management of plant and animal diseases and pests
5. Plant and animal health information

The components of the Program include institutional strengthening, disease and pest control, safety measures, and the creation of an effective information system.

Each of the components will be broken down into a number of sub-components, which will constitute the basis for the Program's overall development.

Below are the activities comprising each component and a brief description of the actions to be carried out.

1. Institutional strengthening

Standardizing plant and animal health policies

Plant and animal health policies in each country, will be analyzed and recommendations made to facilitate the harmonious operation of plant and animal health programs in the countries of the region.

National policies will be reviewed and joint solutions will be proposed.

Harmonizing the legal framework

An analysis will be made of the legislation governing plant and animal health in each country as concerns trade in agricultural and livestock products, and the necessary changes will be proposed for harmonizing legislation at the regional level.

Because it is so important, the project on the prevention, control and eradication of the fruit fly in Central America and Panama will require additional funding in the amount of US\$4.719 million.. (Paper prepared by OIRSA.)

Organizational and operational structure

The organizational and operational structure of plant and animal health services in the countries of the region will be analyzed and any necessary modifications will be proposed to ensure optimum efficiency. These will include arrangements for more active private-sector participation and the establishment of financially self-sustaining models for services.

2. Plant and animal quarantine and emergency services

International plant and animal quarantine inspection

Up-to-date techniques will be introduced for inspecting plant and animal imports and exports, and the necessary posts and appurtenances will be constructed and duly-equipped to ensure the smooth operation of this procedure in the countries of the region.

Emergency systems

Methodologies will be introduced and adapted in the countries of the region to establish plant and animal health emergency, prognosis and alert systems.

3. Diagnosis of plant and animal diseases and pests

Animal health diagnosis

An Animal Health Laboratories Network for the Central Area will be established as a vehicle for technology exchange. National laboratory networks in the region will be strengthened via the supply of equipment, reagents and other working tools required for their operation; this will be complemented by training and refresher courses for personnel.

Plant health diagnosis

A Plant Health Diagnostic Network for the Central Area will be established as a mechanism for technology exchange. National diagnostic networks will be strengthened via the construction of infrastructure and the supply of equipment, materials and other working tools required for their operation; this will be complemented by training and refresher courses for personnel.

4. Management of plant and animal diseases and pests

Management of animal diseases and pests

Efforts will be undertaken to strengthen national epidemiological surveillance and communications systems, as well as plant and animal information services in the countries of the region. Programs for managing priority diseases and pests will also be strengthened, and the basic working tools will be provided for their implementation, including establishment of a biologics supply system, and training and refresher courses for personnel.

The disease and pest management programs for the six countries will include brucellosis, tuberculosis, anaplasmosis, babesiosis, bovine rabies, ticks, botfly and equine diseases. El Salvador, Guatemala and Honduras will also have hog cholera programs.

The International quarantine system will be improved.

Animal Health Laboratory Networks and Plant Health Diagnostic Laboratory Networks will be established in the area.

Treatment of major plant and animal pest and disease problems will be very similar in the six countries.

The following table shows the animal pests and diseases which will be dealt with by the Program.

Control of animal diseases and pests in the region

Name	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua	Panamá
Brucellosis	x	x	x	x	x	x
Tuberculosis	x	x	x	x	x	x
Anaplasmosis	x	x	x	x	x	x
Babesiosis	x	x	x	x	x	x
Bovine rables	x	x	x	x	x	x
Ticks	x	x	x	x	x	x
Botfly	x	x	x	x	x	x
Equine diseases	x	x	x	x	x	
Hog cholera		x	x	x		

Management of plant diseases and pests

National in situ monitoring and surveillance systems in the countries of the region, and plant and animal extension services, will be strengthened, as well as the integrated pest and disease management systems for major crops. More active private sector participation will be promoted, permanent systems to ensure the supply of inputs and beneficial agents will be established, and training and refresher courses will be provided to the personnel responsible for these systems.

The plant pest prevention programs and systems in the six countries will cover: fruitfly, black sigatoka, vegetable leaf miner, coffee rust, monilia of cocoa, flying locust and coffee berry borer, detected in all of the countries except Costa Rica, and witch's broom in cocoa and golden nematode in Panama.

The following table lists the major crop pests and diseases to be dealt with by the Program.

Control of crop diseases and pests in the region

Name	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua	Panamá
Fruitfly	x	x	x	x	x	x
Black sigatoka	x	x	x	x	x	x
Vegetable leaf miner	x	x	x	x	x	x
Coffee rust	x	x	x	x	x	x
Monilla of cocoa	x	x	x	x	x	x
Flying locust	x	x	x	x	x	x
Coffee berry borer	x	x	x	x		
Witch's broom	x	x				
Golden nematode	x					

The private sector will be encouraged to play a more active role in developing the sector.

The Program activities pertaining to the control and eradication of the fruitfly, represent an initial effort which must be continued with actions on a larger scale.

A Central American Plant and Animal Health Information Network will be created.

5. Plant and animal health information

Implementation of the Central American Plant and Animal Health Information Network

A mechanism will be established for retrieving, processing and disseminating information concerning the prevalence, incidence and distribution of diseases and pests, legislation, toxic residues and tolerance levels, damages and losses and bibliographical information. The central unit will operate out of OIRSA/San Salvador and be connected to the national units in each of the countries of the region.

Strengthening national plant and animal health information units

National plant and animal health information units, in each of the countries of the region, will be strengthened; the personnel in charge of these units will be trained in computer program management for retrieving, processing and disseminating information for the Central American Plant and Animal Health Information Network.

5. Goals

The goals set for each of the subprojects are described below. The table also indicates year of completion, based on a scheduled three-year implementation period.

1 Institutional strengthening

Goals	Years		
	1	2	3
-To conduct a regional study of plant and animal health policies, with recommendations for standardization and/or equivalent policies	1		
-To study regional plant and animal health legislation concerning agricultural trade, with recommendations for harmonization and/or equivalent laws		1	
-To study the organizational and operational structure of plant and animal health services, with recommendations for pertinent adjustments or modifications		1	
-To provide arrangements and models for private-sector participation in plant and animal health programs, with recommendations for implementation	2		
-To provide arrangements and models for financially self-sustaining plant and animal health services	2		

2 Plant and animal quarantine and emergency services

Goals	Years		
	1	2	3
-To update import and export quarantine methods and technologies in the countries of the region (manuals)	2		
-To train all personnel in international quarantine inspection services in the region	30	30	30
-To provide technologies for agricultural forecasts and alerts in connection with plant diseases and pests in the countries of the region (manuals)	2		
-To officially establish national plant and animal health emergency systems in the countries of the region		6	
-To provide training for all personnel responsible for emergency systems in the countries of the region	12	12	12

The design of arrangements and models for private sector participation is of paramount importance.

3 Diagnosis of plant and animal diseases and pests

Goals	Years		
	1	2	3
-To establish national animal health laboratories networks in the countries of the region, employing uniform administrative and organization systems	6		
-To create an Animal Health Laboratories Network in the Central Area to promote technology exchange		1	
-To assure central animal health laboratories for the region have the equipment and working materials necessary to respond to the demand for these services			6
-To provide training and refresher courses for all technical supervisors of central animal health laboratories in the region			60
-To establish national plant protection diagnostic networks of the countries of the region, using uniform administrative and organizational systems	6		
-To establish a Plant Protection Diagnostic Network for the Central Area to promote technology exchange		1	
-To establish central plant protection laboratories in the countries of the region having the equipment and working materials necessary to respond to the demand for these services			6
-To provide training and refresher courses for all technical supervisors of diagnostic services in the region			60

Working through a network will promote technical cooperation and boost integration efforts.

4 Management of plant and animal diseases and pests

Goals	Years		
	1	2	3
-To strengthen national epidemiological surveillance systems operating in each country of the region	6		
-To establish programs for managing principal animal diseases and pests, operating in each country with the participation of the public sector, producers' associations and veterinary schools	4	4	4
-To establish plant and animal health information and extension programs operating in each country of the region	6		
-To establish a biologics supply system for the prevention of major animal diseases operating in each country of the region		6	
-To provide training and refresher courses for all supervisors of animal disease and pest management programs	12	12	12
-To strengthen national plant protection monitoring and surveillance systems operating in each country of the region	6		
-To establish integrated management systems for major crop pests and diseases operating in each country, with the participation of the public sector and producers' and professional associations	4	4	4
-To establish plant and animal health information and extension services operating in each country of the region	6		
-To establish systems for supplying inputs and beneficial agents for plant disease and pest management operating in each country of the region		6	
-To provide training and refresher courses for all national supervisors responsible for integrated plant and animal pest and disease management programs	12	12	12

National epidemiological surveillance systems will be improved.

5 Plant and animal health information

Goals	Years		
	1	2	3
-To establish computer methodologies developed and adapted for retrieving, processing and disseminating information concerning the prevalence, incidence and distribution of diseases and pests, legislation, toxic residues and tolerance levels, damages and losses and bibliographical information (manuals)	4		
-To establish the headquarters of the Central American Animal Health Information Network operating at OIRSA headquarters in San Salvador, El Salvador	1		
-To outfit national plant and animal health information offices in each of the countries of the region		6	
-To provide training for all personnel responsible for national plant and animal health information units	8	8	8

6. Program Beneficiaries

Principal beneficiaries will be agricultural and livestock producers and agroexporters of the isthmus.

The main beneficiaries of this Program are agricultural and livestock producers and agroexporters. The former will benefit from fewer losses occasioned by plant and animal diseases and pests on their farms, which will raise their productivity levels. The latter will benefit from having greater access to international agricultural and livestock markets, because their products will have guaranteed superior sanitary conditions. In addition, less stock will be rejected for failing to meet international animal health standards.

Given that the rural population of the region totals close to 15 million, the Program can also be expected to have a considerable indirect impact on the sector. However, it is difficult to quantify the benefits to be reaped at each level.

Professionals and technicians will also benefit substantially from new technological approaches and working methodologies.

Professionals and technicians in both the public and private sector will also benefit from the Program. The introduction of new technologies and operating procedures will allow them to enrich their skills, while preparing them to better solve problems and perform more effectively.

The Program will benefit all farmers; more specifically, plant and animal health actions will have their greatest impact on the small farmer, who lacks the resources which afford access to plant and animal health technology.

7. Support Services for Production

The agricultural sector in the six countries boasts highly-experienced animal health and plant protection institutions.

The animal health and plant protection directorates of the Ministries of Agriculture, in the countries of the region, are the official and direct link with the Program; they will be responsible for direct actions implemented at the national level.

It is through these entities that support will be provided to agricultural and livestock producer groups, agroexporters and agroindustrialists, through specific services such as diagnosis of diseases and pests, management of different plant and animal health problems, and surveillance and quarantine actions to prevent the introduction and spread of diseases and pests with a high economic risk factor.

Other Program-related services linked to the production process include those of the agricultural and livestock research institutes of the agricultural sector, and the universities throughout the region.

III. ORGANIZATIONAL STRUCTURE

1. Executing Unit

The responsibility of implementing the Program will correspond to a regional executing unit made up of a small team operating out of OIRSA headquarters in San Salvador. This unit will be attached to the Office of the Executive Director of this organization.

The regional executing unit will operate out of OIRSA headquarters in El Salvador.

The executing unit will be in charge of the execution, supervision, coordination and orientation of all scheduled actions at the multinational level, and will provide support to the national actions implemented in each of the countries of the region. Actions of national scope will be the responsibility of the respective animal health and plant protection directors in the ministries concerned, as required.

The executing unit, through the Office of the Executive Director of OIRSA, will receive guidelines and mandates for its work from the Regional International Agricultural Plant and Animal Health Committee (CIRSA), made up of the Ministers of Agriculture of the subregion.

CIRSA receives technical counseling on animal health and plant protection matters from the Technical Coordinating Committee, which is made up of top-ranking functionaries from the Ministries of Agriculture of the countries of the region.

The executing unit will be responsible for managing the funds earmarked for multinational actions. Funds destined for direct national investments will be handled by the Animal Health and Plant Protection directorates in the countries, as required.

Investments in the countries will be managed by specialized state institutions.

The executing unit will submit annual technical and administrative reports to CIRSA, which will be used to assess the progress of the Program in terms of its goals and objectives. A final report will serve to evaluate the Program.

2. Plan of Action

The following table enumerates the activities to be carried out by the Program at multinational and national levels, showing the approximate quarter in which a given activity will be implemented.

Considerable importance will be attached to training and technology transfer.

Activities	Year 1				Year 2				Year 3			
	1	2	3	4	1	2	3	4	1	2	3	4
1. Establish executing unit in San Salvador	■											
2. Discussion with governments of the region and adjustments to annual working programs	■			■				■				
3. CIRSA agreements for annual working programs	■			■				■				
4. Studies and compilation of information from countries of the region	■	■	■									
5. Development and adaptation of models, methodologies and technologies	■	■	■	■								
6. Implementation of national and multinational actions				■	■	■	■	■	■	■	■	■
7. Training and technical exchange				■	■	■	■	■	■	■		
8. Program evaluation												■

3. Resources

The following is a description of the resources which the executing unit will require to support each of the national subprojects.

Executing Unit

The regional office responsible for technical and administrative coordination will require the services of a coordinator, two technical assistants, a secretary and an administrative assistant for a period of three years; rented office space for three years; office furniture and computers; fuel, lubricants, maintenance for motor vehicles and equipment; personal and non-personal services and office supplies.

Multinational training and technology exchange related to institutional strengthening, quarantine and emergency campaigns, disease and pest diagnosis, management and information will require: 129 consultant/months; travel expenses for 44 regional seminars and courses/one-week duration; travel expenses for 120 visits to the countries for training, orientation, etc.; travel expenses for the attendance of technical personnel at 18 courses in the countries; purchase of computer, laboratory and dissemination equipment and materials, and printing materials and services.

4. Participating Institutions

The animal health and plant protection directorates in the Ministries of Agriculture of the countries, will be the main participants in this effort, related to defining actions to be carried out (the task of the CIRSA Technical Coordinating Committee), as well as to implementing different actions at the national level. The offices of the Ministers of Agriculture constituting the Central America and Panama

The Program will set the terms of reference for international consultants and national technicians. Several courses and seminars will be held.

At the institutional level, national animal health and plant protection directorates will play a leading role, in close collaboration with the private sector.

Committee of CIRSA will play a decisive role in implementing Program actions.

The animal health and plant protection directorates will be the targets of institutional strengthening. The effort will aim to harmonize plant and animal health legislation at the regional level, and to strengthen technical and administrative structures. This, combined with a more active participation by the private sector, will contribute to making some of these services financially self-sustaining. Producer, agroexporter and professional associations will also participate in Program activities.

IICA, FAO, PAHO, CATIE, the United States Department of Agriculture and several other agencies and universities which regularly conduct animal health and plant protection activities in the region, will participate either directly or indirectly in Program actions, based on the topic and the size of the pertinent organization.

International support will be forthcoming from IICA, FAO, PAHO, CATIE, USDA and other specialized agencies.

IV. COSTS AND FINANCING

1. Costs

The Program will cost a total of US\$31,449,600.

Program: Costs by component and country (US\$ X 000)

Component	Tech. Ad- min. Coord.	Instit. Strength	Quar. Emerg.	Diag. Dis./Pest	Dis./Pest Mgmt.	Health Info.	Country To- tals
I. National		9 913.7	7 421.2	6 401.2	4 098.2	946.6	28 780.9
Costa Rica		3 263.2	2 022.1	1 310.9	971.4	55.8	7 623.4
El Salvador		1 069.4	362.0	476.2	330.2	214.3	2 452.7
Guatemala		1 540.9	1 815.2	794.8	679.2	111.9	4 942.0
Honduras		1 000.8	602.6	398.9	378.1	160.2	2 540.6
Nicaragua		889.4	377.2	1 008.7	397.6	197.4	2 870.3
Panama		2 150.0	2 241.5	2 411.7	1 341.7	207.0	8 351.9
2. Regional Organization	518.2	142.0	445.5	617.5	637.5	308.0	2 648.7
Regional Pro- gram (1 + 2)	518.2	10 065.7	11 866.7	7 018.7	4 766.7	1 264.6	31 449.6

Cost of the Program:
US\$31,449,600

2. Financing

External financing includes investments on the order of US\$13,339,500; the countries' contributions cover the Program's operating costs and total US\$15,213,000. Technical cooperation includes the costs of the regional executing unit, and equipment for

National contributions to the Program will amount to approximately 50 percent of the total cost

the plant and animal health information component in the national projects. Technical cooperation is on the order of US\$2,588,500.

The contribution from OIRSA, in its capacity as Program executing unit, will be US\$307,700 over a three-year period. This will cover such items as personnel, office furniture, equipment and general services, under the general coordination component.

OIRSA's contribution (the executing unit) will be US\$307,700.

Levels	External	National	OIRSA	Technical Cooperation	Total
National (1)	13 339.5	15 213.9		227.5	28 780.9
Costa Rica	3 963.2	3 622.7		37.5	7 623.4
El Salvador	1 050.2	1 355.0		47.5	2 452.7
Honduras	1 446.8	1 056.3		37.5	2 540.6
Guatemala	1 990.0	2 914.5		37.5	4 942.0
Nicaragua	1 522.8	1 310.0		37.5	2 870.3
Panama	3 366.5	4 955.4		30.0	8 351.9
Regional (2)			307.7	2 361.0	2 668.7
Regional Program (1 + 2)	13 339.5	16 213.9	307.7	2 668.5	31 449.6

The following is a disbursement schedule breakdown by country, investments and operating costs (US\$ X 000).

Technical cooperation will amount to US\$2,588,500.

Cost Countries	Years			Total
	1	2	3	
Costa Rica				
Investments	1 906.6	2 030.1	64.0	4 000.7
Operating costs	627.9	1 421.9	1 572.9	3 622.7
El Salvador				
Investments	832.5	177.3	87.3	1 097.1
Operating costs	376.0	455.0	524.0	1 355.0
Guatemala				
Investments	1 056.0	473.0	496.4	2 027.5
Operating costs	721.5	971.5	1 221.5	2 914.5
Honduras				
Investments	780.0	537.0	167.3	1 484.3
Operating costs	312.1	347.1	397.1	1 056.3
Nicaragua				
Investments	1 160.2	322.8	77.3	1 560.3
Operating costs	410.0	443.8	457.0	1 310.0
Panama				
Investments	3 156.5	120.0	120.0	3 396.5
Operating costs	1 643.8	1 652.8	1 658.8	4 955.0
Executing unit	1 122.6	875.6	670.4	2 668.6
Total	14 106.7	9 827.9	7 616.0	31 449.6

Note: Operating costs mainly include personal services and other recurring expenditures to be covered by institutions in the different countries.

V. EVALUATION

1. Technical Analysis

The countries in the region are endowed with sufficient human resources to carry out the prescribed Program activities. Physical resources, in the form of equipment, materials and training, will be contributed by the Program. The regional technical team which consists of members of the executing unit, will be responsible for managing training-specific resources, to ensure uniformity and to reduce unit costs.

There are sufficient skilled human resources in the region to fulfill Program objectives.

2. Institutional Analysis

The countries in the area enjoy an institutional structure that is capable of attending to animal health and plant protection matters, and carrying out the actions envisaged for the Program. This will facilitate the delivery of technology transfer and exchange services requested by producers. Nevertheless, these public entities, as well as their ties with the private sector, must be strengthened, to equip them to develop joint-action programs related to plant and animal health.

The public and private sector will coordinate their efforts to tackle plant and animal health problems.

The regional executing unit will serve as an administrative mechanism responsible for planning, coordinating and monitoring all actions pertaining to the five components of the Program.

3. Legal Analysis

Despite disparities, current legislation at the regional level does not impose any limitation on Program implementation. However, a legal framework must be established for harmonizing institutional activity and creating a legal mechanism through which to secure and allocate financial resources. It should also contribute to ensuring that the countries in the region honor their commitments relative to the exchange of plant and animal products and by-products, in order to facilitate both regional and international trade.

4. Financial and Economic Feasibility

The Program has been evaluated in terms of its costs and benefits. The costs were analyzed by consultants in each of the Central American countries and Panama. The most pressing needs are investments. This information has been updated with data from specific documents submitted by the countries for strengthening their plant and animal health units.

The Regional Program, which includes the national components, is financially feasible.

All regional costs related to training, and systems to be used jointly by the countries of the isthmus, are covered in the budget of the executing unit, located at OIRSA headquarters in San Salvador.

The revenues to be produced by the Program have been calculated on the basis of the increase in agricultural value added, resulting from fewer losses due to pests and diseases. The Program is expected to have a direct impact on agricultural value added as of year two of its implementation. Pertinent data for Central America and Panama are based on adjusted 1987 prices. The calculation of financial indicators assumes an annual increase in agricultural value added of 2.5 percent.

The IRR, the NPV and the B/C ratio demonstrate the feasibility of the Program.

The results of the financial analysis of the overall Program are as follows:

Internal rate of return	IRR	> 100%
Net present value (at 12%)	NPV	US\$40,425,000
Benefit/cost ratio	B/C	2.30

These indicators demonstrate the financial feasibility of the Program.

Sensitivity analysis

Variables	IRR	B/C	NPV (US\$ X 000)
Costs (30% increase)	80%	1.7	31,100
Revenues (30% decrease)	66%	1.6	18,972

The sensitivity analysis demonstrates that the Program can bear variations in costs and benefits of up to 30 percent, and still remain financially feasible.

5. Program Impact

The Program's major achievements will be:

- Involvement of the private sector into the decision-making process, concerning the management of plant and animal health problems in Central America and Panama
- Training for all personnel providing international inspection and quarantine services in the region
- Training for all personnel responsible for emergency systems in the countries of the region
- Application of import and export quarantine methods and techniques in the countries of the isthmus, to boost regional and intraregional trade
- Establishment of national plant and animal health laboratory networks to diagnose diseases and pests

The private sector will become involved in the management of plant and animal health problems.

The proposed networks will deal with the major aspects of regional plant protection and animal health.

- Training for all personnel working in disease and pest diagnostic laboratories
- Development of a program for managing major plant and animal diseases and pests, to operate in each country with the joint participation of the public sector, producers' associations and veterinary schools
- Establishment of a central plant and animal health information network headquartered at OIRSA, and national information offices in each of the countries of the region
- Improvement of environmental conditions through improved pesticide management and use

ANNEX

Costa Rica
Breakdown and investment schedule (US\$ X 000)

Components	Years			Total
	1	2	3	
1. Strengthening				
a. Furniture and equipment	117.7			117.7
b. Materials				
2. Quarantine and emergency				
a. Construction	626.0	810.3		1 436.3
b. Communications and transportation	70.0			70.0
c. Lab equipment	96.3	289.0		385.3
d. Computer equipment	5.0			5.0
e. Furniture and equipment	34.0			34.0
3. Diagnosis of diseases and pests				
a. Construction	49.0			49.0
b. Furniture	34.0			34.0
c. Communications and transportation	313.4			313.4
d. Lab equipment	144.5	433.4		577.9
e. Computer equipment	5.0			5.0
f. Lab materials	64.0	64.0	64.0	192.0
4. Pest and disease management				
a. Furniture and equipment	5.0	433.4		438.4
b. Communications and transportation	303.4			303.4
5. Plant and animal health information				
a. Computer and communications equipment	37.5			37.5
b. Furniture and office equipment	1.8			1.8
Total	1 906.6	2 030.1	64.0	4 000.7

ANNEX

El Salvador

Breakdown and investment schedule (US\$ X 000)

Components	Years			Total
	1	2	3	
1. Strengthening				
a. Communications and transportation	78.7			78.7
b. Furniture and equipment	34.0			34.0
c. Lab equipment	83.2			83.2
2. Quarantine and emergency				
a. Construction	4.0	110.0	20.0	134.0
b. Communications and transportation	78.7			78.0
c. Lab materials	34.4			34.4
3. Diagnosis of diseases and pests				
a. Furniture and equipment	34.0			34.0
b. Communications and transportation	78.7			78.7
c. Lab equipment	83.2	40.0	40.0	163.2
d. Lab materials	44.8	20.0	20.0	84.8
4. Pest and disease management				
a. Construction	56.0			56.0
b. Communication and transportation	78.7			78.7
c. Lab equipment	65.0			65.0
d. Lab materials	15.0			15.0
5. Plant and animal health information				
a. Computer and communications equipment	47.5	7.3	7.3	62.1
b. Materials	14.8			14.8
c. Office equipment	1.8			1.8
Total	832.5	177.3	87.3	1 097.1

ANNEX

Guatemala

Breakdown and investment schedule (US\$ X 000)

Components	Years			Total
	1	2	3	
1. Strengthening				
a. Furniture and office equipment	117.2	8.0	8.0	133.2
b. Communications and transportation	78.7		61.4	140.1
2. Quarantine and emergency				
a. Communications and transportation	78.7		78.7	157.4
b. Furniture and equipment		61.4	61.4	122.8
c. Lab materials	7.0	173.5		180.5
3. Diagnosis of diseases and pests				
a. Furniture and equipment		61.4	61.4	122.8
b. Communications	42.0		42.0	84.0
c. Construction	192.0			192.0
d. Lab equipment	184.0	40.0	40.0	264.0
e. Lab materials	11.0			11.0
f. Communications equipment	28.0			28.0
4. Pest and disease management				
a. Furniture and equipment		61.4		61.4
b. Communications and transportation	78.2		78.2	156.4
c. Construction	80.0			80.0
d. Other equipment	107.0	60.0	60.0	227.0
5. Plant and animal health information				
a. Computer and communications equipment	37.5			37.5
b. Furniture and equipment	14.8	7.3	7.3	29.4
Total	1 056.1	473.0	498.4	2027.5

ANNEX

Honduras

Breakdown and investment schedule (US\$ X 000)

Components	Years			Total
	1	2	3	
1. Strengthening				
a. Communications and transportation	78.7			78.7
b. Materials	34.0			34.0
c. Lab equipment	60.0			60.0
d. Lab materials	23.2			23.2
2. Quarantine and emergency				
a. Construction	4.0	245.0	20.0	269.0
b. Communications and transportation	74.0			74.0
c. Furniture and equipment		85.1		85.1
d. Communications equipment		59.6		59.6
3. Diagnosis of diseases and pests				
a. Lab equipment	60.0	45.0	45.0	150.0
b. Furniture and equipment	34.0			34.0
c. Communications and transportation	70.0			70.0
d. Construction	90.0			90.0
e. Lab materials	10.0	10.0	10.0	30.0
4. Pest and disease management				
a. Construction	56.0			56.0
b. Communications	10.0			10.0
c. Lab equipment	60.0	45.0	45.0	150.0
d. Lab materials	62.0	40.0	40.0	142.0
5. Plant and animal health information				
a. Computer and communications equipment	37.5			37.5
b. Materials	14.8	7.3	7.3	29.4
c. Furniture	1.8			1.8
Total	780.0	537.0	167.3	1 484.3

ANNEX

Nicaragua

Breakdown and investment schedule (US\$ X 000)

Components	Years			Total
	1	2	3	
1. Strengthening				
a. Communications and transportation	78.7			78.7
b. Furniture and equipment	34.0			34.0
c. Lab equipment	63.2			63.2
d. Lab materials	20.0			20.0
2. Quarantine and emergency				
a. Construction	4.0	138.0	20.0	162.0
b. Communications	60.0			60.0
c. Office furniture		46.4		46.4
d. Communications equipment		33.2		33.2
e. Materials	7.0	47.9		54.9
3. Diagnosis of diseases and pests				
a. Communications	84.0			84.0
b. Furniture and equipment	45.5			45.5
c. Lab equipment	400.7			400.7
d. Lab materials	39.0			39.0
4. Pest and disease management				
a. Construction	10.0	35.0	35.0	80.0
b. Communications	90.0			90.0
c. Equipment	145.0			145.0
d. Lab materials	25.0	15.0	15.0	55.0
5. Plant and animal health information				
a. Computer and communications equipment	37.5			37.5
b. Materials	14.8	7.3	7.3	29.4
c. Furniture	1.8			1.8
Total	1 160.2	322.8	77.3	1 560.3

ANNEX

Panama

Breakdown and investment schedule (US\$ X 000)

Components	Years			Total
	1	2	3	
1. Strengthening				
a. Communications	27.0			27.0
b. Furniture	34.0			34.0
c. Materials	117.2			117.2
2. Quarantine and emergency				
a. Construction	115.0			115.0
b. Communications and transportation	88.0			88.0
c. Furniture and equipment	24.0			24.0
d. Laboratory	45.0			45.0
3. Diagnosis of diseases and pests				
a. Construction	900.0			900.0
b. Communications and transportation	230.5			230.5
c. Lab equipment	800.0	35.0	35.0	870.0
4. Pest and disease management				
a. Communications and transportation	314.0			314.0
b. Lab equipment	430.0	85.0	85.0	600.0
5. Plant and animal health information				
a. Furniture and equipment	1.8			1.8
b. Computer equipment	30.0			30.0
Total	3 156.5	120	120	3 396.5

ANNEX

*Regional Executing Unit
Breakdown and Investment schedule (US\$ X 000)*

Components	Years			Total
	1	2	3	
1. Strengthening				
a. Personnel	51.0	51.0		102.0
b. Communications	17.5	17.5		35.0
c. Materials	2.5	2.5		5.0
2. Quarantine and emergency				
a. Personnel	68.0	93.5	68.0	229.5
b. Communications	14.0	97.0	90.0	201.0
c. Materials	2.0	7.0	6.0	15.0
3. Diagnosis of diseases				
a. Personnel	102.0	34.0	34.0	170.0
b. Communications	48.0	42.5	42.5	133.0
c. Materials	7.5	3.5	3.5	14.5
d. Lab materials	100.0	100.0	100.0	300.0
4. Disease management				
a. Personnel	170.0	153.0	68.0	391.0
b. Communications	58.8	50.3	39.3	148.4
c. Communications equipment	50.0			50.0
d. Materials	33.95	9.45	4.7	48.1
5. Plant and animal health information				
a. Personnel	102.0	46.75	46.75	195.5
b. Communications		8.50	8.50	17.0
c. Computer equipment and communications	60.0			60.0
	10.0			10.0
d. Materials	20.0	2.75	2.75	25.5
6. Regional coordination				
a. Personnel	108.0	108.0	108.0	324.0
b. Communications	56.5	27.5	27.50	111.5
c. Furniture and equipment	24.0	4.0	4.0	32.0
d. Materials	2.5	2.5	2.5	7.5
e. General service and rent	14.4	14.4	14.4	43.2
Total	1 122.65	875.65	670.4	2 668.70



