DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PERU

FRUIT FLY (CERATITIS CAPITATA) CONTROL AND ERADICATION PROJECT IN COASTAL AREAS OF PERU

(PE-L1007)

LOAN PROPOSAL

This document was prepared by the project team consisting of Francisco Basilio Souza (RE3/EN3), Team Leader; César Falconí (SDS/RUR); Gerónimo Frigerio (LEG/OPR); Juan Manuel Leaño (COF/CPE); and Giovanna Mahfouz (RE3/EN3), who helped to produce this document.

CONTENTS

ANNEXES

Annex I Logical framework

Proposed resolution

Electronic Links and References	
Basic Socioeconomic Data	http://www.iadb.org/RES/index.cfm?fuseaction=externallinks.countrydata
Status of loan in execution and loans approved	http://ops/Approvals/PDFs/PEen.pdf
Tentative lending program	http://opsgs1/ABSPRJ/tentativelending.ASP?S=PE&L=EN
Information available in the RE3/EN3 technical files	Información disponible en los archivos de RE3/EN3
Organization Chart of SENASA	http://idbdocs.iadb.org/WSDocs/getDocument.aspx?DOCNUM=560780
Procurement plan	http://idbdocs.iadb.org/WSDocs/getDocument.aspx?DOCNUM=560773
Agreement on Procurement Issues	http://idbdocs.iadb.org/WSDocs/getDocument.aspx?DOCNUM=558447

ABBREVIATIONS

AWPS	Annual Work Plans
CCLIP	Conditional Credit Line for Investment Projects
DGA	Decentralized government agency
EU	Executing Unit
FTA	Free Trade Agreement
FTD	Mosca/Trampa/Día [Fly/Trap/Day]
GDP	Gross Domestic Product
GOP	Government of the Republic of Peru
ICB	International competitive bidding
ICC	Internal Coordination Committee
IMF	International Monetary Fund
IPM	Integrated Pest Management
IRR	Internal Rate of Return
LCB	Local competitive bidding
LEU	Logistical Execution Unit
M&E	Monitoring and evaluation
MEF	Ministry of Economy and Finance
NPV	Net Present Value
P&S	Programming and Monitoring
PRODESA	Agricultural Health Development Program
SENASA	National Agricultural Health Service
SNIP	Sistema Nacional de Inversiones Públicas del Perú [Peruvian national public investment system]
WTO	World Trade Organization

PROJECT SUMMARY

PERU
FRUIT FLY (CERATITIS CAPITATA) CONTROL AND ERADICATION IN COASTAL AREAS OF PERU
(PE-L1007)

Basic Data				
Date: 25 July 2004			Project number:	PE-L1007
Project Team: Francisco B. Souza (RE3/EN3), Team Leader; César Falconí (RE3/EN3); Juan Manuel Leaño (COF/CPE); Gerónimo Frigerio (LEG/OPR); and Giovanna Mahfouz (RE3/EN3)			Lending instrument:	Investment loan
			Sector(s):	AG
			CESI review:	18 March 2005

Financial Terms and Conditions[1]				
Borrower: Republic of Peru			Amortization period:	20 years
			Grace period:	4 years
Executing agency: National Agricultural Health Service - SENASA			Disbursement period:	4 years
Source	**Amount**	**%**	Interest rate:	Variable
IDB (Ordinary Capital)	US$15,000,000	55	Inspection and supervision fee:	0%
Local	US$12,400,000	45	Credit fee:	0.25%
Total	US$27,400,000	100	Currency:	U.S. dollars

Project at a glance

Project objective:

To enhance the competitiveness of the fruit and vegetable sector. This will be accomplished by obtaining and keeping areas free of the Mediterranean fruit fly in certain coastal valleys and by reducing the economic losses caused by the insect.

Special contractual conditions:

(i) Conditions precedent to the first disbursement: In addition to compliance with the standard contractual conditions, the following special conditions shall apply as indicated in paragraph(s):

(ii) The establishment of the ICC and the LEU and appointment of their members (paragraph 3.4)

Exceptions to Bank policies:

See paragraph 3.21: request for a 10% Revolving Fund.

Project consistent with country strategy:	Yes [X]	No [ ]			
Project qualifies as:	SEQ [ ]	PTI [ ]	Sector [ ]	Geographic [ ]	Headcount [ ]

Procurement: (see paragraphs 3.12-3.17)

[1] The interest rate, credit fee, and inspection and supervision fee mentioned in this document are established pursuant to document FN-568-3 Rev. and may be changed by the Board of Executive Directors, taking into account the available background information, as well as the respective Finance Department recommendations. In no case will the credit fee exceed 0.75%, or the inspection and supervision fee exceed 1% of the loan amount.*

* With regard to the inspection and supervision fee, in no case will the charge exceed, in a given six-month period, the amount that would result from applying 1% to the loan amount divided by the number of six-month periods included in the original disbursement period.

I. CONTEXT

A. Socioeconomic framework

1.1 Economic indicators show that macroeconomic stability in Peru is extremely high. In 2004, the economy expanded for the third consecutive year without inflationary pressure. Real Gross Domestic Product (GDP) grew 5.1%, amid successful fiscal adjustment and balance of payments stability. Inflation was 3.5%. The fiscal deficit narrowed from 1.8% to 1.1% of GDP, surpassing the 1.4% of the GDP target agreed upon with the International Monetary Fund (IMF). Growth was driven by record exports and by private investment, which was up by 9.4%. The robust expansion in exports resulted in a trade surplus of 4% of GDP and an almost negligible deficit.

1.2 Peru's international liquidity position also improved. In March 2005, net international reserves totaled US$13.6 billion, the equivalent of 12.9 months of imports of goods and services. At the same time, the conventional country risk indicator was 241 basis points, one of the lowest in the region. Together with Colombia and Ecuador, Peru is negotiating a Free Trade Agreement (FTA) with the United States. Although differences still exist on agricultural and intellectual property issues, a final agreement is expected to be reached some time in 2005.

B. The agriculture, livestock, and fruit and vegetable sector

1.3 Primary agriculture and livestock is one of the country's most economically important sectors, accounting for 8% of GDP and employing 34% of the economically active population. Peru has an area of approximately 129 million hectares, of which almost 30.9 million are suitable for agriculture: 3.7 million for crop farming and 27.2 million for grazing.

1.4 Agriculture in Peru is practiced in three natural regions: the coast, the sierra (highlands), and the jungle, which differ in their climatic, topographical, and hydrological characteristics. Fruits with the greatest export potential are grown in all three regions, but the coastal region offers the best prospects for expansion. In 2004, agricultural exports totaled US$860 million, 32% of which were fruits and vegetables.

1.5 The growth in agricultural GDP over the past five years (nearly 5% a year on average) has been attributable mainly to increased exports (fruits/vegetables). Reflecting this trend, the gross value of fruit and vegetable sector output in 2003 was US$814 million, or 29% of agricultural GDP.

1.6 Approximately 90 varieties of fruit and vegetable are produced in Peru; yet in 2003 just 14 crops were grown on 83% of land under cultivation. The area devoted to growing these crops expanded from 275,000 hectares in 1995 to almost 480,000 hectares in 2003, or say, by more than 70% in only eight years. Accounting for

most of this growth were mangoes, asparagus, tangerines, avocados, tomatoes, and green peas.

1.7 To put this in perspective, exports of the 11 principal fruits and vegetables alone soared from US$25 million in 1994 to US$274 million in 2004, or 1,110% in 10 years. Thus, as a share of all agricultural exports, fruit and vegetable production has risen substantially, to nearly 32%. In 2003, Peru exported fruits and vegetables to 44 countries, with just eight absorbing 97% of the total export value. The United States market was Peru's principal market for fruit and vegetables, taking 55% of the FOB value that year. Asparagus, mango, and artichokes accounted for most of this demand, to make North America Peru's export market of choice.

1.8 Despite the dynamic growth of fruit sector exports over the past decade, Peru's share of the international market is still small: less than 1% of world exports in 2003. Given its diversity in fruit and vegetables, the country has the export potential, but the presence of the fruit fly is a constraint on development.

1. Limitations caused by the fruit fly

1.9 Fruits flies are one of the most significant threats to fruit and vegetable cultivation. Substantial amounts of fruit are spoilt, causing farmers serious economic losses. Crops from areas affected by the fly cannot be marketed, and so are lost to the country's principal external markets (such as the United States, Japan, and the European Union, areas that have introduced phytosanitary requirements for the import of fruits and vegetables affected by this pest). In addition, the presence of fruit flies means that pesticides have to be used as a precautionary measure, which is also a barrier to market access. It has been determined that the fruit fly may be hampering agricultural exports, especially of fruit and vegetables, with estimated annual losses of US$100 million.[1] Other estimates by the National Agricultural Health Service (SENASA) suggest that productivity losses to host crops may range from 30% to 50%.

1.10 At the present time, there are seven species of fruit fly in Peru that have not been eradicated, posing a threat to various types of fruits and vegetable. The most widespread of the seven is the Mediterranean fruit fly (*Ceratitis capitata*). Indeed, in 2003, in Moquegua and Tacna, 100% of the pests were Mediterranean fruit flies, followed by Arequipa (89%), Ancash (68%), Ica (58%), La Libertad (61%), Piura (47%), and Lambayeque (29%). Next in importance to the Mediterranean fly are other pests in the *Anastrepha* group (made up of six types of fly which attack specific crops).

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[1] PRODESA.

1.11 In 2003, host crops[2] constituted 16% of farm output value and 32% of agricultural exports. Chief among these was coffee, the principal export representing nearly 40% of total output value. The other leading exports were grapes (10%), oranges (7%), and apples (6%). These four products together accounted for 60% of all output from fruit fly host crops.

1.12 The area sown with host crops in 2004 was 143,000 hectares, spread over valleys in the ten departments along the Pacific Coast. Approximately 25,500 hectares were treated with preventive, eradication, and quarantine protection measures under the PRODESA program, leaving 81 percent untreated. Given the importance of the fruit and vegetable sector and the constraints imposed by the pest, SENASA has developed a strategic plan to rid the Coast of the Mediterranean Fly by 2015.

2. Plant and animal health: the institutional and legal framework

1.13 SENASA, a decentralized government agency attached to the Ministry of Agriculture, is the highest authority on agricultural health issues. It was established by Decree Law N° 25902 (the Ministry of Agriculture Act) and ratified as the National Authority by the Agricultural Health Framework Act (Law 27322 of July 2000). SENASA's actions are also guided by the World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures (SPS/WTO), which contains principles and rules governing animal health, plant health, and food hygiene and protection from an international agricultural trade perspective. Under that framework, SENASA is the official agency for notification and information regarding Peru's health and phytosanitary measures with respect to the WTO.

1.14 The SENASA was created to protect, improve, and support national agricultural and livestock production and the development of agroexports. SENASA establishes national policies, strategies, programs, and regulations and currently has three line department divisions: the Division of Plant Health, the Division of Animal Health, and the Division of Agricultural Inputs and Food Safety.

1.15 SENASA has managed to establish formal and informal mechanisms with the private sector to coordinate and participate in actions to improve, protect, and maintain agricultural health. For instance, consultative councils have been set up on specific health issues and cooperation agreements reached with various farmers' associations, along with agricultural health cooperation agreements with regional and local governments. A board of directors with members from the public and private sectors is currently being established as the senior authority within SENASA, pursuant to Supreme Decree No. 008-2005-AG. One half of the Board is from the private sector.

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[2] Host crops are those vulnerable to fruit flies.

3. The Agricultural Health Development Program—PRODESA (1025/OC-PE)

1.16 The objective of the program was to enhance plant and animal health through specific projects to control and eradicate pests and illnesses; to strengthen SENASA's permanent agriculture and livestock health services; and to increase private sector involvement. PRODESA activities were evaluated at the end of 2003 and during project preparation.

1.17 PRODESA helped to transform SENASA into the country's leading agricultural health authority, recognized internationally as a serious and reliable institution. It also helped to consolidate its organizational structure within Peru, where central, regional, and local bodies now report to a single organizational structure on technical, operational, administrative, and financial matters. SENASA's regular budget also grew while PRODESA was under way to enhance the status of agricultural health. Funds for the provision of services to the private sector take up 40% of the institution's budget. The private sector is contributing more and more in the form of labor, inputs, and equipment for agricultural health programs. Information technology tools have been developed for planning, executing, monitoring, and evaluating SENASA's ongoing activities and technical projects. Important legal provisions were issued, such as the Agricultural Health Framework Act and its General Regulations, and the New Regulations governing the Organization and Functions of SENASA. The establishment of its Executive Board, made up of representatives of the public and private sector, further underscores the coordination and participation of the private sector in agricultural health activities.

1.18 PRODESA also boosted SENASA's regular services, such as surveillance, quarantining, and laboratory work. The health surveillance system was strengthened with equipment, newly established information and training systems, and the creation of surveillance networks throughout the country. A stronger quarantine system meant that all legally imported agricultural goods are checked and inspected. Plant and animal health laboratories or diagnostic centers were renovated and fitted out and their personnel trained. Procedures manuals were produced and, as a result of all these measures, SENASA was able to look at and analyze 100% of the samples it received. Laws and regulations were passed to accredit third parties for certain agricultural health services. Currently, the private sector provides fumigation services in quarantine and vaccination campaigns.

1.19 In addition to its support for the institutional strengthening of SENASA and its regular services—which helped SENASA achieve the status it enjoys today—,

PRODESA comprised six specific components, one of which was the "Fruit Fly Control and Eradication".[3]

1.20 The "Fruit Fly Control and Eradication" component, which represented 34%[4] of the PRODESA budget achieved virtually all its objectives, although no areas have been declared free of the fruit fly. The purpose was to establish and maintain "fruit-fly-free areas" on the Peruvian coast. Responsibility for achieving the targets fell to the National Fruit Fly Program (PNMF), headed by a National Director, with responsibilities deconcentrated in each regional department of SENASA. It was the responsibility of the PNMF[5] to: (i) establish, declare, and maintain areas free of fruit flies; (ii) reduce losses caused by the pest; (iii) foster integrated management of the fruit fly, reducing irrational or excessive use of agricultural pesticides; (iv) promote private sector participation in efforts to eradicate the pest; and (v) formulate, coordinate, supervise, and evaluate work plans nationwide.

1.21 The original targets and actual outcomes of the fruit fly control and eradication component are shown in Table No.1:

Table N° 1
Targets and Outcomes of PRODESA's Fruit Fly Control and Eradication Component
(1998 – 2004)

TARGETS [a/]	OUTCOMES	OVERALL ASSESSMENT
Mediterranean fly is eradicated and "fly-free areas" are declared in 6 valleys with 21,000 hectares of fruit crops in the departments of Tacna, Moquegua, and Arequipa.	22,300 hectares of farmland (including 12,700 vulnerable to the fruit fly) in Tacna, Moquegua, and Arequipa are in the "post-eradication" phase, i.e., several months have passed without any sign of the pest. They have not yet been declared "fly-free areas", as at least 12 months must elapse since the last fly was detected.	No area has officially been declared free of the fly. 9,900 hectares are expected to be declared "fly-free" by June 2006.
Mediterranean fly eradication procedures are under way in 17 valleys in Lima, Ica, Lambayeque, and Piura.	Control and eradication procedures are under way in 55,000 hectares in 14 valleys in Piura, Lambayeque, Lima, Ica, Arequipa, Moquegua, and Tacna.	82% completed in terms of number of valleys and output.
6 valleys in the process of being certified as areas free of *A. fraterculus* and *A. grandis* in the *coastal* departments of the south.	36,588 hectares are declared free of *Anastrepha spp*. in Tacna and Moquegua. Arequipa and Ica are declared free of *Anastrepha grandis*.	Surpassed 100% of target.
50% drop in fruit fly damage.	Average extent of damage caused by fruit flies between Piura and Tacna in 2004 was 3.4% (in 1994, losses attributable to the fruit fly were 26%)	Target surpassed by 37%.

[3] The other five specific components were: biological control of agricultural pests; control and eradication of foot-and-mouth disease; control of brucellosis and bovine tuberculosis; control of caprine brucellosis; and control of mange in South American camelids.

[4] 34% went on the direct costs. The strengthening of quarantine systems, surveillance, and laboratories entail costs associated with the fruit fly control and eradication component, estimated at 10%.

[5] The PNMF became a sub-directorate of the Plant Health Directorate as of February 2005.

TARGETS [a/]	OUTCOMES	OVERALL ASSESSMENT
To produce sterile insects	The fly production plant in La Molina was renovated and equipped and 7.4 million sterile *Ceratitis* flies were produced.	Surpassed 100% of target.
To conduct research into insect production and sterilization of the *Anastrepha* fly.	Studies and tests were carried out and 6.3 million *Anastrepha* flies produced.	Surpassed 100% of target.
Install and operate 7 new centers of operation.	14 centers of operation were built and brought on stream in the principal coastal valleys to support detection and control activities.	Surpassed 100% of target.

a/ As amended in 1998.

1.22 With respect to its other specific components, PRODESA achieved significant results throughout execution: (i) 97% of the country is free of foot-and-mouth disease, without vaccination, and 3% free, with vaccination; (ii) 26 provinces were declared free of bovine tuberculosis, while 37 were declared free of bovine brucellosis; (iii) the incidence of mange in camelids was down sharply from 38% to 1.7%; (iv) Lima and Piura were declared free of caprine brucellosis and its incidence was reduced to less than 1% of the population exposed in the remaining departments; and (v) the program helped reduce the risk of toxic residues in food, as the area treated with biological pest controls increased from 12,000 to 253,000 hectares.

1.23 In general, the success of PRODESA has been a major factor in ensuring access to external markets and in the substantial increase in exports of fruit and vegetables over the past eight years. Despite PRODESA's technical and institutional achievements and campaigns, no area has officially been declared free of the pest. In this operation, tapping the experience acquired through PRODESA, the areas targeted by PRODESA as well as areas in other departments of Peru are to be declared officially fruit-fly-free in a move to expand external markets as phytosanitary restrictions are lifted.

4. Lessons learned

1.24 The establishment of clear objectives and precise targets for each component, within the integrated planning, monitoring, and technical and financial evaluation system developed by PRODESA, was a key ingredient in the orderly execution of the program, directing all the institution's efforts toward the achievement of the objectives. Specifically, the information available in the Integrated Fruit Fly Information System expedited the reporting on progress made in reducing the incidence of the fly in PRODESA's target areas, which, in the past five years, covered 427,000 hectares on the coast.

1.25 Private sector participation has been an important factor in the fruit fly eradication strategy. Farmers in the areas in which the fruit fly is to be eradicated are encouraged by their organizations to play an active part and to cooperate with the

project. They are responsible for pruning unhealthy plants, collecting and destroying infested fruit, setting traps, and other duties. It has been shown that, essential though farmer participation is, participation by local farmer associations is also crucial, as is that of local and regional governments which, through cooperation agreements, support specific tasks in eradication campaigns in small valleys.

1.26 Bearing these lessons in mind, it is worth noting the following steps that would have implications for attaining the objectives of this operation: (i) consolidate coordination between the Executing Unit, the Division of Plant Health, and the Executive Divisions of SENASA (see paragraph 3.6) to ensure timely decisions that make it possible to achieve the objectives; (ii) keep Tacna and Moquegua free of *Anastrepha*; and iii) apply the entire package of control measures (technical strategy) simultaneously and on a scale that guarantees achievement of the objective.

C. The country strategy for the sector

1.27 Peru is making a concerted effort to develop its agricultural sector, while simultaneously pursuing a trade policy designed to take advantage of the opportunities afforded by globalization within the framework of the Free Trade Agreement (FTA) negotiations. To achieve that aim, it has a Strategic Plan for Exports (PENX, 2003-2013), one component of which is the Agriculture and Agroindustrial Sector's Export Plan. The Export Plan's objectives are closely tied to the issue of agricultural health. For fruits and vegetables, targets include: eradicating fruit flies in the valleys of Tacna and Moquegua in 2004 and along the whole of the Peruvian coast by 2012. To achieve the latter aim, fresh funds would be needed beginning in 2005.

D. Strategy and participation of the IDB and other entities

1.28 The Bank's strategy with the country (document GN-2205-1) is based on three fundamental objectives: (i) raising the economic productivity and competitiveness; (ii) making social policy more efficient; and (iii) establishing a modern, decentralized, and efficient State. This operation addresses the first strategic objective of support for increasing competitiveness.

1.29 The Bank's strategy with the sector is geared to enhancing competitiveness and raising the incomes of rural producers by supplying public goods. The Bank is currently supporting reactivation of the land market through the Land Titling and Registration Project (906/OC-PE), which in its first phase regularized titles of nearly one million properties on the coast. The Bank also finances the Agricultural Health Development Program (1025/OC-PE) executed by SENASA, which has led to improvements in food safety, animal and plant health, and, ultimately, the quality of Peruvian farm production. The Bank recently approved the Support Services to

Gain Access to Rural Markets Program (1586/OC-PE), which mainly promotes the establishment of rural businesses, especially on the Peruvian coast. A program to support Peru's efforts to develop a strategy for setting investment priorities for rural development is also in the pipeline.

1.30 For its part, the International Fund for Agricultural Development financed a project to promote the transfer of technology to campesino communities in the highlands, which demonstrated that it is possible to stimulate the development of markets among the very poor and even in relatively isolated areas. The World Bank is financing the innovation and training program for agriculture to broaden private sector participation in the delivery of technical assistance services.

E. Project strategy and the strategy of the national fly eradication plan

1.31 This is a four-year project within the framework of SENASA's Strategic Plan—to be implemented by the Plant Health Directorate—to eradicate the fruit fly pest on the coast within the next 10 years. However, to implement the Strategic Plan and achieve sustainable long-term agricultural health, one of the Bank's new financial instruments, such as the CCLIP,[6] should be used. This option was discussed with the government during preparation of this project but did not materialize as the National Public Investment System (SNIP) does not provide for that possibility. Use of a CCLIP was recommended for subsequent stages of the eradication of the pest, as the SNIP is adjusted to meet the requirements of the Bank's new lending framework.

1.32 The technical strategy pursued by the project is largely based on outcomes of the PRODESA fruit fly component. The lessons learned from it point to the importance of continuing to push ahead with eradication of the fruit fly on the coast. With that in mind and in light of the competitive environment for the fruit and vegetable sector, the idea is to consolidate the intervention strategy, which consists of a combination of activities complementing one another both geographically and in time in a concerted effort to eradicate the pest.

1.33 The strategy contemplates: (i) starting with suppression only in the first two years of the project, in order to ensure that the eradication stage is carried out and is financed by the project. This facet of the strategy is not just technically warranted; it also reflects budgetary constraints and time limits set by the government; (ii) focusing on the departments with the greatest export potential (e.g., Ica, the principal exporter of fruits and vegetables) in order to consolidate and sustain the pest-free areas; (iii) moving ahead with eradication with particular emphasis on the southern coast to safeguard work already done in the departments of Tacna and Moquegua, and, with less emphasis, from the northern coast moving down to the central coast departments; (iv) taking PRODESA's historical financial flows as one

[6] CCLIP – Conditional Credit Line for Investment Projects.

consideration to be used in establishing the execution schedule; (v) promoting participation by producers and other agents in control and eradication activities, fostering strategic partnerships with local and regional governments and with nongovernmental organizations and producers' associations to conduct control and eradication procedures, particularly in small valleys; and (vi) integrating and applying existing control and quarantine protection techniques simultaneously and on a scale to achieve, within a reasonable timeframe, the goal of eradicating the pest and keeping the areas pest-free. Adopting that approach should minimize the collateral damage to the environment and exports subject to best farming practices or similar systems.

II. THE PROJECT

A. Objectives and description

2.1 The objective is to enhance the competitiveness of the fruit and vegetable sector. This will be accomplished by securing areas in certain coastal valleys that are free of the Mediterranean fruit fly and maintaining them free of the pest and by reducing the economic losses caused by the fruit fly. Specific objectives of the project are to: (i) conduct a pest eradication campaign in selected valleys on the coast; and (ii) keep areas free of the pest in coastal valleys.

B. Structure of the project

1. Eradication campaign (US$21.85 million)

2.2 Eradicating the fruit fly in a given region entails a series of stages and/or sequence of activities. Unlike PRODESA, the technical strategy pursued in this project will be to clear one valley after another, giving priority to completing the suppression and post-eradication stages rather than to expansion along the entire coast through focal points. The sequence of stages will be as follows:

a. **Prospecting**: Georeferenced traps will be installed and maintained and fruit will be evaluated to monitor the extent of fruit fly infestation. Data will be gathered in this stage for use in planning subsequent stages. No new areas will be added during execution of this stage, but an average of 61,000 hectares will be covered during execution and 14,000 hectares will move to the suppression stage (US$2.55 million).

b. **Suppression**: Using an integrated pest management (IPM) procedure, biological insecticides are applied, accompanied by early quarantine protection. At this stage, the idea is to achieve a low incidence of the pest, with a Fly/Trap/Day (FTD) reading of less than 0.1. During execution, 31,500 hectares will move to the eradication stage (US$6.8 million).

> The following indicators are used during an eradication campaign: host crop area, namely the area where crops are exposed to the pest; eradication area, namely the area of commercially developed crops included in the project that are fly-free; and the fly population indicator (FTD, fly/trap/day). On the Peruvian coast, populations of up to 20 FTD have been found. A valley may have an agricultural area that is larger than the host crop area.

c. **Eradication**: The IPM then proceeds to the massive release of sterile flies and targeted applications of biological insecticides, while continuing with quarantine protection to avoid reinfestation. The idea at this stage is to bring the FTD indicator below 0.01. During execution, 41,000 hectares will move to the post-eradication phase (US$11.1 million).

d. **Post-eradication**: This stage starts with an FTD indicator of zero. The detection system confirms that the area is pest-free. International rules require a period of three consecutive biological cycles without the insect for an area to be declared pest-free. During execution, 42,000 hectares will be declared free of the fly (US$1.4 million).

2.3 Investments in this component include: purchase of the inputs needed to produce sterile male *Ceratitis capitata* adults at the Sterile Fly Production Plant in La Molina; the purchase of biological pesticides; the hiring of field laborers, the contracting of transportation companies to take the sterile fruit flies from La Molina to the valleys; and other services for activities in the field, such as installation and checking of traps, fruit sampling, and release of the sterile insects, as well as the organizational, training, and dissemination activities needed to involve farmers in execution of the project.

2. Surveillance and continuous quarantine (US$1.94 million)

2.4 The surveillance and continuous quarantine system ensures that the results of the eradication campaign are maintained. It includes operating quarantine barriers on the edges of the pest-free areas, along paths, and in areas at risk, as well as dissemination and training for farmers and the general public to ensure that they do not transport infested produce to the pest-free area. Even though the system operates on a permanent basis nation-wide, for the purposes of this component only the resources corresponding to areas to be declared pest-free as of September 2005 are taken into account. During execution, up to 42,000 hectares will be kept pest-free (a staggered incorporation procedure is applied).

2.5 This component includes outlays for the inputs, field labor, training, and dissemination needed to keep the fruit flies out of the area declared pest-free. It also includes resources for emergency plans in that free area. All the resources for this component will be fully financed with counterpart funds.

C. Cost and financing

2.6 The cost of the project is the equivalent of US$27.4 million. The Bank will finance the equivalent of US$15 million (55%) with resources from the Single Currency Facility of the Bank's Ordinary Capital. The local counterpart, equivalent to US$12.4 million (45%), will be financed with funds from the national budget allocated to SENASA. The following table shows investment categories and sources of financing.

Table 2.1
Costs and Preliminary Financing (US$000s)

Categories	IDB	Local	Total	(%)
A. Administration/Supervision of the project	**699**	**792**	**1,491**	**5.4**
1. Operating the LEU	629	792	1,421	
2. Midterm and final evaluations	70	0	70	
B. Direct Costs	**14,081**	**9,702**	**23,783**	**86.8**
1. Eradication campaign	14,081	7,765	21,846	
2. Surveillance and continuous quarantine		1,937	1,937	
C. Other Costs	**220**	**0**	**220**	**0.8**
1. Independent environmental monitoring	60		60	
2. External financial audit	100		100	
3. Special studies	60		60	
D. Financial Costs	**0**	**1,906**	**1,909**	**7.0**
TOTAL	**15,000**	**12,400**	**27,400**	**100.0**
% per source	**55**	**45**	**100**	

2.7 Following are the principal investment categories:

1. Administration and supervision

2.8 This category accounts for 5.4% of the total cost of the project. It includes outlays for personnel, fuel, fares, per diems, office supplies, and a reserve to cover the costs of legal advice in connection with project procurement.

2. Direct costs

2.9 This category accounts for 86.8% of the total cost of the project and includes the following components: (i) Eradication Campaign; and (ii) Surveillance and Continuous Quarantine. In the first component, the project will finance the cost of field personnel (laborers, technical staff, and specialists), inputs for the production of sterile flies and pest control, materials, fuels, vehicles, and printing and publicity services. For the second component, the project will defray staff and operating costs, and the cost of fuels.

3. Other costs

2.10 This category makes up 0.9% of the total cost of the project and comprises the following activities: (i) Independent Environmental Monitoring, which will entail hiring an environmental consultant to be in charge of monitoring the activities and indicators agreed upon with the Bank, and (ii) Audits, for which a firm is hired to conduct an operational and financial audit of the project.

III. PROJECT EXECUTION

A. Borrower and executing agency

3.1 The borrower for this project will be the Republic of Peru and the executing agency will be SENASA, which was established by Decree Law 25902 in November 1992, as a body attached to the Ministry of Agriculture. It has the status of a decentralized government agency (DGA), which means that it has its own independent budget appropriation and technical, administrative, financial, and legal autonomy. SENASA is the National Authority for Agricultural Health, Seeds, and Organic Production and is empowered to raise its own funds from fees it charges for the agricultural and livestock services it provides.

3.2 Annex I shows SENASA's organizational chart. The various levels in the structure of this body are: (i) Senior Management (board of directors and national head office); (ii) advisory bodies; (iii) supporting bodies; and (iv) line departments and deconcentrated bodies. There is also an oversight body, which performs operational and financial internal audit functions and a consultative body of experts contacted to advise SENASA on specific issues.

3.3 The highest body in the institution is the board of directors, the main function of which is to establish policy and a national and international strategy in matters within SENASA's sphere of competence, and to supervise and evaluate compliance. The Head Office runs the administrative and management side. The advisory body looks after planning, budgeting, and research. The supporting bodies comprise, first, the offices providing cross-cutting support services (accounting, human resources, logistics, etc.), and, second, the laboratories[7] and the Sterile Fruit Fly Production Center. Responsibility for execution of the institution's technical activities lies with the line departments in Lima (Division of Plant Health and Division of Animal Health), and with 24 Executive Divisions (one in each department of Peru and one in the Apurimac-Ene river valley, which encompasses parts of the departments of Ayacucho, Cuzco, and Junín.

B. Project execution and management

3.4 The project will be executed by SENASA through its permanent facilities, supported by a Logistical Execution Unit (LEU), which has been assigned the following support functions in connection with the project: programming and monitoring; administration and finance; and procurement (including hiring). The

[7] SENASA runs the following laboratories: the Plant Health Diagnostic Center (Centro de Diagnóstico de Sanidad Vegetal), the Animal Health Diagnostic Center (Centro de Diagnóstico de Sanidad Animal), and the Inputs and Toxic Residues Control Center Unit (Unidad del Centro de Control de Insumos y Residuos Tóxicos).

LEU will comprise elements of the already existing Executing Unit of PRODESA, adjusted to take account of the project's smaller staff requirements. The Board of directors will be responsible for inter-agency coordination, while an Internal Coordination Committee (ICC) will be installed to look after intra-agency coordination. ***The establishment and actual functioning of the ICC and legal proof that the Executing Unit's existence has been extended will be conditions precedent for the first disbursement of the financing.***

1. The Board of directors of SENASA

3.5 The Board of directors is composed of a representative of each of the following ministries: Agriculture, Foreign Trade and Tourism, Economy and Finance, and Foreign Affairs; five representatives of the private sector; and the Head of SENASA. With respect to the project, the Board of directors will perform the following functions: (i) approve project evaluation and environmental assessment reports; (ii) approve the ICC's proposal for the appointment or removal of the Head of the LEU, to be presented to the Bank for its nonobjection; (iii) approve project-related plans and reports in the context of SENASA's strategic plan and programmatic plan; and (iv) receive the annual audit reports. Given its composition, the board of directors guarantees active private and public sector involvement in project monitoring and evaluation.

2. The Internal Coordination Committee

3.6 The ICC will be the technical body responsible for monitoring project execution and interagency coordination. Its functions will be to: (i) grant technical approval to the initial project report, the annual work plans, and the semiannual progress reports; and (ii) act as the selection panel for LEU officers. The ICC will comprise the Head of SENASA, who will chair it, the General Directors of Plant Health, Planning, and Diagnostic and Production Centers, and the Director of the Ministry of Agriculture's Investment Office, in addition to the Head of the LEU, who will serve as Technical Secretary.

3. Divisions and Units participating in the project

3.7 As indicated in paragraph 3.3, technical and operational execution activities will be conducted through SENASA's existing institutional mechanisms. The units with specific responsibilities are: (i) the Division of Plant Health (DSV), which will be responsible for issuing technical rules and standards and on-site supervision of execution, and preparing the technical features of the annual work plan, in keeping with the initial project report and the recommendations contained in the monitoring and evaluation reports approved by the competent bodies. It will carry out these tasks through the Fruit Fly and Plant Health Projects Subdirectorate (SDMF) and the Plant Quarantine Subdirectorate (SDCV); (ii) the Diagnostic and Production Centers Office (OCDP) will be responsible, through the Fruit Fly Production

Centers Unit (CPMF), for the timely provision of sterile fruit fly material in the quantities and quality required for the project; (iii) the Executive Divisions in Tacna, Moquegua, Arequipa, Ica, Lima, Lambayeque, and Piura, respectively will be responsible for executing the project on the ground, with sufficient authority to administer the resources assigned to them under the project in accordance with the annual work plans and the technical standards set by SENASA's head office and the administrative and management rules established by the LEU.

4. Organization and functions of the project's Logistical Execution Unit

3.8 The LEU will come under the National Head of SENASA, act as the SENASA's counterpart to the Bank, and be divided into three units: Programming and Monitoring (P&M), Procurement (including hiring), and Finance/Administration, which will all report to the Head of the LEU. The director and professional staff in charge of each of the units will be financed out of loan funds. The additional personnel[8] will be financed using the local counterpart. The Unit will perform the following functions, coordinating closely with SENASA offices: (i) directing and coordinating preparation of the annual work plans; (ii) monitoring and supervising execution of those plans and coordinating evaluations; (iii) providing support for the environmental audit; (iv) conducting procurement and hiring activities; (v) preparing and submitting to the IDB disbursement requests, and preparing and submitting statements of account; (vi) forwarding resources in cash and kind to SENASA's operational units; (vii) keeping project operating and accounting records, as required under the loan contract; (viii) supervising compliance with the terms and targets of the loan contract; and (ix) preparing technical and financial reports for presentation to the competent bodies in the government and to the IDB.

3.9 The specific functions of LEU staff will be as follows: The Director of the LEU is its legal representative and his principal function is to ensure that the project is executed by managing its resources appropriately, reporting to the Bank, SENASA management and the Peruvian National Public Investment System (SNIP) on progress made with each component and project activities. The Coordinator for Programming and Monitoring, in close coordination with SENASA's General Planning Office, will be responsible for formulating, implementing, monitoring, and evaluating the annual work plans, as well as for preparing the execution reports requested by competent authorities in the government and by the IDB. The Procurement and Hiring Coordinator will be in charge of formulating and implementing the annual procurement and hiring plans. He will manage contracts with suppliers and prepare the procurement and hiring reports requested by competent authorities in the government and by the IDB. The Administration and Finance Coordinator will be responsible for administering the project's financial resources. He will prepare financial statements and liaise with the external auditors.

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[8] Originally, the Executing Unit of PRODESA had a staff of 23. As its execution is nearing completion, 16 people are currently employed. The LEU will have a staff of 13.

He will also prepare such financial reports as are requested by competent authorities in the government and by the IDB.

5. The plan for transfer of the LEU to SENASA

3.10 Since the LEU will have the same basic structure as PRODESA's Executing Unit, the project will start promptly, with a smooth transition assuring continuity from PRODESA to the project. Nevertheless, during execution SENASA will absorb LEU functions into its regular structure. Thus, 24 to 36 months into project execution, a transfer of responsibilities will begin between the LEU and SENASA's line units, so that by month 37 after the start of execution, LEU functions will have been fully incorporated into SENASA's structure. For the midterm evaluation of the project, SENASA will submit the LEU-SENASA transition plan to the Bank for approval. The institutional evaluation conducted during preparation of the project indicates that in principle the transfer of functions is feasible for the following reasons: (i) SENASA is keen to keep the staff with specialized knowledge of project execution, acquired through PRODESA, given its medium-term strategy of continuing with health projects backed by multinational agencies; and (ii) the functions and systems developed in the LEU can be adapted and will strengthen the institution's regular support functions. This same evaluation revealed, however, that the transfer could not take place immediately since specific positions for administrative staff would need to be created, an increase in the budgetary allocation would need to be obtained, and competitions would need to be held. The final evaluation of the project will include an analysis of the impact of the LEU's transfer of functions to SENASA.

C. Environmental monitoring

3.11 An environmental expert will be hired out of the financing to ensure that the standards and regulations of Peru, SENASA, and the project are being observed. He or she will serve on a part time basis as the project's environmental auditor, making frequent visits to the valleys in which the project is to be executed. The visits, which may be pre-announced, will be used to audit compliance with standards and/or directives, verify monitoring indicators, gather the information needed to prepare the semiannual environmental audit reports, and, where necessary, make recommendations on improving execution of project activities. The expert will be a specialist in environmental management, with no functional ties to SENASA or the LEU, and will report to the board of directors of SENASA. The expert's six-month work plan should include an oral presentation of the semiannual environmental audit report, which will also be presented to the Internal Coordination Committee and posted on the SENASA website. The terms of reference governing the hiring of the expert are attached to the environmental management plan.

D. Procurement of goods and services

3.12 **Goods.** Procurement of goods will proceed in accordance with Bank policies as set forth in document GN-2349-4 (Policies for the procurement of construction works and goods financed by the IDB of 19 January 2005). International competitive bidding (ICB) will be obligatory for the procurement of goods either fully or partially financed with foreign exchange provided by the loan and whose value exceeds the equivalent of US$350,000. Procurement in amounts between US$50,000 and US$350,000 may be done through local competitive bidding (LCB), pursuant to domestic legislation, and procurement in amounts below US$50,000 will be carried out using shopping (three price quotations). Goods will be procured in accordance with the procurement plan previously approved by the Bank.

3.13 **Direct purchase.** Direct purchase procurement, without competition, is contemplated for an amount up to US$2,400,000 for the biological insecticide Spinosad, which is manufactured exclusively by Down Agrosciences in the United States. The insecticide is patented under a registered trade mark, and so far can only be obtained from a single manufacturer. The quantity authorized for this purchase is what is necessary, and indeed essential, for project execution to begin. Before authorizing further purchases of the same product without a call for tenders, SENASA must demonstrate to the Bank's satisfaction that the manufacturer of this product continues to have a market monopoly. The direct purchase is warranted by the need to serve markets in Europe and Japan that do not accept fruit produced with chemical insecticides and for environmental reasons, as indicated in paragraph 4.27.

3.14 **Consulting services.** For selecting and hiring consulting service in an amount of US$200,000 or more, a short list will be used following an international request for expressions of interest. For amounts below US$200,000, international advertising will not be required. Selection and hiring of consultants will be carried out in accordance with the Bank's policies as set forth in document GN-2350-4 of 19 January 2005. Consulting services will be engaged in accordance with the procurement plan previously approved by the Bank.

3.15 **Continuation of consulting services**. Loan resources will be used to extend the contracts of the four consultants (see paragraph 3.8 for a description of their tasks) who are currently performing the same duties in the Executing Unit of PRODESA. Extending the contracts of the current team of consultants in PRODESA's Executing Unit will ensure continuity, preserve the technical expertise they have acquired, and guarantee an appropriate transfer of information and efficiency in the initial stages of execution. Keeping them on in the project ensures quality and efficiency. It should be emphasized that their original hiring conformed to Bank standards. In the period between the last disbursement under PRODESA and the

first disbursement of the new loan, SENASA will advance the funds, which will be recognized as chargeable to the financing as indicated in paragraph 3.18.

3.16 **Procurement plan.** Pursuant to Bank policies contained in document GN-2349-4 (Policies governing the procurement of construction works and goods financed by the IDB) and document GN-2350-4 (Policies governing the selection of consultants financed by the IDB), prior to the loan negotiations, the borrower must submit to the Bank for approval a procurement plan that is acceptable to the latter, specifying: (i) the individual contracts for goods and consulting services required to carry out the project during an initial period of at least 18 months; (ii) the methods used to select the consultants; (iii) the methods proposed for procurement of goods; and (iv) the procedures applicable to the Bank's review (as set out in document GN-2349-4 and document GN-2350-4). The borrower must update the procurement plan every year, as required, or whenever substantial changes occur, each time covering the following 18 months of project execution. Any proposal to amend the procurement plan must be submitted to the Bank for approval. The current version of the procurement plan must be available at all times. During the analysis mission, agreement was reached with the borrower on the initial procurement plan (Annex II) for the first 18 months of project execution. That agreement will be confirmed during negotiation of the operation.

3.17 **Review of procurement of goods and consulting services**. Procurement and hiring requiring international publicity (ICB) and consulting services contracts in amounts over US$200,000 will be supervised ex ante. All other procurement and consulting services contracts will be reviewed ex post, as specified in documents GN-2350-4 and GN-2349-4.

E. Reimbursement and recognition of expenses to be charged to the financing and to the local counterpart

3.18 The Bank may reimburse under the loan up to the equivalent of US$800,000 incurred by the Executing Unit in connection with the hiring of operations personnel, LEU consultants, and field materials/inputs, provided that procurement complies with Bank procedures and policies and the terms of the loan contract and its annexes, and was incurred in the 18 months prior to approval of the loan (and subsequent to official incorporation of the project in the pipeline of operations in November 2004).

3.19 The Bank may also recognize as chargeable to the local counterpart up to the equivalent of US$250,000, expenses incurred by the executing agency in connection with the hiring of LEU support personnel or operating expenses, surveillance, and continuous quarantine, provided that procurement complies with Bank procedures and policies and the terms of the loan contract and its annexes, and took place in the 18 months prior to approval of the loan (and subsequent to official incorporation of the project into the pipeline in November 2004).

F. Execution and disbursement schedules

3.20 The project's execution and disbursement period will be four years. The following table shows the projected disbursement schedule:

Table 3.1
Disbursement Schedule by Year of Execution
(US$ 000s)

Source of financing	TOTAL	Year 1	Year 2	Year 3	Year 4
1. IDB	15,001	5,007	5,886	3,052	1,055
2. Local	12,399	3,357	3,979	3,360	1,703
Total	27,400	8,364	9,865	6,413	2,758
%	100	31	36	23	10

G. Revolving Fund and audit

3.21 In order to advance funds for activities to be financed with Bank resources, a revolving fund will be established, in an amount of up to 10% of the Bank financing. The 10% ceiling is necessary to ensure flow of payments to field workers, who are paid by the task and in lump sums, in amounts that exceed the usual 5%. The ceiling was also based on PRODESA's sound performance. The executing agency will be responsible for submitting to the Bank a semiannual report on the Revolving Fund within 60 calendar days of the end of each six-month period.

3.22 During execution of the program, SENASA will present the annual financial statements of the program and the institution. The external audit will be conducted by a firm of independent auditors acceptable to the Bank, pursuant to the requirements of documents AF-100 and AF-300, and based on terms of reference previously approved by the Bank (document AF-400). The audited financial statements of the project will be presented within 120 days following the end of the fiscal year and the financial statements at the close of the program will be submitted within 120 days of the last disbursement.

H. Monitoring and evaluation

3.23 The M&E unit will be responsible for functional relations with the National Public Investment System's monitoring system. PRODESA's existing management and technical information system will be maintained. The system will provide continuous up-to-date information on project management and will serve as a management decision-making tool for the LEU, SENASA, SNIP, and the private sector beneficiaries. It will allow early detection of benefits and real or potential difficulties, and hence timely adoption of corrective measures during project execution. To meet this objective, the person in charge of the system will: (i) adjust and feed data continuously into the system to ensure information is always

available on the progress of the project; (ii) periodically evaluate the relevance and impact of outcomes vis-à-vis the pre-established objectives; and (iii) coordinate midterm and final evaluations of the project. The M&E unit will also be responsible for commissioning specific strategic studies for monitoring and midterm and final evaluations of the project and for organizing training activities, such as workshops to disseminate the knowledge acquired during execution, seminars to discuss the study findings, and training in project monitoring and evaluation.

3.24 The existing management and technical information system enables managers to track execution of the project's annual work plans and to monitor the information in the logical framework, which in turn will permit technical monitoring of execution, midterm and final evaluations, and specific studies. The offices responsible for monitoring and evaluation in the Ministry of Agriculture and the Ministry of Economy and Finance will be able to access the system. Table 3.2 shows the project's main performance indicators and targets.

Table 3.2
Performance Indicators and Targets

INDICATOR	Base line	Mid-term review	Final review
Areas free of *Ceratitis* (in thousands of hectares)	5	11	42
Private cost of control avoided (in US$/hectare)	80	322	0
Use of chemical pesticides avoided (in tons)	36	36	0
Areas with prospecting carried out (in thousands of hectares)	78	57	60
Suppression areas executed (in thousands of hectares)	13	14	0
Areas where eradicated (in thousands of hectares)	0.8	18	0
Areas with post-eradication activity in thousands of hectares)	9	8	15

3.25 The executing agency will present the annual work plans (AWPs) to COF/CPE by November 30 each year. The initial report (as specified in Article 4.01 c. of the general standards) must include the AWP for year one. The semiannual progress reports will be submitted by May 30 and November 30 of each year, with a cut-off date for activities of April 30 and October 30, respectively.

1. Midterm review and evaluation

3.26 Twenty-four months into the loan contract or when 50% of the resources have been committed, whichever occurs first, the LEU will commission a midterm evaluation of the project. The terms of reference and the evaluation study will be approved by the Ministry of Agriculture's Investment Office and the Ministry of Economy and Finance's Division of Long-term Programming, and will also require the Bank's

nonobjection. The midterm evaluation of the project will also include the ex post evaluation of the Fruit Fly Control and Eradication Component of PRODESA, which will result in recommendations for the project. The evaluation will, among other items: (i) analyze the progress toward achievement of the project targets stipulated in the logical framework; (ii) analyze the extent to which the project's technical targets have been attained; (iii) evaluate the effectiveness with which the independent consultant audits compliance with environmental regulations; (iv) evaluate the effectiveness of the project monitoring and evaluation system and identify possible lessons learned; and (v) develop a policy for covering costs and rates. Based on this evaluation, SENASA and the Bank will conduct a midterm review that provides recommendations on project execution performance and the steps needed to correct issues that were not adequately anticipated during project preparation. In addition to the specific recommendations for project execution, the midterm evaluation will yield ingredients for the design and processing of a CCLIP operation (see paragraph 1.31) to expand the control and eradication campaign throughout the country.

To develop a rates policy, SENASA must take the following into consideration: (i) a strategy to sensitize stakeholders to the new rates policy and to implement it; (ii) determination of the categories with the greatest potential for generating resources; (iii) cost accounting procedures for calculating, adjusting, and approving rates; and (iv) procedures for projected cash flows based on the new rates.

2. Final evaluation

3.27 Once 90% of the loan resources have been committed, SENASA and the Bank will undertake a final evaluation of the project. The terms of reference and the evaluation study will be approved by the Ministry of Agriculture's Investment Office and the Ministry of Economy and Finance's Division of Long-term Programming, and will also require the Bank's nonobjection. The evaluation will include, inter alia: (i) a specific evaluation of each activity, assessing the potential impacts of technical aspects and investments financed; (ii) measures to ensure the sustainability of project activities; and (iii) identification of lessons learned from implementation and utilization of the monitoring and evaluation system and possible uses of the system for other operations

3.28 The following studies were identified in advance as useful for the final evaluation: (i) reducing the likelihood of invasions by other pests and of a fly reinfestation that might affect the fruit and vegetable sector, and (ii) the impact of the project on employment generation in the fruit and vegetable production chain. The studies should be contracted out and executed at least 12 months and 7 months prior to finalization of the project, respectively. The evaluation will include consultations with project users. The final evaluation will form the basis of the Project Completion Report (PCR).

3.29 In keeping with Bank policy, SENASA, through the LEU, will compile, store, and itself keep all the information, indicators, and parameters, including the annual work plans, and the midterm and final evaluations, needed to help the Bank prepare the Project Completion Report. The evaluation activities should also be accessible through links on the project's Internet web page.

IV. VIABILITY AND RISKS

A. Institutional viability

4.1 SENASA has demonstrated its institutional capacity to execute externally financed projects through its work with PRODESA and other bilateral cooperation agreements. While it was under way, PRODESA, which was carried out with Bank financing, was classified as satisfactory, with respect to progress in implementing the program and the high probability of achieving the development objectives.

4.2 Although SENASA demonstrated that it has the capacity during PRODESA, an institutional analysis of the project was performed, using the institutional capacity evaluation system (SECI).[9] The analysis found that SENASA has the organizational structure, trained personnel, infrastructure, and the procedures for executing the project's scheduled technical activities, as well as for supervision and technical and socioeconomic evaluation, and it will be supported by an LEU in the administrative and financial oversight of project activities. At the same time, SENASA will establish the Internal Coordination Committee (ICC), to help facilitate the flow of information from decision making to execution and monitoring of activities to be supported at different levels within the institution, including the support units at headquarters and the decentralized units. These measures guarantee the institutional viability of the operation.

Quality at Entry- During the project preparation process, each of the GN-2282 guidelines were considered and reviewed. To satisfy the guidelines about consulting stakeholders, farmers in the most infested project areas were interviewed directly. The consultant for social and environmental issues also visited the project's area of influence.

4.3 SENASA has been building up its career staff contingent. A comparison of positions between 1998 and 2005 shows for each year, respectively: career positions 99 versus 454; fixed-term posts: 151 versus 0; temporary positions: 359 versus 343; Total: 797 versus 609. In other words, there has been an increase in the total number of positions, as well as a significant conversion of fixed-term positions into career posts. In addition, SENASA's budget provides for another 100 positions, which will be used to reduce the current number of temporary positions. Hiring of new career staff will be reserved primarily for priority areas.

4.4 As regards the personnel needed in the fruit fly area, it was found that of the 21 positions required for permanent activities, the 14 located at headquarters in Lima were converted to career positions, while the remaining 7 at the regional level are included among the positions to be converted with the 100 additional positions mentioned earlier. An appropriate number of career staff increases the viability of

[9] Full documentation on the analysis is available in the project technical files.

carrying out the institution's permanent activities, including those related to fruit fly programs.

B. Socio-economic viability

4.5 The principal benefits of the project stem from: (i) the declaration of pest-free areas, and (ii) eradication of the pest in selected valleys on the Peruvian coast. Economically, both benefits take the form of: (i) a reduction in the economic losses caused by the pest, in terms of the gross value of output of host crops; (ii) a reduction in farmers' private treatment costs; (iii) expansion of export markets; (iv) less damage to the environment; and (v) the contribution to employment generation throughout the fruit and vegetable production chain (fruit picking, post-harvest, and marketing). One of the most significant outcomes expected from the project is access to external markets as phytosanitary barriers are lifted. Another impact is that a large number of small farmers will try to join in the export effort and increase their profitability. This means that those farmers will strive to reduce their costs, manage their factors of production more efficiently, increase productivity, improve quality, and maintain a certain health status.

4.6 The economic benefits of the project are viewed from a private and social standpoint. From a private economic point of view, implementation of the project makes it possible to lower farmers' losses in two ways: through a reduction in crop treatment costs (the cost of pesticides, treatment, and labor) and through a reduction in the percentage of infested farm products that cannot be marketed. Thus, there is a cost that is avoided (private treatment) and the benefit stemming from an increase in farm productivity. From a social economic point of view, the control, suppression, and eradication of the fruit fly constitute a public good, reducing the likelihood of infestation and losses of all the crops in surrounding areas, regardless of whether they incur private costs or not. Another major economic impact stems from the increase in the quality of the produce harvested, thereby helping to establish and consolidate a valuable reputation in international markets, which, in turn, facilitates access to new markets and expands the volume of exports to existing markets, provided appropriate marketing channels exist.

4.7 Assuming implementation of the project, the benefits were calculated using conservative assumptions: (i) the extent of the agricultural productivity gains will depend on the stage reached in the control and eradication process, with an upward trend, whereby the gain in productivity rises from 0% in the prospecting stage to 100% in the pest-free areas stage, and the cost avoided is equivalent to 7.61% of the gross value of output of host crops; (ii) the amount saved by farmers in private control costs will depend, as in the preceding point, on the stage reached in the control and eradication process. In the first three stages, the cost of a situation without the project was compared with the maximum private cost of treatment that the project forces farmers to incur, with the result that the cost avoided is zero or negative, whereas in the post-eradication and pest-free area stages, the cost avoided

for farmers is 50% and 100%, respectively, of the cost of US$322 per hectare; and (iii) the simulation attributes only 10 percent of the observed increase in exports of avocado, citric fruits, mango, and grapes to project execution.

4.8 For the economic evaluation of the project, only the incremental benefits were taken into account, or say, the difference between the gain in productivity, the saving in private control costs, and the increase in exports, with the project and without the project. To calculate costs, in addition to the project investment, account was taken of the costs of maintaining the results achieved with the project, the cost of quarantine protection, and the financial cost of the funds. This yielded, at social prices, an economic net present value discounted at 12% of US$78 million and an economic internal rate of return (EIRR) of 57%.

C. Financial viability

4.9 This section examines the feasibility of the counterpart contribution and the financial viability of SENASA

1. Conceptual considerations

4.10 SENASA conducts two types of activity: permanent and temporary. The permanent activities are those needed to maintain a certain, already achieved, sanitary level. Activities of this kind such as surveillance and control are the rationale for agricultural health agencies. Temporary activities are those carried out periodically as investment projects to attain a new, higher health status. Examples of such activities are health campaigns (against foot and mouth disease or the fruit fly) or actions to strengthen permanent activities, such as those found in PRODESA.

4.11 Permanent activities are considered a public good, and mainly entail current operating expenses (staff, maintenance, inputs). The principal expense of this kind is the cost of staff needed for the operations and surveillance and control. The capital expenditure associated with permanent activities are mostly for upgrading and/or replacement of machinery and training in technical areas.[10] In addition to these expenditures, a health agency always needs to set aside reserves for emergencies (such as an unexpected outbreak of disease).

4.12 This aspect of the project as a public good justifies the Revenue Department covering recurrent costs. In the case of SENASA, no clear cost coverage policy exists, but the idea is to aim for a degree of financial capacity whereby the institution generates funds to cover recurrent current operating and investment costs, other than payroll expenses, as well as reserves to provide funds for emergencies, while the Revenue Department defrays payroll expenses.

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[10] The modernization and training process is liable to face sudden unexpected demands when new pests or diseases occur, as happened, for example, with “mad cow disease.”

4.13 At the same time, in the case of sanitary campaigns, which are temporary actions, it is universally accepted that they are largely financed using public funds. In some countries in the region, such as Chile and the United States, the Revenue Department assumes almost all the costs, while in others, such as Peru, the private sector contributes either in kind or in logistical support or manpower, as is the case with the campaign to eradicate fruit flies.

2. Financial analysis of SENASA

4.14 Following is a summary table of average annual outlays for recurrent and temporary expenses, by source of financing in 2000-2004 and expenses expected during project execution. With respect to recurrent expenses, in 2000-2004, the Revenue Department financed the bulk of payroll and pension costs, while SENASA used own funds to pay for most goods and services (maintenance, materials, fuels, supplies), as well as most of the modest capital expenditures. The table also shows revenue in both periods.

Table 4.1
Annual Average Expenditure: Past And Projected, by Source of Financing
(Thousands of Constant – December 1994 – U.S. Dollars)

	2000 to 2004				2005 to 2009			
	Expenditure		Total	%	Expenditure		Total	%
	Recurrent	Temporary			Recurrent	Temporary		
Revenue Department	4,388.1	4,016.5	8,404.6	39.1	8,478.1	2,380.5	10,858.6	55.0
Own funds	4,743.8	744.5	5,488.3	25.6	5,049.4	243.7	5,293.1	26.8
Grants	65.2	0.0	65.2	0.3	8.3	0.0	8.3	0.0
IDB	0.0	7,521.9	7,521.9	35.0	0.0	3,581.2	3,581.2	18.1
Total	9,197.1	12,282.9	21,480.0	100.0	13,535.8	6,205.4	19,741.2	100.0
%	42.8	57.2	100.0		68.6	31.4	100.0	
Own revenue			**5,548.0**				**5,973.6**	

4.15 In 2000-2004, SENASA reported **average** annual expenditures of approximately US$21.5 million, of which US$9.2 million were recurrent expenses and US$12.3 million in outlays for investment projects. Of the recurrent expenses, the major item was payroll and pension expenses (38%). Recurrent expenses were financed in equal parts by the Revenue Department and own funds. The investment outlays were financed by the Bank (61%), the Revenue Department counterpart (33%), and own funds (6%). In all, in the 2000-2004 period, the Revenue Department contributed an annual average of US$8.4 million (39% of total expenditure), own funds averaged US$5.5 million (26% of total expenditure), and the Bank's loan resources contributed an annual average of US$7.5 million (35% of total expenditure).

4.16 In the same 2000-2004 period, the average annual revenue of own funds totaled US$5.6 million These resources come from fees, services, fines, and penalties, and other minor sources. The main source of revenue is fees, chiefly the fee charged for inspection and sanitary control, which on average brought in 89% of total own funds. This fee is charged for inspections of agricultural products, be they imports, exports, or products to be marketed locally.

4.17 The projections for 2005 were prepared by SENASA, using conservative assumptions, which included: (i) a substantial increase in payroll costs due mainly to the conversion of 100 staff positions in 2005, and, to a lesser extent, to the staff requirements needed to keep the new pest-free areas generated by this project free of fruit flies; (ii) an annual increase of approximately 3% in the cost of inputs also needed to keep the new areas pest-free as of 2007; and (iii) annual increases in own funds from fees are assumed to grow by only 2%, taking 2004 results as the base.[11] The only investment expenses included were the costs of the new project and residual PRODESA investment.

4.18 The projections show average annual expenditure of US$19.7 million, or approximately US$1.8 million less than the historic average. However, as a result of the staff and input increases referred to in the preceding paragraph, an almost 50% increase is projected for average annual recurrent expenditure. Most of this increase will be felt in payroll and pension liabilities for career staff, an item in which the projected annual average is double the historical average. With respect to investment outlays, given that the project is smaller than PRODESA, the projections show a 50% decline in investment expenditure. It is projected that 63% of the financing of recurrent expenses would come from Revenue Department contributions and 37% from own funds. The projections show the Revenue Department would cover the bulk of wage and pension expenses for the career staff and non-career staff of SENASA, while the institution would largely cover its nonpayroll operating expenses. Also, 58% of investment outlays would be financed with the Bank's loan resources, 39% with the Revenue Department's counterpart contributions to the new project, and 3% with own funds applicable to investments projected for 2005.

3. Viability of the counterpart

4.19 As the borrower, the Peruvian Revenue Department will be responsible for servicing the debt. The project local counterpart will come from Revenue Department budget appropriations for SENASA. The counterpart contribution is considered viable for the following reasons: (i) the Revenue Department has already arranged for the allocation and taken it into account in the public sector's long-term planning. and (ii) as the preceding section showed, the average annual

[11] The 2% growth could be conservative, given that, according to SENASA, agricultural exports have grown on average between 2% and 10% annually in recent years.

counterpart contributions to the new project (US$2.4 million) will be smaller than the Revenue Department's past counterpart contributions to PRODESA (US$4.4 million).

4. Financial sustainability of SENASA

4.20 The financial viability of SENASA needs to be examined from three different angles: (i) coverage of personnel costs entailed in the permanent activities; (ii) the capacity of SENASA to cover operating expenses other than payroll costs associated with the permanent activities; and (iii) the ability of SENASA to generate resources for an emergency fund.

4.21 As mentioned in the conceptual considerations section, it is assumed that personnel and pension costs for permanent activities will be defrayed by the Revenue Department. Given the increase in those costs and their allocation to fiscal resources, the projections show a substantial increase in the Revenue Department's contribution to covering these expenses, from an annual average of US$4.4 million in the past to a projected US$8.5 million, or an increase of US$4.1 million. Although a considerable part of that increase (US$3.5 million or 85%) corresponds to wage adjustments and to the pension costs and benefits of incorporating personnel with temporary contracts (see paragraph 4.3) in the career staff payroll, already approved in the budget, the continuity of financing for personnel costs associated with continuous services will certainly depend on ongoing Revenue Department contributions to SENASA's budget. Current budget support by the Revenue Department for regularization of the staff, plus the importance for the Revenue Department of increasing agricultural exports, suggests that the Revenue Department will continue to support financing of the payroll costs for personnel engaged in SENASA permanent activities.

4.22 At the same time, conservative projections of revenue show own funds covering operating expenses, other than payroll expenses, for continuous services, and they point to potential savings of approximately US$680,000 per year[12] for an emergency fund. In short, if the assumptions of ongoing Revenue Department support to cover the payroll and the other assumptions used in the projections materialize, then in just 10 years of operation SENASA will be on its way to achieving financial sustainability on a par with, or superior to, comparator institutions in the region.

D. Social and environmental impact

4.23 The following potential social and environmental impacts of the project were assessed: (i) impacts on the human population; (ii) direct impacts on the physical

[12] Own revenue of US$5,974,000 less expenditure paid out of own funds of US$5,293,000.

environment; (iii) impacts resulting from laboratory work; and (iv) impacts on biological resources.

4.24 The environmental impact of the proposed project is generally beneficial, since its objective is to strengthen activities thought to have positive effects on human health and on the environment. Furthermore, institutional strengthening and execution of the fruit fly component, both of which are financed for SENASA under PRODESA, have produced an institution with experience in handling possible environmental risks and with the technical capacity to avoid them. At the same time, the main thrust of the project is to continue using integrated pest management in agricultural and livestock practices, through biological control, accompanied by the use of biological pesticides rather than the chemicals used in PRODESA. The project will continue PRODESA's successful efforts to encourage private sector and community participation in sanitary tasks, all of which enhances the project's sustainability.

4.25 In order to ensure that environmental risks identified as consequences of project activities are mitigated and the benefits maximized, the following measures will be built into the operation: (i) the establishment of proper rules for the disposal of solid toxic residues and for other environmentally sensitive processes; and (ii) the changeover from chemical to biological pesticides; and (iii) the hiring of an independent consultant to audit compliance with the rules.

4.26 With respect to the establishment of appropriate rules, the mitigation activities envisaged for the project focus on two areas: the first comprises the issuance of directives, compliance with which is obligatory for project execution. Today, the Fruit Fly Subdivision of the Plant Health Division already has three manuals, clearly detailing the procedures that staff must follow in carrying out the various control and eradication activities and those related to the breeding and sterilization of fruit flies in the laboratories in Piura and Lima, namely (i) the fruit fly detection system manual; (ii) the manual for the integrated control area quality assurance system; and (iii) the procedures manual for quality assurance in the *Ceratitis capitata* fruit fly breeding and sterilization control process. The manual for the integrated control area quality assurance system must, first, be adapted to the use of biological pesticides, with the addition of a specific procedure. The Procedures manual for quality assurance in the *Ceratitis capitata* fruit fly breeding and sterilization control process must include the use of equipment and clothing for personnel (such as gloves, overalls, etc.), and design and incorporate a specific procedure for burning waste. Second, compliance with the standards in the new version of the manuals must be made compulsory for the execution of project activities. The second activity entails requiring the pesticide supplier to provide its product in large (200-liter) containers, to collect the empty containers, and to dispose of them according to the rules and regulations in force.

4.27 The changeover from chemical to biological pesticide is a core component of the project's environmental management plan and one that clearly shows the cross-cutting nature of the environmental dimension in the fruit fly control and eradication activities to be carried out as part of the project. Execution of the project will avoid the use of 36,000 liters of Malathion, a chemical pesticide that is harmful to beneficial fauna and poses a risk to human health, as it will be replaced with Spinosad, a biological pesticide. Spinosad has no negative effects on benign fauna and is considered to have a low level of toxicity for human beings, mammals, and birds, although it is considered to be relatively poisonous to fish. In this project there is little likelihood of water ways being affected by the Spinosad.

4.28 The hiring of an independent consultant to monitor compliance with the procedures established in the aforementioned manuals is the third environmental risk mitigation measure. The Environmental Auditor will report directly to the board of directors of SENASA. Part of his duties will entail submitting a semiannual work plan that includes scheduled and unannounced visits to the different valleys in which the project is under way. This will require the LEU to provide the necessary resources and show some flexibility with respect to expenditure on spot check visits. Every six months, the Environmental Auditor will present audit reports, which will include both verification of the indicators considered in the matrix of indicators for monitoring environmental impacts, which forms part of the environmental management plan, and verification of the indicators shown in the logical framework, together, if need be, with recommendations for improvements in procedures or new activities and indications of responsibilities. The terms of reference governing the hiring of the Environmental Auditor are included in the environmental management plan.

E. Benefits

4.29 The project will help raise the competitiveness and increase exports of Peruvian fruit and vegetable products, by opening up new export markets and integrating producers into production chains. The principal beneficiaries will be farmers in the valleys in which the project will be actively carried out, as it will bring down their production costs and/or improve the sale price of their produce. The pest is expected to be eradicated in Tacna and Moquegua by the end of 2005.

4.30 It is estimated that approximately 60,000 fruit and vegetable farmers, with nearly 400,000 hectares of farmland in the coastal valleys, are directly affected by the presence of the pest, while the other farmers are also indirectly affected by the trade restrictions triggered by the pest.

F. Risks

4.31 One risk identified during project preparation was the possible loss of personnel trained to fulfill fruit control and eradication functions in the Executive Divisions of

SENASA because they are hired on temporary contracts. To mitigate that risk, SENASA developed a strategy and a plan that gives priority to the creation of positions for those divisions within the institution's new staff assignment table. The analysis (see paragraphs 4.3 and 4.4) found that the plan mitigates this potential risk.

(PE-L1007)
FRUIT FLY (CERATITIS CAPITATA) CONTROL AND ERADICATION IN COASTAL AREAS OF PERU
LOGICAL FRAMEWORK

NARRATIVE SUMMARY	INDICATORS	MEANS OF VERIFICATION	MAJOR ASSUMPTIONS
GOAL			
To help improve competitiveness and expand fruit and vegetable exports	– Increase in exports of fruits and vegetables vulnerable to the pest. – Increase in the supply of fly-free fruits and vegetables from small farmers	– Official statistics – Final evaluation of the project	
PURPOSE			
To obtain and maintain areas free of *Ceratitis capitata* and reduce economic losses caused by fruit flies	By the end of the execution period: 1. Between 5,000 and 42,000 host hectares free of *Ceratitis capitata* 2. Loss of between US$2.1 million and US$9.3 million in gross value of output of host crops avoided in the areas targeted 3. Private cost of pest control of between US$322/ha and US$0/ha. Avoided (post eradication and free area cost included) 4. 57,000 hectares in post eradication stage and in free areas with no demand for chemical pesticides 5. Use of 36 tons of chemical pesticide avoided in suppression and eradication stages, in the areas targeted	1. SENASA resolution and report by the Detection System 2. Official Ministry of Agriculture statistics and report of the Integrated Fruit Fly Information System (SIIMF) 3. SENASA surveys and report of the eradication committees 4. SENASA resolutions 5. SIIMF report	Social and market conditions normal

NARRATIVE SUMMARY	INDICATORS	MEANS OF VERIFICATION	MAJOR ASSUMPTIONS
COMPONENTS/OUTCOMES			
I. Eradication campaign			
1.1 Prospecting for pests executed	1.1 Information on the pest is collected and evaluated for planning subsequent stages. Baseline of 78,000 host hectares in planning and prospecting. Year 1, 69,000 hectares; year 2, 57,000 hectares; year 3: 58,500 hectares; and year 4: 60,000 hectares. Over the four years, 14,000 hectares will move to the suppression stage.	1.1 Report of the Integrated Fruit Fly Information System (SIIMF)	Government continues to support SENASA, and provides it with financial resources on time
1.2 Suppression of the pest achieved	1.2 Control measures to reduce the *Ceratitis capitata* population to an FTD equal to or less than 0.1. Base line 13,000 host hectares in suppression: year 1: 17,000 hectares and year 2: 14,000 hectares. Over the four years, 31,500 hectares will move to the eradication stage.	1.2 Report of the Integrated Fruit Fly Information System (SIIMF) On-site inspection	Effective ties between farmers and the project
1.3 Eradication of the pest achieved	1.3 Control measures implemented to reduce the *Ceratitis capitata* population to an FTD equal to or less than 0.01. Baseline 800 host hectares in eradication; year 1: 8,000 hectares; year 2: 18,000 hectares; and year 3: 14,500 hectares. Over the four years, 41,000 hectares will move to the post-eradication stage.	1.3 Report of the Integrated Fruit Fly Information System (SIIMF) On-site inspection	Normal environmental conditions
1.4 Post eradication and free areas achieved	1.4 Control measures implemented to reduce the *Ceratitis capitata* population to an FTD equal to zero. Baseline: 9,000 host hectares in post eradication; year 1: 800 hectares; year 2: 8,000 hectares; year 3: 19,600 hectares; and year 4: 14,800 hectares. By the end of this stage, 42,000 hectares will have been declared pest-free.	1.4 Report of the Integrated Fruit Fly Information System (SIIMF) SENASA resolution On-site inspection	
II. Surveillance and Continuous Protection of Free Areas			
2.1 Phytosanitary surveillance in place	2.1 42,000 pest-free host hectares are monitored permanently to confirm absence of the pest.	2.1 Report of the Integrated Fruit Fly Information System (SIIMF). On-site inspection.	
2.2 Quarantine protection executed	2.2 42,000 pest-free host hectares are protected to avoid reinfestation by the pest.	2.2 On-site inspection of quarantine protection	

<table>
<tr><th>NARRATIVE SUMMARY</th><th>INDICATORS</th><th>MEANS OF VERIFICATION</th><th>MAJOR ASSUMPTIONS</th></tr>
<tr><td>2.3 Emergency plan in place

III. Social and Environmental Monitoring
3.1 Environmental audit carried out</td><td>2.3 Any focus of the pest in pest- free areas is promptly detected and eliminated.

3.1 Social and environmental audit reports are approved by SENASA's board of directors</td><td>2.3 Report on treatment of foci

3.1 Report available at www.senasa.gob.pe</td><td></td></tr>
<tr><td colspan="4">ACTIVITIES</td></tr>
<tr><td>I. ERADICATION CAMPAIGN
1.1 Planning and prospecting executed
a. Planning and organizing the control and eradication process
b. Designing and implementing the official detection system
c. Checking and maintaining official network traps
d. Sampling and evaluating of host fruit
e. Communications with and training for stakeholders
1.2 Suppression executed
a. Checking and maintaining official network traps
b. Sampling and evaluation of host fruits
c. Communications with and training for stakeholders
d. Attaching baits to foliage of host crops
e. Evaluation and maintenance of fauna benefiting intervention areas.
f. Integrated pest management tasks</td><td>BUDGET (US$)
<table>
<tr><th>Components</th><th>Year 1</th><th>Year 2</th><th>Year 3</th><th>Year 4</th><th>Total</th></tr>
<tr><td>ERADICATION CAMPAIGN</td><td>6,591,557</td><td>8,930,071</td><td>5,205,138</td><td>1,120,158</td><td>21,846,924</td></tr>
<tr><td>Pest planning and prospecting executed</td><td>722,061</td><td>592,471</td><td>609,572</td><td>627,192</td><td>2,551,297</td></tr>
<tr><td>Pest suppression achieved</td><td>3,698,927</td><td>3,076,895</td><td>0</td><td>0</td><td>6,775,822</td></tr>
<tr><td>Pest eradication achieved</td><td>2,138,461</td><td>5,000,984</td><td>3,963,729</td><td>0</td><td>11,103,175</td></tr>
<tr><td>Post eradication of the pest, achieved</td><td>32,108</td><td>259,720</td><td>631,837</td><td>492,966</td><td>1,416,630</td></tr>
<tr><td>SURVEILLANCE AND PROTECTION OF PEST-FREE AREAS</td><td>228,823</td><td>263,164</td><td>468,694</td><td>976,191</td><td>1,936,872</td></tr>
<tr><td>Free areas achieved and maintained</td><td>228,823</td><td>263,164</td><td>468,694</td><td>976,191</td><td>1,936,872</td></tr>
<tr><td>ADMINISTRATION AND SUPERVISION OF THE PROJECT</td><td>350,590</td><td>379,052</td><td>351,308</td><td>386,308</td><td>1,467,258</td></tr>
<tr><td>LEU operating</td><td>350,590</td><td>344,052</td><td>351,308</td><td>351,308</td><td>1,397,258</td></tr>
<tr><td>Midterm and final evaluations</td><td></td><td>35,000</td><td></td><td>35,000</td><td>70,000</td></tr>
<tr><td>OTHER</td><td>60,000</td><td>60,000</td><td>60,000</td><td>60,000</td><td>240,000</td></tr>
<tr><td>Environmental Monitoring</td><td>15,000</td><td>15,000</td><td>15,000</td><td>15,000</td><td>60,000</td></tr>
<tr><td>External financial audit</td><td>25,000</td><td>25,000</td><td>25,000</td><td>25,000</td><td>100,000</td></tr>
<tr><td>Social, economic, and environmental impact studies</td><td>20,000</td><td>20,000</td><td>20,000</td><td>20,000</td><td>80,000</td></tr>
<tr><td>TOTAL (US$)</td><td>7,230,970</td><td>9,632,286</td><td>6,085,140</td><td>2,542,657</td><td>25,491,054</td></tr>
</table>
Does not include interest or credit fee</td><td>Report on activities and budget</td><td>Resources disbursed according to schedule</td></tr>
</table>

NARRATIVE SUMMARY	INDICATORS	MEANS OF VERIFICATION	MAJOR ASSUMPTIONS
g. Pure chemical control in special crops h. Quarantine protection of regulated areas i. Collect and bury host fruits with no commercial value **1.3 Eradication executed** a. Checking and maintaining official network traps b. Sampling and evaluating host fruits c. Communications with and training for stakeholders d. Attaching baits to foliage of host crops e. Integrated pest management tasks f. Quarantine protection of regulated areas g. Collection and burying of host fruits with no commercial value h. Controlling pest larval foci i. Application of the Sterile Insect Technique (SIT). **1.4 Post eradication and free areas executed** a. Checking and maintaining official network traps b. Sampling and evaluating host fruits c. Communications with and training for stakeholders d. Quarantine protection of regulated areas e. Application of the Emergency Plan f. Declaration of free areas			

NARRATIVE SUMMARY	INDICATORS	MEANS OF VERIFICATION	MAJOR ASSUMPTIONS
II. CONTINUOUS SURVEILLANCE AND PROTECTION OF FREE AREAS **2.1 Phytosanitary surveillance carried out** a. Checking and maintaining official network traps **2.2 Quarantine protection executed** a. Quarantine protection of areas declared pest-free **2.3 Emergency plan executed** a. Application of phytosanitary measures to eliminate foci **III. ENVIRONMENTAL MONITORING** **3.1 Environmental audit carried out** a. Prepare an annual monitoring plan b. Conduct audits c. Present reports to the board of directors			