

# AGRICULTURAL HEALTH DEVELOPMENT PROGRAM

(PE-0143)

## EXECUTIVE SUMMARY

**BORROWER AND GUARANTOR:** Republic of Peru

**EXECUTING AGENCY:** Servicio Nacional de Sanidad Agraria [National Agricultural Health Service] (SENASA)

**AMOUNT AND SOURCE:**

IDB:	US\$45.6 million (OC)
Local counterpart funding:	US\$30.4 million
Total:	US\$76.0 million

**FINANCIAL TERMS AND CONDITIONS:**

Amortization period:	20 years
Disbursement period:	5 years
Interest rate:	variable
Inspection and supervision:	1%
Credit fee:	0.75
Currency:	U.S. dollars from the Single Currency Facility

**OBJECTIVES:** The objective of the program is to contribute to the development of the country's agriculture sector, and especially its agricultural exports, by improving the levels of plant and animal health. This will be done by implementing specific pest and disease control and eradication programs, and strengthening ongoing agricultural health services, either through SENASA's own activities or by increasing private sector involvement.

**DESCRIPTION:** The main components of the program are described below:

1. Strengthening of ongoing agricultural health actions:
  - a. Institutional strengthening (US\$10,194). The objective is the consolidation of SENASA as the national agricultural health authority, by putting the regional health services in place, hiring the additional personnel needed, defining channels of interaction with the private sector (delegation and accreditation), concluding the pertinent national and international agreements, establishing an appropriate strategy for communicating with users and assuring their participation,

training staff, and contracting the requisite technical advisory services.

- b. Agricultural health surveillance (US\$3,194). This area entails the obtaining of timely and reliable information on the risks of introducing plant and animal pests and diseases, the characteristics they present, the damage they do, and how they spread.
- c. Agricultural health defense (US\$3,157).
  - (i) **Plant and Livestock Quarantine System.** The objective of this subcomponent is to prevent the entry of exotic health problems by means of control and inspection activities at official entry points into the country covering 100% of farm products, together with the quarantining of all animals and plant reproductive material officially brought into the country. The program will finance the rehabilitation of the existing Livestock Quarantine Station and the construction of the Agricultural Quarantine Station, together with the installation of checkpoints at seaports and airports;
  - (ii) **Registration and control of inputs.** The intention is to maintain and continuously evaluate an Agricultural and Livestock Input Use Control System by reviewing the existing regulations, training the necessary technical personnel, establishing a National Pesticides Commission, and concluding agreements with international specialized agencies for both input control and the control of residues in farm products.
- d. National laboratories system (US\$3,439). The objective in this case is to provide support to ongoing health projects and actions by identifying the causal agents of health problems and analyzing input samples to verify their quality. The project will finance the upgrading of the two national reference laboratories for these purposes.

## 2. Specific projects

- a. Fruitfly control and eradication (US\$25,760). The objective of this subcomponent is to maintain fruitfly-free areas in 25 selected valleys in Peru's coastal region, and also to reduce the harm caused by fruitflies (by some

50% over the five-year life of the project). By the end of the project, the detection and control system would be set up, the laboratory for producing sterile fruitflies will have been modernized and the fruit producers will be organized and trained in comprehensive pest management.

- b. Biological control of agricultural pests (US\$4,292). The objective here is to promote the use of biological pest control in crops of economic importance, with the aim of reducing the cost of control and contributing to the preservation of the environment. The goal is to achieve 24% coverage of the area where the main crops are grown and to reduce the cost of pest control by 50% in the areas covered. The specific activities will comprise: (i) adaptation of the laboratory of the Center for Introduction and Breeding of Useful Insects (CICIU) for the introduction and large-scale breeding of beneficial agents; (ii) maintaining and organizing 132 private biological control laboratories, as self-financing microenterprises; and (iii) training professional and producers in the production and use of biocontrol agents.
- c. Foot-and-mouth disease control and eradication (US\$8,644). The objective is control and eradication of foot-and-mouth disease throughout Peru by establishing areas free of the disease. The strategy is based on updating the epidemiologic diagnosis, training professionals and technicians and accrediting enterprises for detection and control of the disease, achieving high levels of immunization by promoting large-scale vaccination, strengthening the external and domestic quarantine system to prevent the spread of the disease, and maintaining health surveillance in order to track the situation and the risk factors involved.
- d. Tuberculosis and brucellosis control and eradication in coastal milksheds (US\$551). The project will promote the declaring of farms free of these diseases, with voluntary participation by farmers in the program. SENASA will promote the accreditation of private enterprises and professionals in order to delegate program activities to them. It is hoped that 25% of the farms will be

brought into the program in the first year and that a further 15% will be included in each subsequent year.

- e. Goat brucellosis control in Lima, Piura, and Ica (US\$402). The purpose of controlling this disease is not just to improve the quality of goat products and byproducts, but also to lessen the risk of communicating the disease to end consumers. The work will focus on securing the participation of the small goat farmers who will be the main project beneficiaries. After an initial diagnostic stage, the vaccination campaign will be started. It will be conducted by SENASA in the beginning, but after appropriate training will subsequently be transferred to the private sector.
- f. Control of scabies in South American cameloids (US\$5,365). The project aims to reduce the incidence of scabies in cameloids and sheep in the south of the country. Scabies affects wool production and quality in llamas, alpacas, and sheep. The campaign will be based on application of a systemic antiparasite treatment and systematic training for the small farmers.

**ENVIRONMENTAL  
CLASSIFICATION:**

The Committee on Environment and Social Impact (CESI), at its meeting of April 30, 1996, classified this as a Category III operation. The Environment and Social Impact Summary was approved on March 7, 1997.

**BENEFITS:**

The main benefits of the project will result from: (i) the lessening of the probability of entry of pests previously unknown in the country and, consequently, from the prevention of economic losses in agricultural production; (ii) savings due to reduction of economic losses caused by diseases or pests present in the country, such as fruitflies, foot-and-mouth disease, brucellosis and bovine tuberculosis, and goat brucellosis and scabies in South American cameloids and sheep; (iii) the reduction in treatment costs at the farmer level; (iv) access to external markets; and (v) the lessening of harm to the environment.

The environmental impact of the proposed program is in general positive, since its objective is to strengthen activities with proven favorable effects on human health and the environment. In addition,

the program's basic thrust is to introduce comprehensive pest management in agricultural practices by introducing biological control, which will enable a substantial reduction in the use of agricultural chemicals.

**TARGETING OF POOR  
BENEFICIARIES:**

Although 61% of Peru's total population lives below the poverty line (estimated at 246 new soles per capita per month), and poverty in rural areas is more pronounced and pervasive, according to estimates made for a recent Bank project with the National Compensation and Social Development Fund (FONCODES), this project is not aimed at low-income segments of the population. However, it does embrace projects such as those to control goat brucellosis and scabies in cameloids, which specifically targets poor beneficiaries; moreover, SENASA will earmark a part of its stock of foot-and-mouth vaccine for small farmers.

**RISKS:**

The fundamental risk of the program is the possibility that SENASA's institutional development may not follow a pattern consistent with the requirements for setting up an effective national agricultural health authority. To prevent this happening, the government has issued a Supreme Decree that establishes regulations pursuant to the laws that created SENASA and established its organizational structure and assigns the agency effective management of the human, physical, and financial resources, at both the national and regional levels; these powers must enable it to act with the flexibility and promptness required when health emergencies strike. The other fundamental risk lies in the sustainability of the financial effort required for maintaining the health infrastructure and the projects that the program will finance. In this case, the adjustment of its tariffs will make it possible to increase and maintain the level of its own resources generated by SENASA while the regulation of the accreditation and delegation mechanisms will ensure the continuous participation of the private sector in the different projects.

**CEILING AMOUNTS  
FOR PROCUREMENT:**

The cost ceilings above which project procurement will have to be by international competitive bidding are US\$250,000 for the procurement of goods and related services, and US\$1 million for civil works.

**THE BANK'S  
COUNTRY AND  
SECTOR STRATEGY:**

The basic components of the Bank's strategy in the country are: (i) to support the economic modernization process by paying special attention to the second stage of the structural reform process, the rehabilitation and expansion of the productive infrastructure, the financing of private investment,

and the development of an institutional framework and policies that will encourage rational management of renewable natural resources and investment in agriculture; (ii) to help reduce poverty and increase the coverage and efficiency of the systems for delivering social services, by means of specific projects to reduce poverty and support the reforms and technical assistance in health and education; and (iii) to support efforts to modernize the Peruvian State, with emphasis on increasing the capacity of the central level of the Executive Branch, reforming the Judicial Branch, and modernizing the public administration at the provincial and district levels. In the case of the agricultural sector in particular, the Bank's fundamental objectives are to promote private investment and reduce poverty rates in rural areas. The promotion of agricultural health will make it possible to increase the profitability and quality of agricultural production, and to develop agricultural exports, and will have significant favorable effects on human health and the rural environment, all of which serve to underscore the compatibility of the proposed program with the strategies cited.

**SPECIAL  
CONTRACTUAL  
CONDITIONS:**

The following must have been implemented before the first disbursement under the loan: (i) the establishment and installation of the Program Coordination Committee and its Executing Unit (paragraph 3.2); (ii) submission to the Bank of the yearly operating plan for the first year of the program (paragraphs 3.4 and 3.17); (iii) presentation of evidence that a request for advisory services has been submitted to the Pan American Health Organization (PAHO) (the "agreement") in regard to the design and implementation of a program to check residues in agricultural products, in accordance with terms of reference previously agreed upon with the Bank (paragraphs 2.6, 2.7, and 3.9); (iv) presentation of evidence as to the terms for monitoring and verifying the funds collected by the Regional Agrarian Directorates for rendering agricultural health services (paragraph 4.15).

During the execution of the program, the borrower, through the executing agency, must satisfy the following conditions: (i) within six months after the first disbursement under the loan, the Supreme Decree enabling updating of the fees charged for agricultural health services shall have been issued to the Bank's satisfaction (paragraph 4.15); (ii) within 12 months after the first disbursement under the loan, the legal provision formalizing the

system of accreditation of private professionals and diagnostic laboratories in animal and plant health, and the order ["Resolución Jefatural"] giving official sanction to the operating manual on agricultural quarantine shall have been issued (paragraph 3.10); (iii) within 12 months after the first disbursement under the loan, the necessary procedures manuals for implementing existing legal provisions in order to follow up on the use of agricultural chemicals in farming must be presented, to the Bank's satisfaction (paragraph 3.27); (iv) by October 31 of each year, the POA for the following year shall have been submitted to the Bank (paragraph 3.17).

## I. FRAME OF REFERENCE

### A. Macroeconomic aspects

- 1.1 The economic program applied by Peru since 1990 has proven successful. The stabilization and structural reform measures carried out laid the foundations for the period of economic expansion that took place between 1993 and 1995. The latter year saw annual growth averaging 8.4% *per annum* while inflation was brought down to 10%. The most vulnerable area of Peruvian economic performance was the balance of payments current account deficit, which grew from 4.8% of GDP in 1992 to around 7.2% in 1995, as a result of the imbalance between investment expenditures and domestic savings. However, the efforts to reduce this deficit in 1996 succeeded in bringing it down to 5.7% of GDP and the rate of GDP growth fell back from 7.0% in 1995 to 2.8% in December 1996. In addition, during this period Peru virtually completed the process of normalizing its relations with the international financial community.
- 1.2 The basic challenges facing the development process are connected with the effecting of investments and the deepening of the structural reforms, which will make it possible to increase the economy's competitiveness, especially as regards the boosting and diversification of exports. The primary efforts in this field need to be concentrated in improving of the productive structure and in modernization of sectors such as agriculture, mining and fishery. Poverty reduction and modernization of the state constitute essential complements for laying the foundations for equitable and sustainable growth.

### B. The agriculture sector

#### 1. Development of production

- 1.3 The agriculture sector is one of the economy's most important sectors, accounting for about 8% of GDP and employing 34% of the economically active population. Peru's total land area is some 129 million hectares, of which about 30.9 million hectares are usable for agriculture and stock raising, with 3.7 million hectares being cropland and 27.2 million hectares natural pastures. It is estimated that about 73 million hectares consist of woodlands, mountains, and hills.
- 1.4 Peru's agriculture is carried out in three natural regions: the coast, the uplands and the jungle, which differ in their climatic, topographic hydrological and soil characteristics. Fruit crops, which represent the country's greatest potential in terms of exports, are raised in all three natural regions, but the best prospects are offered by the coastal region. The main livestock



raised consists of cattle, sheep, goats, pigs, and cameloids such as llamas and alpacas.

- 1.5 Peru's agricultural exports totaled US\$238 million in 1993, the chief products involved being asparagus, coffee, marigold flower meal, and sugar. Agricultural imports amounted to US\$616 million, the main items being sugar, rice, corn, and powdered milk. Almost all agricultural chemicals used in Peru are imported. In 1993, pesticide and fertilizer imports totaled US\$39 million.
- 1.6 In the last two years, as a result of the general surge of the economy, the agriculture sector has posted considerable recovery, reaching a growth rate of 14.7% in 1994. However, in 1995 the increase in the agricultural product was only 5.6% *per annum*.

## 2. Constraints on development of the agriculture sector

### a. Physical and technological constraints

- 1.7 The growth of Peruvian agriculture's production and productivity has been severely limited by rigidities and restrictions on the use of the available land and by the low level of investment in health research and control. The possibilities for extending the agricultural frontier are quite small in Peru's case. Of the country's total area of 129 million hectares, only 6% (6.74 million hectares) has the potential for cultivation and 3.7 million hectares of this is currently under cultivation. In view of the little investment in technology generation and transfer, it is clear that the increase in GDP is due primarily to expansion of the cultivated area in the uplands and the region bordering the jungle.

### b. State intervention in the agriculture sector

- 1.8 In addition to the physical and technological constraints already mentioned, the policies applied in the sector and the accompanying institutional structure go a long way towards explaining the stagnation of Peruvian agriculture. Until the beginning of the 1990s agricultural policy was characterized by State intervention in the price system and foreign trade. In addition, the agrarian reform process caused uncertainty about ownership rights, segmented the land market, and severely limited private investment. As a result of the structural reforms introduced since 1990, the sector policy framework has improved appreciably.

### c. Allocation of public expenditure

- 1.9 Between 1970 and 1990 public expenditure in the agriculture sector diminished in real terms, and was also concentrated in the financing of large irrigation projects of questionable economic value, while allowing services such as research and technical assistance, crop and livestock health, provision of information, and conservation of renewable natural resources to deteriorate.

During the period from 1985 to 1990 a large portion of the expenditure was channeled into credit, marketing, and input subsidies. Since 1990, the liquidation of the Banco Agrario and of the Empresa de Comercialización de Alimentos [Foodstuffs Marketing Corporation] (ECASA), the limitation of the activities of the Empresa Nacional de Comercialización de Insumos [National Inputs Marketing Corporation] (ENCI), and changes in irrigation policy in large measure remedied this situation and made it possible to increase the proportion of funds invested in land titling, small- and medium-scale irrigation, and natural-resource management.

d. The institutional organization of the Agricultural Public Sector (APS)

- 1.10 The institutional organization of the APS in effect in 1990 was designed to manage the extensive State intervention in the production and marketing of agricultural products. For several decades prior to 1990 Peru's agricultural public sector had seen uninterrupted growth, to the extent that by 1990 the Ministry of Agriculture and its associated agencies had about 45,000 employees.
- 1.11 In implementing the APS reorganization plan, Peru issued Legislative Decree 25,902, of November 1992, which, as the Organic Law of the Ministry of Agriculture: (i) reaffirmed the normative nature of the Ministry of Agriculture (MAG), created the Agricultural Information Office (AIO), and restructured the Agricultural Planning Office (APO); (ii) created and defined the functions of three decentralized agencies responsible for the main agricultural services: the National Agricultural Research Institute (INIA); the National Natural Resources Institute (INRENA) and the National Agricultural Health Service (SENASA); and (iii) created the Special Project for Land Titling and Rural Cadaster (PETT), with a duration of four years. As a result of this restructuring the number of personnel employed in the agricultural public sector was drastically reduced, to about 4,000 at the end of 1993.

3. The health situation

a. Plant health situation

- 1.12 Despite the progress made by SENASA, there is no organized information system concerned with agricultural pests and diseases in Peru. In recent years about 70 pests and diseases have been detected which could be causing losses amounting to as much as 35% of national output. One of the worst problems in agriculture in the coastal region is the fruitfly, which has prevented more dynamic development of vegetable and fruit exports from that region which, by virtue of its location and climatic conditions would have a considerable comparative advantage. The impact in terms of annual losses has been calculated at US\$100 million.

- 1.13 In addition, to defend the crops against pests and diseases the farmers use excessive quantities of agricultural chemicals, as a result of which the produce harvested is contaminated, beneficial insects are destroyed, new pests develop, and the environment is polluted. This inappropriate application of pesticides also affects the health of consumers and of the workers who apply them. In the same way, the pesticide residues in the products restrict their access to international markets.
- 1.14 In this connection it should be noted that for many years now Peru has had available highly developed techniques for biological control of pests and diseases in agriculture, something that is of special importance for promoting integrated pest management and reducing residues in foodstuffs. The existing demand for biocontrol agents has led to the development of about 80 small laboratories in the country, whose supply of basic materials is currently handled by the State.

b. Livestock health situation

- 1.15 In the livestock subsector, foot-and-mouth disease can be identified as one of the chief health problems for cattle. During the past 10 years there have been epidemic outbreaks of the disease in 1990, 1993, and 1996. In 1996 in particular, areas like Puno, Arequipa, and Tacna were affected, which had previously remained free of the disease for many years. The disease affects milk and meat production and losses in an epidemic year such as 1996 are estimated at US\$7.5 million.
- 1.16 Also important because of their economic impact and effect on human health are brucellosis and tuberculosis. In the case of the cameloids, about 35% of the national herd is affected by scabies, which damages around 35% of all llama and alpaca fiber; this has a severe impact on the incomes of the small livestock producers in the upland regions. Goat brucellosis, which occurs in the departments of Lima, Piura, and Ica, affects the poorest segments of the population.

4. The institutional and legal situation

- 1.17 Until the end of 1992, agricultural health occupied a secondary position in the structure of the MAG. However, in 1992, in the context of the modernization of the State and of the deregulation of foreign trade, it was decided that organizing the National Agricultural Health Service (SENASA), as an autonomous agency attached to the MAG, was a priority. However, the setting up of the agency was delayed by the shortage of qualified human resources and of the technical and financial resources needed. In addition, the regional directorates of the MAG retained administrative management of the personnel at regional level, which complicated the organization of the Regional Agricultural Health Services. In the same way, although there is legislation establishing charges

for the services provided, a large proportion of the funds collected went directly into the Treasury's general revenues or remained in the hands of the MAG regional agencies.

- 1.18 The recovery of economic activity in Peru has brought about a significant increase in imports of agricultural products; in this case the health services are essential for preventing the entry or spread of exotic or alien health problems. Moreover, a renewal in farm exports is one of the alternatives available for improving the balance of payments current account position. Peru is a signatory to the World Trade Organization agreements, which require application of the criteria of transparency and risk analysis with regard to plant and animal health measures.

5. Agricultural health activities

a. Defense or inspection and agricultural quarantine

- 1.19 There are major deficiencies in quarantine procedures at border crossings, seaports, and international airports, especially at the northern border with Ecuador and the southeast border with Bolivia, owing to the illegal movement of cattle there, and on the eastern border with Brazil, because of the importation of cattle across it. It is also necessary to strengthen the internal control posts in order to separate the epidemiologically different zones and to step up control and inspection in places where cattle and plants are concentrated, such as fairs and holding centers for cattle and nurseries and stores for plants.

b. Health surveillance

- 1.20 In the case of livestock health, only the surveillance model regulated at the international level by the Pan American Foot-and-Mouth Disease Center is being effectively applied. Laboratory diagnostic data are also being received concerning other diseases such as brucellosis and tuberculosis. There is no active surveillance system operating through the monitoring of priority species and diseases; a sampling system should also be established that will make it possible to declare the country or parts of it as being free from or suffering only a low incidence of particular livestock health problems. In the case of plant health, the existing surveillance relates basically to what is applied in the Tacna area and the northern part of the San Lorenzo valley regarding fruitflies.

c. Laboratory diagnosis and input control

- 1.21 For livestock, the Central Livestock Diagnostic Laboratory was set up in 1994 in the La Molina facility and with part of the personnel of the livestock laboratory that used to operate in the Ministry of Health. Accordingly, although there is the basis for a reference laboratory, the existing facilities need to be improved, additional

equipment must be provided, what equipment is available needs to be modernized, personnel must be trained, and modern diagnostic techniques must be instituted. It should be noted that there are some 15 laboratories with livestock diagnosis capacity in the country, and these could be made into an effective network if they were accredited on the basis of standardized criteria. There is not at the moment capacity for performing the required checks in the case of biological products for animal use.

- 1.22 Regarding plant health, a central reference laboratory has also been set up, using the personnel and facilities of the National Agricultural Research Institute (INIA). Similar to the situation prevailing in regard to livestock, there are around 25 laboratories performing plant diagnostic work within the sphere of the universities and the private sector which, by means of accreditation under appropriate regulations and supervision, could form a national plant diagnostic network, under referral to SENASA. So far as control of agricultural chemicals is concerned, Peru does not currently have capacity to make the measurements required, or for checking residues in foodstuffs. Even though this capacity is not available in the private sector either, there are laboratories which could quickly be equipped to do this work if there were a demand for such services. However, no agency or organization in the country can perform the confirmation or reference analyses if it does not have the requisite equipment.

d. Projects for control and/or eradication of health problems

- 1.23 For crops there is basically one agricultural pest control project in operation, for fruitflies, both for the actions that are being carried out in Tacna under the Peru-Chile agreement, and in the case of the San Lorenzo Valley for mango exports to the United States. Mention should be made here of the Fruitfly Laboratory in La Molina which, if provided with sufficient equipment and human resources, could meet the needs of a national program on this subject. Quarantine measures are also being carried out with a view to collaborating with the private sector for moniliasis in cocoa beans and Sigatoka disease in bananas. Another important point is the existence of around 80 laboratories for producing and distributing biological control agents; the State provides these laboratories with the basic material they use.
- 1.24 In the livestock health sphere, for practical purposes coordinated actions are only being conducted with respect to foot-and-mouth disease. These consist basically of control of foci, perifocal vaccination with oil-adjuvant vaccine, epidemiological surveillance, and quarantine measures at border crossings, seaports, and airports. Regarding brucellosis and tuberculosis, the private sector performs certain measures as a result of which SENASA would be able to certify farms as free of the diseases. However, nothing whatsoever is being done to control scabies in cameloids, despite the considerable losses caused by the disease.

6. The Bank's strategy in the country and in the sector

- 1.25 The basic components of the Bank's strategy in Peru are: (i) to support the process of economic modernization, paying special attention to the second stage of the structural reforms, the rehabilitation and expansion of productive infrastructure, the financing of private investment, and development of an institutional and policy framework that encourages rational management of renewable natural resources and investment in agriculture; (ii) to contribute to the efforts to reduce poverty and increase the coverage and efficiency of the social services delivery systems, by means of specific projects to reduce poverty and support for the reforms and technical assistance in health and education; (iii) to support the efforts to modernize the Peruvian State, with emphasis on increasing management capacity in the central level of the executive, reform of the judicial branch and modernization of public administration at provincial and district levels. In the case of the agriculture sector, the Bank's fundamental objectives are promotion of private investment and reduction of rural poverty. The promotion of agricultural health makes it possible to increase the return from and quality of agricultural production, enables development of sector exports and has significant favorable effects on human health and the environment, all of which serves to underscore the compatibility of the proposed program with the strategies cited.

C. Action by the IDB and other agencies in the sector

- 1.26 Between 1961 and 1983 the loans granted by the Bank to Peru in the agriculture sphere focused on the financing of credit, small and medium irrigation works, rural development, and settlement. Between 1974 and 1980 the National Foot-and-Mouth Disease Program, funded by the Bank, was carried out. This program enabled the installation of a technical and administrative structure that served as basis for the country's livestock health organization and made it possible to reduce the incidence of the disease. Because of its almost total dependence on the public budget at a time of scarce resources, the infrastructure deteriorated and the trained personnel were withdrawn.
- 1.27 Since 1990, the IDB has been working in coordination with the World Bank on an investment strategy for the rehabilitation of irrigation systems, provided the users are prepared to absorb the incremental costs of the project. Similarly, the two institutions have been exploring the possibility of rural development and natural resource management projects, and have coordinated actions leading to the new legal framework for land registration and to the Water Resources Act currently before the National Congress.

D. Conceptual aspects of the project

- 1.28 Surmounting the principal constraints affecting production and exports. The trade balance deficit is one of the biggest risks involved in the trade deregulation process of the Peruvian economy. The development of agricultural exports, produced primarily in Peru's coastal region, is an attractive alternative for export diversification. However, the health problems form a barrier to access for such exports to international markets; the investment of public and private funds to surmount this obstacle will therefore be amply justified. In the same way, the losses caused by pests and diseases lower the farmers' income potential so control or eradication will be a valuable tool for lessening rural poverty. The increasing of the volumes of agricultural products traded in an export-oriented economy and the commitments assumed by Peru as part of its membership in the World Trade Organization (WTO) fully justify the investments in institutional and operational strengthening of the health authority.
- 1.29 Promoting alternative biological control techniques. The project will seek to make biological control techniques available to farmers as alternative methods for controlling pests and diseases in place of or to complement intensification of pesticide use, with the aim of minimizing possible negative impacts on the environment and human health and increasing acceptance of Peruvian exports in international markets.
- 1.30 Delineating the roles of the State and of the private sector, and promoting the sustainability of the program. In this respect it should be noted that, notwithstanding it being considered primarily a public good, agricultural health is not exclusively a State responsibility since a large number of health practices are carried out at the private level: vaccinations, pesticide applications, and so forth. The fundamental responsibility of the State in this process is to support the development of the health authority (SENASA) so that it will be able to take care of directing and coordinating the proposed program and be in a position to take the ongoing actions necessary for protecting the country's agricultural assets. However, the State will seek to delegate to the private sector the largest possible proportion of the work to be done, while retaining supervisory authority where necessary. In this connection, the organization and accreditation of associations of farmers will be promoted, as a means for encouraging the private sector to assume greater responsibility for the direct provision of services within the framework of the specific pest and disease control and eradication projects. SENASA, for its part, will have to set up and apply systems for recovering the cost of the services provided, and thereby guaranteeing the sustainability of its activities.

## II. THE PROJECT

### A. Objective

- 2.1 The objective of the program is to contribute to the development of the country's agriculture sector, and especially to the development of agricultural exports, by means of improvement of the levels of plant and animal health. This will be accomplished through the implementation of specific pest and disease control and eradication projects and strengthening of the permanent agricultural health services, either by means of SENASA actions or by increasing private sector participation. The program actions will have significant repercussions on both agricultural productivity and the promotion of human health and the environment.

### B. Description of the program

#### 1. Strengthening of permanent services component

##### a. Institutional strengthening

- 2.2 The objective of this case is consolidation of SENASA, at the national, regional, and local levels, from both the legal and administrative standpoints and as regards the technical side of agricultural health and input control in Peru. As of the second year of the program, SENASA's institutional structure must be fully operational. This process will require review of the current health legislation; implementation of the health services at regional level by means of the selection and contracting on a fixed-term basis of 209 additional staff and management by these services of the revenues generated at regional level; the allocation of the necessary resources by the Treasury; the concluding of agreements with the Regional Agrarian Directorates and with other national and international agencies and organizations; the issuing of rules on delegation and accreditation to ensure interaction with the private sector; establishment of an appropriate strategy for communication with users; implementation of the staff training program and contracting of the appropriate technical advisory services.

##### b. Agricultural health surveillance system

- 2.3 The aim is to have timely and reliable information on the risks of introduction and characteristics, damage caused, and spread of pests and diseases affecting crops and livestock. To achieve this aim the intention is to design and establish an information system concerned with these factors, defining the priority species and problems to be kept under active surveillance by means of monitoring and prospecting. The primary information will flow from the regional and subregional units, checkpoints at border



crossings, seaports, and airports, internal checkpoints, SENASA laboratories and private laboratories, professionals, nurseries, fairs, abattoirs, dairy plants, pilot farms, and post-entry quarantine facilities.

c. Agricultural health defense system

- 2.4 Checkpoints at border crossings, seaports, and airports, and post-entry quarantine. The objective here is to prevent the entry of exotic or alien health problems by means of control and inspection at the official points of entry into the country of 100% of all agricultural goods and the quarantining of all animals and plant reproductive material officially brought into the country. To do this, infrastructure, equipment, and personnel will be strengthened at nine border crossings, at the riverport of Iquitos, at the Port of Callao, through which 90% of all agricultural products enter the country, at the Jorge Chávez Airport in Lima, and at the other seaports and airports through which goods are brought into the country. It is also the intention to equip the Ventanilla livestock quarantine station and the Zamacola station in Arequipa, and to create the necessary facilities for post-entry plant quarantine in Ventanilla.
- 2.5 Internal quarantine control system. The objective in this case is to prevent the spread of crop and livestock health problems in the country. The intention is to set up 16 internal control posts and also to establish mobile controls, so as to set up containment areas and also to separate zones with different epidemiological conditions. This subcomponent will support the control, in accordance with current regulations, of 100% of the places where livestock is concentrated (fairs, exhibitions, stockyards, etc.), and also nurseries and places where plants are kept.
- 2.6 Input registration and control. The aim in the case of livestock is to ensure the availability of biological products for use with livestock that are really effective for controlling and treating health problems. The goals are: (i) establishment, with the participation of the private sector, of a registration and control system for 100% of the biological products used in each of the specific projects to be financed by the program; (ii) the training of the professional and technical personnel required by the system; (iii) reactivation of the agreement with the Pan American Foot-and-Mouth Disease Center for supply and control of foot-and-mouth vaccine and the establishment, with the collaboration of the Pan American Institute on Foodstuff Protection and Zoonoses (INPPAZ), of a system for checking residues in products of livestock origin.
- 2.7 In the case of crops the objective is to maintain and constantly evaluate a system of registration and control of inputs for agricultural use, so that such inputs will perform efficiently in plant health applications, without forming a vehicle for disseminating health problems, and in the case of pesticides will

not adversely impact environmental safety. The goals in this field are: (i) review of the existing legislation to make it compatible with the relevant Andean rules; (ii) establishment of the National Pesticides Commission, as a consultative entity with the private sector; (iii) training of the technical and professional personnel required for the establishment of the system; (iv) concluding of agreements with international agencies (FAO, PAHO/INPPAZ, the Board of the Cartagena Agreement, the Codex Alimentarius) and with the domestic private sector; and (v) establishment of a system for monitoring and evaluating pesticide use and the impact of pesticides on Peru's agriculture sector. The program will finance the concluding of an agreement with PAHO/INPPAZ for setting up a system for control of residues in products of plant origin.

d. National system of diagnostic and input control laboratories

- 2.8 The objective here is to support the projects and ongoing health measures by identifying the causal agents of health problems, and performing an analysis of samples of agricultural and livestock inputs in order to verify their quality. The project envisages the formation and strengthening of the two national reference laboratories for plant and animal health questions and input control.

2. Specific projects component

a. Fruitfly control, elimination and eradication in the fruit-growing valleys of Peru's coastal region

- 2.9 The objective of this subcomponent is to contribute to the creation and maintenance of fruitfly-free areas in the fruit-growing valleys of Peru's coastal region and to reduce the losses cause by this pest. At the end of the project, Mediterranean fruitflies will have been eradicated from eight valleys with 21,000 hectares of fruit plantations in Tacna, Arequipa, and Moquegua, which will be declared fruitfly-free, while the process will be under way in 17 valleys in Lima, Lambayeque, Ica, and Piura. At the end of the fifth year a reduction of at least 50% is expected in the quantifiable losses caused by fruitflies.

- 2.10 The activities planned under the program include:

- (i) The training and organization of growers (42,700 in five years) into Auxiliary Plant Health Committees (25 in five years) in the valleys where the project is carried out. The intention is also to mount health education and publicity activities, and to institute the process of accrediting professionals and training technicians who will work in a private capacity. Besides complementing the work of SENASA, these actions will enable the future delegation of these activities to the private sector.

- (ii) Implementation of a detection system based on traps (57,000 Jackson traps and 57,000 McPhail traps) for catching insects and fruit sampling, in accordance with international technical rules. This system will make it possible to monitor the level of the insect populations and thereby evaluate the program's effectiveness.
- (iii) Adaptation and use of the La Molina fruitfly laboratory for breeding and production of sterile insects of the different species, together with parasitoids, whose release in the field will serve to complement the control of the insect populations.
- (iv) The utilization of additional techniques for comprehensive pest control, such as cultivation methods (fruit removal and pruning of hosts), and chemical control, through application of pesticides to the foliage if trees are heavily infested.
- (v) The field work will be facilitated by the construction of seven operations centers in different parts of the project's area of influence.

b. Biological control of agricultural pests

- 2.11 The objective of the project is to foster intensive use of biological control in crops of economic importance, in order partially to replace the use of pesticides, lower control costs, and help preserve the environment. The target is to achieve coverage of 24% of the area of the main crops and to reduce the cost of pest control by 50% in these areas. For example, in the case of *Heliothis* in cotton, the cost of control can be brought down from US\$29 per hectare to US\$17 per hectare by means of biocontrol agents, while in the case of rice, the treatment for *Diatrea* drops from US\$779 per hectare to US\$17.5 per hectare.
- 2.12 The specific activities comprise: (i) adapting the Center for Introduction and Breeding of Useful Insects [Centro de Introducción y Cría de Insectos Útiles] (CICIU) for purposes of the introduction and large-scale breeding of beneficial insects; (ii) maintaining and organizing 132 private biological control laboratories as self-financing microenterprises; and (iii) training professionals and growers in the production and application of biocontrol agents.

c. Foot-and-mouth disease control and eradication

- 2.13 The objective of this subcomponent is nationwide control and eradication of foot-and-mouth disease by establishing areas free of the disease. The strategy is based on the following actions: (i) updating the diagnosis of the prevalence of the disease, so as to provide guidance for execution of the project; (ii) amending the Foot-and-Mouth Regulations to secure active community participation

in the project actions; (iii) training producers (8,000), professionals (500), and technicians (1,000), and accrediting enterprises (200), veterinarians (400) and technicians (500) to work in control and eradication; (iv) attaining high levels of immunization, through promotion of large-scale vaccination performed by contracted services or by the private sector through accredited persons and entities (about 14.7 million doses applied over five years); (v) strengthening the external and internal quarantine system to prevent the entry and spread of the disease, and strengthening the epidemiological surveillance system for monitoring the situation and the relevant risk factors.

- 2.14 The project targets are specified for each of the country's geographic areas, in accordance with their present epidemiological situation. In general terms, the aim is to achieve absence of clinical cases of the disease by around the third year of execution of the project, suspension of vaccination as of the fourth or fifth year of the project. Vaccination will be performed with oil-adjuvant vaccine certified as to quality by the Pan American Foot-and-Mouth Disease Center (PANAFTOSA), which can be imported freely. In the high-risk cases, only PANAFTOSA vaccine will be used. Estimates of the number of doses needed by regions and subregions will be made available to farmers and commercial houses each year. SENASA will only act in emergency cases and in isolated areas, when it will contract the necessary services. SENASA will recover both the cost of the vaccine itself and that of its application and these receipts will be used to finance vaccination in the following year.

d. Control and eradication of brucellosis and tuberculosis in coastal milksheds

- 2.15 The objective is to achieve control and eradication of brucellosis and bovine tuberculosis in the milksheds of 12 departments of the country. The project would promote the declaring of farms free of such diseases, with the voluntary incorporation of the farmers into the system. The project strategy is based on: (i) updating of the diagnosis of the incidence of these diseases; (ii) updating of the regulations (decrees) on control and eradication; (iii) training of farmers and of persons connected with dairy cattle; (iv) the accreditation of enterprises, veterinarians and private technicians and laboratories, in order to be able to delegate to them the detection and elimination of animals showing a positive reaction, together with laboratory analyses and other activities. SENASA will perform the definitive tests for declaring farms free of the diseases. The targets are to include 25% of the farms in the first year, and then to add a further 15% in each of the subsequent years.

e. Goat brucellosis control in Lima, Piura, and Ica

- 2.16 The objective is to achieve prevention, control, and eradication of goat brucellosis in the departments of Lima, Piura, and Ica, in order to upgrade the healthiness and wholesomeness of goat products and byproducts. The aim will be to make a diagnosis of the situation and to zero in on the problem in the affected departments in the first year; in the second year a control and surveillance system must be in operation with a view to eradication in the departments concerned, and in the third year the project activities should be gradually extended to the other departments.
- 2.17 The project focuses on the activities that will lead to detection and elimination of positive animals and vaccination when appropriate. About 180,000 goats will be tested; those that show a positive reaction will be sacrificed, for which the authorities are studying amendment of the regulations (decree) to permit compensation for the owners. In view of the low level of incidence of the disease, the cost would be modest. Other health education and publicity activities will also be carried out. The project activities will be performed basically by SENASA personnel.

f. Scabies control in South American cameloids

- 2.18 The intention is to control scabies in sheep and South American cameloids in the departments of Puno, Arequipa, Cuzco, Ayacucho, Apurimac, Moquegua, Huancavelica, Pasco, and Junín. The strategy is based on application of a systematic antiparasite treatment for control of the disease. This application will be done 100% by SENASA in the case of sheep and 24% for cameloids; the remaining 76% will be applied by the farmers, NGOs, and private professionals, for whom SENASA will promote the respective registration and accreditation. SENASA will act by preference in isolated areas and with low-income farmers. The objective is progressively to cover 85% of the cameloid population during the life of the project. SENASA's activities will also be concentrated in health education and publicity targeting small farmers. To this end SENASA will set up about 200 demonstration units in three years in the nine departments concerned.

C. Cost and financing

- 2.19 The total cost of the program is estimated at US\$76 million equivalent of which the Bank would finance US\$45.6 million (60%) from its ordinary capital while US\$30.4 million (40%) would be provided in the form of local funding. The following table shows the investment categories for each of the components and indicates the sources of financing.

CONSOLIDATED BUDGET, BROKEN DOWN BY COMPONENT

Components	IDB	Local <sup>1/</sup>	Total	Percentage
I. ADMINISTRATION AND SUPERVISION	701	381	1,082	1.4
II. COMPONENTS	35,607	29,463	65,070	85.6
A. STRENGTHENING ONGOING ACTIONS	11,612	8,444	20,056	26.4
a. Institutional strengthening	6,780	3,414	10,194	13.4
b. Agricultural health surveillance	537	2,657	3,194	4.2
c. Agricultural health defense	1,832	1,298	3,157	4.2
d. National system of diagnostic and input control laboratories	2,363	1,076	3,439	4.7
B. SPECIFIC PROJECTS	23,996	21,018	45,014	59.2
a. Fruitfly control and eradication	13,209	12,551	25,760	33.9
b. Biological control	1,743	2,549	4,292	5.6
c. Foot-and-mouth disease control	4,018	4,626	8,644	11.4
d. Brucellosis and bovine tuberculosis control	285	266	551	0.7
e. Goat brucellosis control	226	176	402	0.5
f. Scabies control in cameloids	4,516	849	5,365	7.1
SUBTOTAL	36,236	29,843	66,080	86.9
III. FINANCE CHARGES	9,364	557	9,920	13.1
Interest	8,908	0	8,908	11.7
Credit fee	0	557	557	0.7
Inspection and supervision	456	0	456	0.6
TOTAL	45,600	30,400	76,000	100.0
By source	60%	40%	100%	

<sup>1/</sup> Includes local taxes

2.20 The main investment categories are described below (in thousands of U.S. dollars):

1. Administration and supervision (US\$1,082)

2.21 This category (1.4% of the total) will finance the management and support staff of the Program Coordination Unit, plus the equipment and inputs required for administration and supervision.

2. Strengthening of ongoing actions (US\$19,984; 26.3%)

a. Institutional strengthening (US\$10,194)

- 2.22 This category (13.4% of the total) will finance the audiovisual equipment and materials necessary for the health education and publicity activities and the computer equipment and materials for strengthening SENASA's activities. It will also finance the consultancies and advisory services of specialists in areas where SENASA does not possess sufficient experience and the training in Peru and abroad of SENASA staff.

b. Agricultural health surveillance system (US\$3,194)

- 2.23 This category (4.2% of the total) will finance field equipment such as river transport vehicles, materials, and supplies, development of specific software, the establishment of a reliable information system, and the training of staff and about 8,000 farmers connected with the agricultural health surveillance and control work.

c. Agricultural health defense system (US\$3,157)

- 2.24 This item (4.2% of the total) will finance the construction or adaptation of 16 checkpoints and the Ventanilla and Zamacola quarantine stations, laboratory and field equipment, computer, communications, and office equipment, and development of specific software to be used in the quarantine work. The project will also finance the concluding of the agreements with international agencies for input control (INPPAZ), the monitoring of pesticide use and the training of SENASA and private sector personnel in these areas.

d. National system of diagnostic and input control laboratories (US\$3,439)

- 2.25 This category (4.7% of the total) will finance the adaptation and repair of the La Molina national reference laboratories, the provision of equipment and supplies for them, and service contracts for analysis of samples. The laboratories will be provided with equipment for analyzing toxic residues in agricultural products.

3. Specific projects component (US\$45,014; 59.2%)

a. Fruitfly control and eradication (US\$25,760)

- 2.26 This item (33.9% of the total) will finance the following activities: (i) the adaptations and the equipment and supplies needed for the operation of the La Molina Mediterranean fruitfly laboratory (equipment for production and quality control of sterile flies, microbiology and biosecurity equipment). It will also finance the construction of the wastewater treatment plant and of the inputs necessary for the breeding and production of the

insects; (ii) the construction of seven operations centers and four reception and packing centers in the field; and further, the service contracts with specialized enterprises needed for the detection and control activities: installation and review of traps (114,000 units), fruit sampling (260,000 samples) and release of sterile insects (about 212 million in Year 2 and 4,770 million per year as of Year 3; (iii) the organizational, training, and publicity work necessary to involve the producers in the execution of the project, which work will be contracted out to specialized organizations.

b. Biological control (US\$4,292)

- 2.27 This category (5.6% of the total) will finance the following activities: (i) the adaptation and equipping of the CICIU central laboratory for the introduction and production of biocontrol agents; (ii) the strengthening of this center's operations, with a view to supporting the private laboratories; and (iii) the training and publicity activities, which will be contracted out to specialized organizations and will cover about 900 persons in the five years.

c. Foot-and-mouth disease control and eradication (US\$8,644)

- 2.28 This category (11.4% of the total) will finance the following: (i) provision of equipment and field inputs, communications and computer equipment for the effective performance of the surveillance, quarantine, and vaccination work; (ii) purchase of an initial stock of vaccines and the subsequent replacement of the proportion (25%) used for low-income farmers; the vaccination (mostly by the private sector) of 12,250,000 head in five years is envisaged; and (iii) the contracting of services for the application of the vaccine and monitoring of the disease in the areas that are too remote or otherwise unattractive for private sector involvement.

d. Control and eradication of other diseases: brucellosis and bovine tuberculosis; goat brucellosis and scabies in cameloids (US\$6,318)

- 2.29 This category (8.3% of the total) will finance: (i) the equipment and laboratory and field inputs needed for detecting these diseases; (ii) the contracting of studies to determine their levels of incidence and the biologicals necessary for performing the diagnostic tests; (iii) the training and publicity and promotion activities needed to secure the farmers' participation; and (iv) the procurement of the proportion of the biologicals that will be applied directly by SENASA.



4. Finance charges (US\$9,920; 13.1%)

- 2.30 This category will finance the interest (11.7% of the total), the credit fee (0.7% of the total), and the inspection and supervision (0.6% of the total).

D. Bank financing and local counterpart funding

- 2.31 The Bank will contribute 60% of the total cost of the program (US\$45.6 million) from its ordinary capital, while the local counterpart funding of US\$30.4 million equivalent will cover 40% of the total cost. These funds will be contributed by the Republic of Peru from the national budget.

### III. EXECUTION OF THE PROJECT

#### A. Plan of execution

- 3.1 Execution of the project will be the responsibility of the Servicio Nacional de Sanidad Agraria [National Agricultural Health Service] (SENASA), created by Decree-Law 25902 of November 1992 and organized by Supreme Decree 024-95-AG as a decentralized public agency attached to the Ministry of Agriculture, having an independent budget and technical, administrative, financial, and legal autonomy. Article 35 of Supreme Decree 024-95-AG authorizes SENASA to generate funds for its use by charging for the agricultural services it provides. The program's technical work will be carried out through SENASA's organizational structure, i.e. through the Directorates of Animal and Plant Health and the Directorates of the National Fruitfly, Biological Control and Foot-and-Mouth Disease Programs, for the specific projects. The field operations will be carried out for the most part by the Regional Agricultural Health Services.

- 3.2 To coordinate the program actions, prior to the first disbursement under the program an Agricultural Health Program Coordination Committee and the Program Executing Unit (PEU) will be set up within SENASA to serve as direct advisory bodies to SENASA's national headquarters.

#### 1. Agricultural Health Program Coordination Committee

- 3.3 This committee constitutes the program advisory group and is responsible for reviewing its programming and ensuring the achievement of its targets. It is also required to review the operating plans, the budget, the administration of program execution and the monitoring and evaluation. The Program Technical Committee will have the following members: the National Chief of SENASA (chairman), the Directors General of Planning, Administration and Legal Advisory Services; the Directors of Animal and Plant Health and the Directors of the National Fruitfly, Biological Control and Foot-and-Mouth Disease Programs.

#### 2. The Program Executing Unit (PEU)

- 3.4 The Program Executing Unit (PEU) will be the main contact with the Bank during execution. Among other things, it will have the following responsibilities: (i) preparation, in coordination with the respective technical units, for approval by the Program Coordination Committee and SENASA headquarters, of the annual project POA; (ii) coordination of the preparation of the program's annual budgets, as regards both the loan funds and the Treasury contributions, and submission of same to SENASA's General Administration Office, for negotiation with the Ministry of Economy

and Finance; (iii) execution through the SENASA unit designated for the purpose of the procurement and contracting process; (iv) preparation and submission to the Bank of loan disbursement requests; (v) keeping of the records and preparation of the reports required by the contract; and (vi) supervision of compliance with the contract conditions and targets. The formation and installation of the PEU and the submission of the POA for the first year will be conditions precedent to the first disbursement from the loan.

- 3.5 The PEU will consist of, at most, five professionals plus the necessary support personnel. The chief of the unit will serve as secretary of the Program Technical Committee. Besides its chief, the PEU will have a group of three additional professionals, who will be responsible for bidding arrangements, procurement, contracting, evaluation and monitoring, preparation of terms of reference, and drafting of reports. It will also have an accountant for preparing the financial statements, audits, reports, and application of accounting systems.

B. Execution mechanisms of the permanent actions

1. Institutional strengthening

- 3.6 The activities in this case would be handled by the national headquarters, through the planning and administration offices and the Directorates of Animal and Plant Health, which will be responsible for the programming, coordination, and evaluation of the health education and publicity strategy, for staff training in Peru and elsewhere, and for the contracting of consultancies and advisory services.

2. Agricultural health surveillance system

- 3.7 This will be executed through the Directorates of Plant and Animal Health Surveillance, the aim being to set up an information system based on the surveillance established by SENASA's regional, subregional, and local units, the checkpoints at border crossings, seaports, and airports, inspection stations, quarantine stations, farmers, pilot farms, and public and private laboratories. The temporary services to be contracted will be for prospecting, sampling and field monitoring, with a view to quantifying the presence and magnitude of existing agricultural health problems.

3. Agricultural health defense system

- 3.8 Quarantine control, which will be executed by the Agricultural Inspection Sections charged with control of the plant and animal products and byproducts entering the country through the border posts, airports, and seaports and the domestic transportation of materials that represent a threat from the health standpoint. To this end, before 12 months have elapsed from the first disbursement

from the loan, the operating manual and the pertinent legislative provisions for agricultural quarantine must be available and ready for application in the border, seaport, and airport controls concerning both crops and livestock.

- 3.9 Input certification, supervision, and analysis, which is the responsibility of the Plant and Animal Input Registration and Control Sections. This will involve review, adaptation, and application of the current legislation on agricultural inputs, for the maintaining of the National Pesticide Register and the National Register of Livestock Inputs, evaluating the requirements set in each case. Private sector participation will be organized through the National Pesticides Commission and the Advisory Committee on Livestock Pharmaceuticals and Biologicals, with representation of the establishments interested and through the conclusion of agreements for analysis of samples collected by SENASA. International participation will take place through agreements to be concluded with the FAO, PAHO/INPPAZ, the Codex Alimentarius, and the Board of the Cartagena Agreement. For control of residues in products of plant origin, as with livestock products, it is considered important that, prior to the first disbursement under the program, advisory services be requested from PAHO in regard to the design and implementation of a program to check residues in agricultural products, in accordance with terms previously agreed upon with the Bank.

4. National system of diagnostic and input control laboratories

- 3.10 The SENASA Central Plant Health Diagnostic Laboratories and the National Central Livestock Health Reference Laboratory, located in La Molina, will be converted, after they have been appropriately equipped and strengthened, into reference laboratories, and will be responsible for identifying the causal agents of plant and animal health problems, analysis of crop and livestock inputs, and establishment of coordination and monitoring arrangements for analyses made by private laboratories. Within six months after the first disbursement from the loan, the Supreme Decree must be issued for accreditation of private professionals and diagnostic laboratories in plant and animal health.

C. Specific agricultural projects

1. Fruitfly control and eradication

- 3.11 This project will be executed through the National Fruitfly Program. It comprises three clearly defined areas:
- a. Breeding and sterilization laboratory, which will follow the manuals prepared on breeding and sterilizing the insect and quality control of the inputs and the end product.

- b. Field operations, which will be based on agreements with farmer organizations in the individual valleys for securing their collaboration in the control and surveillance work. For the detection work (placement and checking of traps) and the control activities (placement of toxic lures and releasing of sterile insects), the services of specialized enterprises will be contracted, for a minimum duration of one year and in accordance with Bank regulations.
- c. Training and publicity, through which the aim will be to organize and train about 42,700 producers by means of various mechanisms (radio messages, posters, courses). The services of specialized enterprises will be contracted for these purposes, in accordance with Bank regulations.

## 2. National biological control program

- 3.12 The project will be executed by the SENASA National Biological Control Program in various regions of Peru's coastal, upland, and forest zones, in accordance with the following plan: (i) the CIGIU central laboratory will be responsible for quarantine activities and development of methods, production of useful insects and training; (ii) at field level the project will be supervised by the SENASA regional coordination offices and executed by existing private laboratories handling the breeding, distribution, and sale of biocontrol agents under a standard agreement between them and SENASA; (iii) in the training area, manuals have been prepared covering practical matters and training which will govern the training process for the personnel of the laboratories working under agreements, producers and other project users. The training activities will be contracted out to specialized private enterprises.

## 3. Foot-and-mouth disease control and eradication

- 3.13 Execution of the campaign will be handled by the National Foot-and-Mouth Disease Eradication Program, which reports to the SENASA national headquarters. The main thrusts of the project will be:
  - a. Organization and participation of the private sector. An important element is the organization of the departmental and local livestock health committees, which will participate in the preparation, implementation and maintenance of the subregional and local plans for preventing the disease. SENASA will also accredit private enterprises and veterinarians to which animal health activities can be delegated. In addition, the project in Peru will have to be closely coordinated with those being carried out in other Andean countries (Ecuador, Bolivia, Colombia, and Venezuela) in the context of the Hemispheric Foot-and-Mouth Disease Eradication Plan. It should be noted that the Bank is financing a similar project in Ecuador and is preparing another in Colombia.

- b. Mass vaccination. This will be done using oil-adjuvant vaccine, the quality of which is controlled by PANAFTOSA, with the aim of reaching 80% coverage in the endemic areas by the second year of the project. Importation of this type of vaccine is free; the project will finance procurement by SENASA of an initial stock of vaccine (for emergency cases and isolated areas) and the estimate of the number of doses to be applied by regions and subregions will be made available annually to the farmers, commercial firms, and accredited organizations. In the years following the purchase of the initial stock, SENASA will finance itself with the proceeds of the charges made and the program will only finance the 25% earmarked for low-income stockfarmers. Vaccination services in the areas covered by SENASA will be contracted out to specialized enterprises.
- c. Surveillance, monitoring, and control of foci. Execution of the program will require that SENASA strengthen the quarantine controls at border posts and in the containment zones, together with the internal control over cattle movements and surveillance of farms, stockyards, and other high-risk places. SENASA must also prepare the cadaster of farms and of the livestock population, detect 100% of foci, check out 100% of the reports, and perform laboratory analyses of 100% of the samples taken from the foci detected.

#### 4. Control and eradication of brucellosis and bovine tuberculosis

- 3.14 The project will be carried out in the milksheds of the Peruvian coastal region, with voluntary participation by farmers. Considering the low level of incidence of these two diseases, the aim will be to detect animals that give positive reactions, which would then be sacrificed. The owners will continue to pay the cost of vaccination and of the diagnostic tests, which may be performed by accredited veterinarians, with the exception of the final tests for declaring farms and areas disease-free and for the periodic checks, which will be made under the project.

#### 5. Control of goat brucellosis ("Malta fever")

- 3.15 Since the farmers concerned are in the low-income category and in view of the implications for human health, the project requires greater involvement by SENASA in the control and possible eradication of the disease. Agreements will also be concluded with NGOs and farmers' associations in the areas concerned. The activities will be started with the registration of goat-raising farmers in the departments of Lima, Piura, and Ica and sampling to determine and eliminate animals that give positive reactions. When appropriate, vaccinations will be done using Rev-1 vaccine approved and authorized by SENASA. An estimated 36,000 head will have to be vaccinated, most of them by SENASA. The project will be supplemented by health education and publicity campaigns in the

community, together with active health surveillance by SENASA. The current legislation (Supreme Decree 001-87-AG) does not provide for compensation of owners of sacrificed animals, so the authorities are considering amendments to that effect. In light of the low level of incidence of the disease, the amount involved will not be high (approximately US\$100,000) and will be financed using the local counterpart funding.

6. Scabies control in South American cameloids

- 3.16 The project strategy is based on application of an antiparasite treatment to control the disease. This will be done by SENASA in the case of the sheep and to a large extent (76%) by the private sector, to which end the cooperation will be required not only of regional and local SENASA units but also of community and farmer organizations, NGOs, and FONCODES. Ensuring the success of the project will require setting up demonstration farms to publicize the treatment systems.

D. Project monitoring

- 3.17 The project execution period will be five years (60 months). During this period two evaluations will be made, at the 18-month and 36-month points after the first disbursement under the loan. POAs, which will be submitted annually, must include the common activities or those connected with the various components; these POAs would be agreed on with the Bank in the fourth quarter of each year of execution. Submission of the first POA will be a condition precedent to the first disbursement. Subsequently, the POAs for each component for the following year will be submitted prior to October 31 of each year, and each one will specify the source of financing of the local counterpart funding. These operating plans will include, among other things, the technical criteria to be taken into account for the qualification of firms or entities that will take part in processes for supplying goods, constructing works, and providing services.
- 3.18 The specific targets and parameters on which evaluation of the program's progress can be based are presented in detail in the annex setting out the logical framework of the program. However, in terms of SENASA's ongoing actions, there will be continuous monitoring of variables such as: number of goods brought in and checked, and confiscations of items not meeting the health requirements; quantities of drugs, agricultural chemicals, seed, and other inputs in general registered and controlled; number of reports on health problems received and responded to; number of professionals, enterprises, and laboratories accredited and number of samples received and analyzed; number of persons trained, publications issued, and events organized.
- 3.19 In terms of the specific projects, the main control variables are shown in the following table:

**TARGETS OF THE SPECIFIC PROJECTS**

	Year 1	Year 2	Year 3	Year 4	Year 5
Fruitflies: Losses prevented in thousands of U.S. dollars		6,224	6,809	10,016	13,275
Biological control: Thousands of hectares covered	150	150	180	210	240
Foot-and-mouth: Thousands of doses of vaccine applied	2,900	4,000	4,500	2,300	1,000
Brucellosis and TB: Percentage of farms included	25	40	55	70	85
Goat brucellosis: Hundreds of doses of Rev-1 applied	36	36	36	36	36
Scabies in cameloids: Thousands of new doses applied	900	950	1,000	1,100	1,100

**E. Disbursement schedule**

- 3.20 The following table shows the project disbursement schedule, based on execution of each component, SENASA's budget performance capacity, and timely availability of the counterpart funding.

**DISBURSEMENT SCHEDULE  
(in US\$ thousands)**

Year	IDB/OC	Government	Total	Percentage
1	10,919	6,174	17,093	22.5
2	13,384	7,311	20,695	27.3
3	8,946	6,654	15,600	20.5
4	6,676	5,671	12,347	16.2
5	5,675	4,590	10,265	13.5
<b>Total</b>	<b>45,600</b>	<b>30,400</b>	<b>76,000</b>	<b>100.0</b>

**F. Bidding**

- 3.21 Procurement of goods and contracting of services will be done in accordance with the procedures stipulated in Annex B to the loan contract. International competitive bidding will be obligatory for the procurement of goods and related services exceeding US\$250,000 and for civil works having a value of more than US\$1 million. Calls for bids where the amounts are lower than these limits will be conducted in accordance with national legislation. Annex II presents the schedule of bidding and proposals proposed for the execution of the project, together with the specific limits set by Peruvian legislation.



G. Advance of funds

- 3.22 For timely execution of the program it is recommended that an advance of funds be granted of the equivalent of 10% of the total budget.

H. Equipment maintenance

- 3.23 The borrower, through the executing agency, will undertake to include in the financing agreements a commitment to the effect that the equipment financed by the program will be operated and maintained in accordance with generally accepted technical standards, and that appropriate personnel will be available together with the necessary materials for the equipment's efficient functioning.

I. External audit

- 3.24 The project financial statements will be audited by a firm of independent auditors acceptable to the Bank. These statements shall be submitted annually within 120 days of the close of the government's fiscal year throughout the project execution period.

J. Environmental and social feasibility

- 3.25 The environmental impact of the proposed program is in general positive, since its objective is to strengthen activities with favorable imputed effects on human health and the environment. The strengthening envisaged for SENASA, in regard to the upgrading of its personnel, provision of equipment and technical assistance, the strengthening of the quarantine systems, the health surveillance, and input control, will enable it to perform its work more efficiently and to protect levels of agricultural health. In addition, the basic thrust of the program is to introduce integrated pest management in agricultural practices by means of biological control, which will make it possible to substantially reduce the use of agricultural chemicals. The success of the program will further be based on encouragement of private sector and community participation, all of which will serve to increase its sustainability.
- 3.26 To ensure that the environmental risks identified by the program activities are mitigated and that benefits are maximized, the following measures will be implemented:
- a. In the context of the loan contract
- 3.27 Design of an adequate regulatory framework for application of agricultural chemicals. Within 12 months after the first disbursement under the loan, the necessary procedures manuals for implementing existing legal provisions in order to follow up on the

use of agricultural chemicals in Peruvian farming must be presented, to the Bank's satisfaction.

- 3.28 Monitoring of the use of agricultural chemicals and their impact. The methodology devised for following up on the use of agricultural chemicals in the farm sector (on which work is to be completed within 12 months after the first disbursement, and will include targets for replacing and reducing the use of pesticides as deemed feasible in the light of the analyses conducted) will be set out in the aforesaid procedures manuals.

b. The program budget will include funding for the following activities:

- (i) Design and implementation of the monitoring system for agricultural chemical use.
  - (ii) Design and implementation of the control system for residues in products.
  - (iii) Implementation of the environmental control measures in laboratories and quarantine stations.
  - (iv) Training in and dissemination of biological control techniques, and in the other specific projects.
- 3.29 In the specific projects that entail the sacrificing of affected animals (goat brucellosis), the possibility will be explored with the government of including arrangements for compensation for low-income farmers.

#### IV. THE BORROWER AND THE EXECUTING AGENCY

##### A. The borrower and the executing agency

- 4.1 The borrower for the program will be the Republic of Peru and the executing agency will be SENASA through the Program Execution Unit (PEU). The PEU, which will report to SENASA headquarters, will coordinate and supervise the execution of the program by each of SENASA's technical units. The PEU will have the support of the appropriate SENASA technical and administrative units for this purpose. The Program Coordination Committee will guide its policies and oversee the attainment of its targets.

##### B. National Agricultural Health Service (SENASA)

- 4.2 SENASA was created by Decree-Law 25,902 of November 1992 as a service reporting to the Ministry of Agriculture, with its own juridical personality as a corporate person and with technical, administrative, and financial autonomy. The regulations in respect of its organization and functions were instituted by Supreme Decree 024-95-AG. According to its establishing decree, SENASA, with the participation of the private sector, has as its central objective the task of ensuring continual improvement in national plant and animal health, in support of the production, processing, internal marketing, import, and export of agricultural products and byproducts. Supreme Decree 024-95-AG also authorizes SENASA to generate funds for itself by charging for the services provided.

##### 1. SENASA functions and organizational structure

- 4.3 In accordance with its establishing decree, SENASA's functions are to: (i) control and supervise the healthfulness of agricultural products and byproducts in domestic and international trade; in this connection, it is to regulate the health aspects for imports, exports, marketing, domestic transport of agricultural plants and animals, and of agricultural products and inputs; (ii) propose to the MAG national and regional rules in respect of health surveillance, inspection, registration, control, supervision, and evaluations in the agriculture sector; (iii) provide directly or through third parties the services needed for the protection of agricultural plants and animals, and of forests, at the national and regional levels; for this it has to organize and administer quarantine, health inspection, and registration systems; (iv) plan and organize agricultural health projects and programs, to be carried out by public or private organizations, promoting the participation of private-sector bodies by means of national or regional associations; (v) conduct analyses of health risks, in order to generate the necessary information that will make it possible to predict the level of health risk resulting from the marketing of particular products or byproducts; (vi) administer the

registration of enterprises that produce and distribute pesticides and health products used in agricultural activities, and (vii) promote training and dissemination activities in health-related matters.

- 4.4 To accomplish its objectives and perform the above functions, SENASA is structured as shown in the chart in Annex III. Its top management echelon is made up of the Executive Council, with private sector participation, its head office and the Consultative Board on Agricultural Health. At the central level the service's activity is basically regulatory, management, coordination, supervision, and control, both on the part of the line directorates general (agricultural plant and animal health) and the advisory and support entities (General Planning Office, General Administration Office, Legal Office, and Internal Audit).
- 4.5 SENASA's decentralized units at the regional level, pursuant to its charter, are the regional agricultural health services. These would normally have two units, the Plant Protection, Inspection, and Regulation Unit and the Animal Protection, Inspection, and Regulation Unit. These regional units would have jurisdiction over the local units and over the offices in seaports, airports, and border posts, as well as over the offices responsible for domestic control and regional laboratories. At the regional level they are required to supervise and coordinate the health program at that level and to prepare and apply, in conjunction with the local units, the annual technical action plans and budget programs. The local level would be basically responsible for carrying out the plant and animal health activities.
- 4.6 The National Fruitfly, Biological Control, and Foot-and-Mouth Disease Programs perform their functions through regional, subregional, and local offices. They report directly to SENASA headquarters and have a national Consultative Committee in which the private sector participates. The national programs formulate the specific operating plans and programs at national level, coordinate, supervise, and evaluate their execution, and promote participation by the private sector and by other public agencies in health activities.
- 4.7 SENASA has made considerable progress in putting its structure in place at the national level; however, it has not been able to fully implement the institutional structure envisaged by the law because the MAG regional agricultural directorates have retained administrative and financial management of the health services at the regional level. Accordingly, during the analysis mission the government and the Bank agreed that, in accordance with the relevant decrees (Decree-Law 25,902 of 1992 and Supreme Decree 024-95-AG), the Regional Agricultural Health Services would be established, reporting to SENASA and responsible for coordinating, executing, and supervising the execution of the program at the regional level. The activities will be carried out

by personnel linked with SENASA either under indefinite contracts or fixed-term contracts, under service contracts in the case of specific projects, under private sector participation arrangements, or under agreements concluded by SENASA for the purpose with the Regional Agricultural Directorates. The instructions for putting this regime into place will be included in a Supreme Decree that establishes regulations pursuant to the existing legislation, which is to be issued by the government before the present document is submitted to the Bank's Board of Executive Directors.

## 2. SENASA personnel

- 4.8 The staff employed in agricultural health at present are as follows:
- a. 106 SENASA staff hired and funded by the Public Treasury;
  - b. 40 fixed-term staff hired by SENASA;
  - c. 100 individuals hired by SENASA other than under personal contracts;
  - d. 161 staff members of the Regional Agricultural Directorates who work full-time on health activities;
  - e. 288 staff members of the Regional Agricultural Directorates who work part-time on health activities.
- 4.9 According to the analysis carried out, health activities would be performed in future by some of the 246 individuals working for SENASA as listed under (a), (b), and (c) and with the assistance of 209 additional staff who would work with SENASA under fixed-term contracts (i.e., under a different system from that prevailing for permanent public sector employees) following a process of selection and classification. There would therefore be 455 persons linked to SENASA plus the Regional Agricultural Directorate staff who would work under the agreements with SENASA, the terms of which were reviewed by the Bank during the analysis mission.
- 4.10 According to a pay survey carried out recently by IICA, in the agriculture sector the remuneration of SENASA management staff is only 27% to 30% of the average level surveyed and 68% to 85% of MAG remuneration. At the professional level pay was found to be 45% of the average and 102% of MAG pay; and at technician level 32% to 58% of the average and 82% of MAG pay. Accordingly, in the context of the rules to be issued for the establishment of the Regional Agricultural Health Services, an increase of around 40% will be considered for the SENASA staff as of the second year of the program. It should be noted that according to Supreme Decree 024-95-AG the SENASA personnel are included under the labor system for private activity.

3. Budget, accounting, and financial administration

- 4.11 The project funds will be administered by means of direct transfers by the Ministry of Economic Affairs and Finance to SENASA accounts. SENASA will request disbursements from the Bank through the PEU, which will be responsible for submitting the forms required by the Bank. Budget management will be coordinated with the SENASA administration and budget units.

C. Financial aspects of SENASA

- 4.12 Analysis of SENASA's receipts over recent years by sources of financing shows a high proportion of own revenues (42% to 60%), a phenomenon which results not from a high capacity to generate revenues, but rather from the low percentage of funding received from the National Treasury, which was no more than 58% in 1994. Performance of budgeted expenditure was quite low for the period from 1993 to 1995, being highest in 1995 at 67.4%. SENASA only accounted for 5.8% of agriculture agency expenditure in 1996, whereas almost 80% of such expenditure was concentrated in the MAG.
- 4.13 In 1997 various changes will be introduced in budget programming, which in regard to expenditure will establish a structure defined by a function, programs and subprograms, and activity or project and subcomponent, in place of the present structure which is very global in its approach. This new structure should facilitate execution of the program, especially at regional level.

RECENT SENASA RECEIPTS FOR FINANCING SPENDING  
(US\$ thousands)

Receipts	1993	1994	1995*	Total	Annual average
From National Treasury	448.0	1,310.1	1,809.9	3,568.0	1,189.3
Own receipts	680.6	968.6	2,299.4	3,948.6	1,316.2
<b>Total receipts</b>	<b>1,128.6</b>	<b>2,278.7</b>	<b>4,109.3</b>	<b>7,516.6</b>	<b>2,505.5</b>

- 4.14 In preparing SENASA's expenditure projections, the service's budget for 1997 and the values of the different program components financed by the Bank, including the recurring costs for keeping the program in operation, were taken as bases. As regards expenditures, the data in the tables showing the development of own funds for 1995 and 1996 were used as basic information. The information on funds generated by the agricultural regions by means of health activities carried out up to September 1996 were also taken into account.
- 4.15 From the exercise carried out for the financial projections it can be concluded that during the program execution period (and taken into consideration the additional personnel mentioned), the

National Treasury will have to provide US\$47.2 million (of which US\$11.7 million in counterpart funding and US\$35.5 million in recurring costs). The Bank financing will be US\$46 million and SENASA will be required to generate US\$37 million in own funds. During the five years of the program US\$130.2 million will be invested, at an average of US\$26 million per year. During the five years following the execution of the program, the maintaining of the health activities would require an effort of some US\$75 million, i.e., about US\$15 million on average, to be derived both from the National Treasury and from the service's own funds. The projections confirmed the importance both of the funds being allocated in timely fashion by the Treasury and of the resources collected by the health services provided at the national level for ensuring the sustainability of the agricultural health service. In order to ensure that these funds are actually collected and are channeled to the program projects, the following specific measures will be taken:

- a. A Supreme Decree has been issued which establishes regulations to implement the existing legislation (Supreme Decree 024-95-AG) and specifies that the funds generated by the agricultural health services, including those recovered in vaccination work and from application of other biologicals "will be deposited by the Regional Agricultural Directorates in the current account of SENASA's own receipts and will be designated exclusively for strengthening the health campaigns...". The tariffs charged for the respective services will be adjusted to those set in the Supreme Decree on the "Sole Text on SENASA Administrative Procedures". Prior to the first disbursement under the loan, SENASA will establish the terms of the process for monitoring and verifying the funds collected by the Regional Agrarian Directorates for rendering agricultural health services.
- b. Review during the first six months after the first disbursement from the loan of the tariffs that will be charged for the health services, to ensure that they reflect not only the direct costs involved but also the additional and support activities carried out by the different SENASA units to enable efficient performance of the inspection and certification activities.

## V. FEASIBILITY AND RISK

### A. Institutional and technical feasibility

#### 1. Institutional feasibility

- 5.1 The feasibility of the Agricultural Health Development Program is based on the existence of SENASA as national health authority, with powers to control and supervise the healthfulness of animal products in national and international trade, propose to the MAG the rules connected with its activity, plan and organize specific projects, promote private enterprise, make health risks analyses and perform the registration and control of the inputs, for both plant and animal use, that are marketed in the country.
- 5.2 However, as already noted, this feasibility depends basically on the surmounting by SENASA of the constraints imposed at regional level by the action of the Regional Agricultural Directorates as regards both personnel and administrative and financial aspects. Accordingly, implementation of legislative arrangements agreed on for establishing the Regional Agricultural Services and their appropriate staffing is vital for effective execution of the program.

#### 2. Technical feasibility

- 5.3 Besides the technical strengthening of the nucleus of the public agency, the underlying objective of the permanent agricultural health activities and of the related specific projects, is involvement of the private sector through the community in general, the farmers' organizations, the associations of professionals, and the universities and private laboratories, by means of the delegation and accreditation processes. Equally important are agreements with other public and international agencies. From the legal standpoint, review and codification of the current legislation concerning agricultural health are essential to make this legislation consistent with the higher level of international trade and with the WTO rules. This review will culminate in the promulgation of a new law on agricultural health.
- 5.4 The permanent activities of the program (quarantine, surveillance, input registration and control, and laboratory diagnoses) are designed to maintain and increase the level of health and healthfulness in light of intensified international trade in agricultural products and inputs. The strengthening of border posts and of checkpoints at seaports and airports, together with the system of internal checkpoints, should enable the national health authority to inspect and control 100% of all goods brought into the country legally, to detect health problems in time and to prevent them spreading. The prospecting and surveillance



activities and the establishment of adequate information systems, with the participation of the community in general, will make available the basic information needed for making scientifically based risks analyses, facilitating the designing of the health provisions and preventing the occurrence of serious health problems.

- 5.5 Registration and control of inputs, both for plant and animal purposes, is an essential requirement for maintaining national agricultural health. The program includes review of the pertinent legislation and also strengthening of postregistration activities. The program will also complement these activities with the biological control and residue control projects.
- 5.6 The technical feasibility of the program is supported by the rehabilitation of the plant and livestock health diagnostic laboratories, and by the accreditation of private laboratories and the agreement that will be concluded with other national and international agencies and organizations.

B. Financial feasibility

- 5.7 The analysis of receipts and total expenditures on agricultural health during the program's five-year execution period, together with the ten-year projection made, determined the conditions necessary for the financial feasibility of the program and for the sustainability of the health projects. During the five years of the program the resources needed for agricultural health will be US\$130.2 million, of which the Bank will finance US\$46 million, SENASA itself will be required to generate US\$37 million and the National Treasury would contribute US\$47.2 million.
- 5.8 The conditions that will ensure the program's financial feasibility and its future sustainability will therefore depend critically on the effectiveness with which the rules agreed on with the analysis mission are applied regarding the implementation of the Regional Agricultural Services, review of the tariffs to be charged for agricultural services, the effective management of these resources by SENASA and the increase in the funds to be contributed by the National Treasury.

C. Economic feasibility <sup>1/</sup>

- 5.9 The program's main benefits will be derived from: (i) the reduction of the probability of unknown pests being introduced into the country and, consequently, of the agriculture-related economic losses prevented (ii) the saving in economic losses caused by diseases or pests present in Peru, such as fruitflies, foot-and-

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<sup>1/</sup> A full description of the economic evaluation is contained in the corresponding technical annex in the project files.

mouth disease, bovine brucellosis and tuberculosis, goat brucellosis, and scabies in South American cameloids and sheep; and (iii) the lower cost of treatment at the farmer level. The program will generate additional benefits resulting from access to external markets, especially in the case of fruit and alpaca wool, following the raising of health barriers; the improvement of the quality of the products concerned, which will be reflected in losses avoided by producers because their products will not be confiscated in international markets; and the reduction of harm to the environment.

- 5.10 A cost-benefit analysis was made both for the pest and disease control and eradication projects currently benefiting the agriculture sector and for the program as a whole. In the first case, since the achievement of the objectives of each specific project depends not only on the investments made in them but also on the investments in the permanent actions (i.e. surveillance, defense, diagnostic laboratories and institutional strengthening), a part of the latter was considered as being a part of the project costs. In the case of the program as a whole, the economic evaluation was made by totaling the benefits generated by each specific project and adding to these the benefits from losses prevented because the possible entry of various exotic pests and diseases was barred (cotton boll weevil, African swine fever).
- 5.11 In the case of the fruitfly control project, it was assumed that 10% of the cost of ongoing plant health actions (surveillance, defense, and plant diagnostic laboratory) was associated with the success of the project. In the case of the foot-and-mouth disease, brucellosis, and bovine tuberculosis and scabies projects, the same percentage was assumed for the cost of ongoing livestock health actions. Finally, for the goat brucellosis project, the percentage was assumed to be only 1% of the livestock health costs because of the relatively small investment involved. In all the projects, the same percentage was assumed for institutional strengthening costs (without technical assistance).
- 5.12 For the economic evaluation of the fruitfly project, only the incremental benefits represented by the difference between the production losses, with and without the project, were taken into account, without considering the additional benefits from the improvement in quality and greater market access. A net present value (NPV) discounted at 12% of US\$48 million was obtained, together with an internal rate of return (IRR) of 80%.
- 5.13 In the case of foot-and-mouth disease, the physical losses avoided were taken into account, valued at import parity prices at the farm level. The average incidence rate of the analysis period was assumed, which was a conservative assumption. The cost-benefit analysis produced a NPV of US\$3.9 million and an IRR of 54%. The IRR remains positive even if the rate of incidence of the disease drops by 30%. In the case of bovine tuberculosis and brucellosis,

the average incidence rate is less than 1%, which permits a substantial reduction in costs, while the benefits obtained from increasing milk and meat production are relatively high, all of which produces a NPV of US\$4.3 million and an IRR of 171%. For goat brucellosis, considering only the benefits from increased production, the IRR is 12.9%.

- 5.14 The global evaluation of the program was made by aggregating the benefits generated by each of the specific projects and adding the benefits associated with the losses avoided by preventing the possible entry of a particular pest, the cotton boll weevil, and a particular disease, African swine fever. Similarly, it was assumed that all the resources allocated under the program were used. The NPV is US\$67.4 million and the IRR is 25%.

D. The project beneficiaries

- 5.15 The program has a nationwide coverage, with the primary beneficiaries being the farmers whose production levels would be increased by preventing the losses caused by disease and pests; given the land distribution pattern in Peru, the great majority of these are small farmers. The population for its part will benefit through the larger volumes of production and the better quality of the foodstuffs produced, and also by the lower risk of contracting communicable diseases from animals, such as bovine and goat brucellosis and bovine tuberculosis. There will also be unquestionable environmental benefits due to less intensive use of pesticides and greater control over those that are used, while Peru's economy as a whole will be benefited by the greater access of its agricultural exports to external markets.
- 5.16 The specific projects, while they will be concentrated in areas of greater incidence and economic impact, such as the milksheds and the dual-purpose areas (milk and meat) and those with the greatest agricultural output (fruit-growing areas), will also benefit the other farmers who will be able to acquire disease-free animals or seed and plant material of better quality and free of pests. Two of the projects target low-income farmers, namely the ones aimed at goat brucellosis and scabies in cameloids.
- 5.17 Although 61% of the country's total population is living below the poverty line (estimated at 246 soles per capita per month), and poverty in rural areas is more pronounced, according to estimates produced by a recent Bank project executed with FONCODES, this project is not aimed at low-income segments of the population. However, it does embrace projects such as those to control goat brucellosis and scabies in cameloids, which specifically target poor beneficiaries; moreover, SENASA will earmark a part of its stock of foot-and-mouth vaccine for small farmers.

E. Women in the production process

- 5.18 The permanent or temporary migration of the menfolk from the rural areas has meant that in many cases the women have to act as heads of households. According to findings of the 1994 National Living Standards Survey, about 12% of all rural households are headed by women, who in most cases are responsible for managing the farm animals and fruit plantations. The program's health education and publicity components will emphasize proper livestock management as a means for helping the women to increase meat, milk, and wool production while lessening the risk of disease transmission (bovine tuberculosis and bovine and goat brucellosis). Furthermore, the control of the use of pesticides will foster rational application, thus reducing the quantity of highly toxic products which in the past have affected rural mothers and their children in particular.

F. The risks involved in the project

- 5.19 The fundamental risk for the program is the possibility that SENASA's institutional development may not match the requirements for establishment of an effective national health authority. The legislative provisions agreed with the government must accordingly give SENASA effective management of the human, material, and financial resources at both national and regional level, and this management must be capable of the flexibility and swift response required by health emergencies. Similarly, the addition to SENASA of the qualified personnel necessary for effective performance of the services must be monitored. The other fundamental risk lies in the sustainability of the financial effort required to maintain the laboratories, quarantine stations, and checkpoints that the program will finance and the continuity of projects such as the fruitfly eradication project whose horizon extends beyond the program execution period. In this case, the adjustment of the tariffs charged for the health services and management of these receipts by SENASA will help to further the program's financial viability. In addition, its success will depend fundamentally on participation by the private sector in the different projects, through the accreditation, contracting, and delegation mechanisms set up, which will be included in the respective regulations.

**LOGICAL FRAMEWORK - SUMMARY**  
**AGRICULTURAL HEALTH DEVELOPMENT PROGRAM**  
**PE-0143**

OBJECTIVES	TARGETS	MEANS OF VERIFICATION	IMPORT ASSUMPTIONS
development of the agriculture sector and of the ing and supporting the agricultural export	<b>SITUATION AT END OF EXECUTION OF THE PROGRAM (5 years)</b>		
in agricultural plant and animal health levels, ut specific projects, strengthening the ultural health services and the activities of l increasing the private sector's involvement.	<ul style="list-style-type: none"> <li>- Areas free of fruitflies</li> <li>- Areas free of foot-and-mouth disease</li> <li>- Areas free of brucellosis</li> <li>- Pests and disease controlled</li> <li>- SENASA operating effectively as the country's agricultural health authority</li> <li>- Entry of foreign pests and diseases controlled</li> <li>- Crop and livestock inputs 100% registered</li> <li>- Agricultural products free of toxic residues, at least in part</li> <li>- Private sector and communities actively participating in agricultural health activities</li> <li>- Increase in number of confiscations of goods of agricultural origin detected which lack appropriate health certification from the country of origin.</li> </ul>	- Evaluations	The government consolidates SE national agency, its regional struc enables it to ma resources at tha effectively.

**COMPONENTS/Subcomponents**  
**EXECUTION OF SPECIFIC PROJECTS**

control and eradication. The objective of this o create and maintain fruitfly-free areas in the ng valleys of Peru's coastal region.	1. <b>TARGETS:</b> Eight areas free of <i>Ceratitis capitata</i> and 17 areas in process of being made free of it, in five years. The intention is to carry out: fruitfly prospecting and surveillance by checking traps and sampling fruit, combined with comprehensive pest control; to produce sterile insects; to make studies for breeding insects and sterilization of <i>Anastrepha</i> to undertake breeding and massification of parasitoids in the La Molina laboratories; to set up and operate seven field operations centers; and to implement the training and technical assistance program.	1. - Monitoring reports - Evaluations	1. Effective proc involvement i
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**LOGICAL FRAMEWORK - SUMMARY**  
**AGRICULTURAL HEALTH DEVELOPMENT PROGRAM**  
**PE-0143**

OBJECTIVES	TARGETS	MEANS OF VERIFICATION	IMPORT ASSUMP
<p><u>control of agricultural pests.</u> The purpose of this project is to foster intensive use of biological control affecting crops of economic importance in Peru, reduce control costs and contribute efficiently to the environment.</p>	<p>2. <b>TARGETS:</b> (a) to maintain 109 private laboratories and to increase their number to 132 in five years; (b) to have 6,000 units in production in the first year and to increase them to 9,000 in five years; (c) to produce sufficient biocontrol agents to cover 15% of the areas of the main crops in the first year, and to increase this to 24%; (d) to train 890 professionals and technicians in five years; (e) to introduce at least two beneficial species of insects per year for use by the private labs and to carry out 100% of the health education and publicity program; (f) to conclude agreements with national and local public and private institutions; and (g) to reduce the cost of pesticide-based pest control by 50%.</p>	<p>2. - Monitoring reports - Evaluations</p>	<p>2. SENASA performing effective training and publicity work.</p>
<p><u>foot-and-mouth disease control and eradication.</u> The purpose of this project are: (a) to control and eradicate the disease throughout Peru, by means of the vaccination and maintenance of foot-and-mouth-free zones; (b) maintaining the foot-and-mouth-free status without vaccination, of the departments of Loreto, Tarma, Huancayo, Puno, Ucayali, Amazonas, and San Martin.</p>	<p>3. <b>TARGETS:</b> Northern Area: absence of clinical cases after the third year; maintenance of the Department of Piura free of the disease, without vaccination, as of the fourth year. Central and South Central Area: absence of clinical cases as of the end of Year 3; suspension of vaccination as of Year 4; maintenance of these zones foot-and-mouth-free, without vaccination, after Year 5. Southern Area: absence of clinical cases after the end of Year 4; maintenance of area foot-and-mouth-free, without vaccination, from Year 2; maintenance of department of Puno free, with vaccination, from Year 2. Eastern Area: foot-and-mouth-free as of Year 3. <b>ACTIVITIES:</b> review, updating, preparation, and dissemination of legal provisions; preparation of standards for accreditation and registration of private sector agents; penalties; epidemiological surveillance; vaccination; quarantine control; control of 100% of foci; institution of diagnostic techniques; basic and specialized training; health education and publicity; administrative support.</p>	<p>3. - Monitoring reports - Evaluations</p>	<p>3. Active community participation in the project.</p>
<p><u>sheep and bovine tuberculosis control.</u> The purpose of this project is to control and eradicate sheep and bovine tuberculosis in the milksheds of the departments of Tarma and Huancayo.</p>	<p>4. <b>TARGETS:</b> include 25% of the milkshed farms in Year 1; include more farms at a rate of 15% p.a. as of Year 2; establish the pertinent technical rules as of Year 1.</p>	<p>4. - Monitoring reports - Evaluations</p>	<p>4. Effective farm participation.</p>
<p><u>goat brucellosis in Ica and Piura.</u> The purpose of this project is to prevent, control, and eradicate goat brucellosis in the departments of Lima, Piura, and Ica, in order to improve the health status and wholesomeness of goat meat and byproducts obtained from goats and reduce the probability of disease transmission to humans.</p>	<p>5. <b>TARGETS:</b> Year 1: monitoring in the departments of Lima, Piura, and Ica. Year 2: establishment of an epidemiological control and surveillance system; Year 3: inclusion of the other departments in this project's activities.</p>	<p>5. - Monitoring reports</p>	<p>5. Regulation of compensation for eradication.</p>

**LOGICAL FRAMEWORK - SUMMARY**  
**AGRICULTURAL HEALTH DEVELOPMENT PROGRAM**  
**PE-0143**

OBJECTIVES	TARGETS	MEANS OF VERIFICATION	IMPORT ASSUMP
control in South American cameloids. The this project is to control scabies caused by scabei and Soroples sp. in South American and sheep in the departments of Puno, Cuzco, Ayacucho, Apurimac, Moquegua, Ica, Pasco, and Junin, thereby producing a ble beneficial impact for owners of this type k.	6. <b>TARGETS:</b> treatment of 25% of the cameloid population with antiscabies products in Years 1 and 2; treatment of a further 5% as of Year 3; establishment of 200 demonstration units with 200 animals each in each department; accreditation of private agents; execution of health education and publicity activities.	6. - Monitoring reports - Evaluation	6. Effective com participation.
<b>MINING OF ONGOING ACTIONS</b>			
d plant health surveillance. From the crop , the objective of this subcomponent is to y and reliable information on the risks of g plant diseases and pests into the country, aracteristics of such pests and diseases and n that could result from their spreading in the	7. From the livestock standpoint: have timely and reliable information on presentation, level, damage done and spreading of livestock pests and disease and on the risk of introduction of exotic pests.	7. - Monitoring reports - Evaluations	7. Private sector as provider o information.
animal quarantine system. The purpose of mponent is to prevent the entry of exotic or and livestock health problems, by means of d inspection at the official entry points into oods of agricultural origin, together with the ng of all animals and plant reproductive cially brought into the country.	8. <b>TARGETS:</b> Year 1: control 100% of goods of agricultural origin entering the country, and detection of 100% of those that do not meet the current requirements; equipment of the Ventanilla livestock quarantine station in Lima and of the Zamacola station in Arequipa; Year 2: have manual of legal and technical provisions to be applied at border, seaport, and airport checkpoints ready for use.	8. - Monitoring reports - Evaluations	8. Efficient funct border check
animal health laboratories. The purpose of mponent as regards plant health is to support c projects and ongoing plant health actions identification of the causal agents of problems is of samples of agricultural inputs in support rol work. As regards animal health, the s to identify the causal agents of the problems the country, in support of the livestock pest e control and eradication projects and the t quarantine and epidemiological surveillance together with analysis of input and biological ents.	9. <b>TARGETS:</b> Year 1: preparation of accreditation rules and procedures; establishment of a national network of laboratories for plant health diagnostic work and control of agricultural inputs; analysis of 100% of samples received, upgrading of La Molina's facilities and equipment procurement.  <b>TARGETS:</b> Year 1: upgrading of La Molina's facilities; analysis of 100% of samples received; preparation of the rules and procedures for inclusion of laboratories of other State agencies and universities and private labs of the national livestock health diagnostic system, for analysis of inputs for livestock use; Year 2: equipment procurement for the SENASA central lab.	9. - Monitoring reports - Evaluations	9. Issuance of th Regulations o accreditation labs.

**LOGICAL FRAMEWORK - SUMMARY**  
**AGRICULTURAL HEALTH DEVELOPMENT PROGRAM**  
**PE-0143**

OBJECTIVES	TARGETS	MEANS OF VERIFICATION	IMPORTANCE ASSUMPTIONS
<b>INSTITUTIONAL STRENGTHENING OF SENASA</b>			
10. <u>Organization and consolidation of the organizational structure of SENASA at the regional, departmental, and local levels.</u> The objective of this subcomponent is to ensure the consolidation of the organizational structure of SENASA as the country's agricultural health authority, set up as a decentralized public authority as specified in its organic law.	10. <b>TARGET:</b> ensure that regional, departmental, and local organizational structure of SENASA is 100% operational during the first year of execution of the program.	10. - Institutional evaluation	10. The government is part of the modernization of public administration; maintains a decentralized agricultural health authority at the national and regional level.
11. <u>Rural health legislation.</u> The objective of this subcomponent is to have revised, updated, and enacted agricultural health legislation which effectively supports the plant and animal health work undertaken.	11. <b>TARGETS:</b> preparation and issuance of the rules on "Registration and Authorization" (accreditation) of organizations and individuals to perform agricultural health actions within the framework of SENASA's responsibilities.	11. - Institutional evaluation	11. Issuance of laws and amendments to the health legislation.
12. <u>Organization and participation of private sector.</u> The objective of this subcomponent is to create formal mechanisms to govern private sector participation, both in the plant and animal health work to be done, and the performance of agricultural health activities undertaken up to now by the public sector.	12. <b>TARGETS:</b> SENASA Executive Council as specified in its organic law fully operational; creation and operation of National Animal and Plant Health Committees; Regional Agricultural Health Committees fully operational	12. - Institutional evaluation	12. Effective functioning of the regional agricultural health committees.
13. <u>Education and publicity work by private sector.</u> The objective of this subcomponent is to ensure active participation by users and by the private sector and the public in general in order to promote their collaboration and possibly have them undertake actions within the SENASA framework.	13. <b>TARGETS:</b> Year 1: define characteristics of public programs, especially as regards plant and animal health, and the education modules to be included in the rural school programs; Years 1 and 2: prepare the national and regional community cadaster and prepare and distribute a publicity bulletin every four months on plant and animal health matters.	13. - Monitoring reports	
14. <u>Training.</u> The objective of this subcomponent is to ensure the effectiveness and efficiency of the work actions performed by staff, in the interests of realizing the organization's goals.	14. <b>TARGETS:</b> carry out 100% of the training program, both internal and external, and ensure that 100% of the trainees brought into the organization during the execution of the program identify fully with the program's objectives and with SENASA's functions.	14. - Institutional evaluation	
15. <u>Technical assistance.</u> The objective of this subcomponent is to ensure that SENASA, with the assistance of experts, performs the actions included in the program component, while at the same time refining its organizational structure.	15. <b>TARGETS:</b> ensure that 100% of the consultancies included in the program are implemented.	15. - Register of consultancy services contracted	



# LOGICAL FRAMEWORK OF STRENGTHENING OF PERMANENT SERVICES COMPONENT

OBJECTIVES	TARGETS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
health problems in order to er security for agricultural nd exports.	<ul style="list-style-type: none"> <li>- Increasing and maintaining the areas free of pests and diseases.</li> <li>- Fewer cases of introduction of pests and diseases.</li> <li>- Reduction of agricultural product losses due to plant and animal health problems.</li> <li>- Reduction of level of pesticide use per unit of area.</li> <li>- SENASA strengthened and consolidated as national agricultural health authority.</li> </ul>		
TO BE COMPLETED ECUTION INSTITUTIONAL ENING OF SENASA			
emented  trained   cies, contracted  al framework, improved	<ol style="list-style-type: none"> <li>1. - 480 persons (227 professionals and 253 technicians) gradually added to form the staff required by SENASA and approved by M.R. 336-95-AG (309 professionals and 311 technicians).</li> <li>2. - In the national sphere: 128 professionals (57 in animal health, 71 in plant health; 46 of the total in computer topics and languages) and 15 technicians of the agricultural health programs. <ul style="list-style-type: none"> <li>- In the international sphere: 158 professionals through fellowships abroad (72 in animal health, 82 in plant health, and one in institutional strengthening).</li> <li>- In the regional sphere: 177 persons in animal health (97 professionals and 76 technicians), 298 persons in plant health (181 professionals and 117 technicians), and 30 persons from the administration area; by means of seminars and workshops.</li> </ul> </li> <li>3. - International consultants: 65 person-months for animal health, plant health, and institutional strengthening. <ul style="list-style-type: none"> <li>- National consultants: 56 person-months for animal health, plant health and institutional strengthening.</li> </ul> </li> <li>4. - Agricultural health legal framework reviewed and improved (agricultural health laws, regulations, policies, legal rules for delegation of certain SENASA functions to third parties) <ul style="list-style-type: none"> <li>- Structural and functional organization of SENASA reviewed and approved, together with the manuals of organization and functions from the management standpoint.</li> <li>- Specific manuals of procedures prepared for plant and animal health defense and plant and livestock health laboratories.</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>1. OGA-SENASA report.</li> <li>2. Planning Office reports.</li> <li>3. Planning Office Register of Contracts.</li> <li>4. Documents produced.</li> </ol>	

# LOGICAL FRAMEWORK OF STRENGTHENING OF PERMANENT SERVICES COMPONENT

OBJECTIVES	TARGETS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
al health publicity program,	5. - Cooperation agreements with Ministry of Health, Ministry of Education, Environmental Enforcement Police, Office of the Superintendent of Customs. - Cadaster of local organizations for agricultural health publicity actions, and the holding of courses, talks, and regional seminars. - Educational videos produced on agricultural health programs, manuals published, folders and posters distributed, radio program executed, publicity boards set up, a quarterly publicity bulletin issued.	5. Agreements, documents and materials produced.	
al health services, delegated parties	6. - Diagnostic laboratories for plant and animal health, labs for producing biocontrol agents, some input inspection functions, analysis of toxic residues in agricultural products and quality control of agricultural inputs; accredited to third parties (enterprises or individuals).	6. Accreditation Register.	
nd computer equipment, and distributed	7. - A total of 167 motorcycles, 88 light trucks, 80 computers procured and distributed to the different SENASA units.	7. - Inspection - Property control reports.	
<b>SURVEILLANCE</b>			
al health surveillance strengthened	8. - The present surveillance system will be strengthened with trained personnel (*), river transport vehicles, equipment, materials, and inputs, and the development of specific software and establishment of the information system for gathering reliable and timely information. - Training of 8,000 farmers and persons connected with the sector at national level in plant and animal health surveillance.	8. - Inspection - Evaluation	
<b>PLANT HEALTH DEFENSE</b>			
a system, modernized	9. - Construction and/or adaptation of 16 checkpoints and the Ventanilla and Zamacola quarantine stations. - Implementation with trained personnel (*) to raise the technical level of the quarantine actions, with field machinery and equipment, and communications, computer, office, and other equipment. - Strengthening of the quarantine channels of information and communication. - Development of specific software. - New updated and harmonized legal framework (*).	9. - Inspection - Evaluation	

**LOGICAL FRAMEWORK OF STRENGTHENING OF PERMANENT SERVICES COMPONENT**

OBJECTIVES	TARGETS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>agricultural inputs registration and control system, strengthened and modernized.</p> <p><b>AND PLANT HEALTH SERVICES</b></p> <p>laboratories, converted unto reference laboratories</p>	<p>10.- Updating and harmonization of legislation (*), implementation with trained personnel.</p> <ul style="list-style-type: none"> <li>- Development of specific software and installation of computer equipment (*).</li> <li>- Establishment of agreements with international agencies concerned with agricultural input registration and control.</li> <li>- Postregistration inspection programs.</li> </ul> <p>11.- Facilities of two laboratories adapted, including hothouses, animal quarters, etc.</p> <ul style="list-style-type: none"> <li>- Laboratories equipped for analyzing toxic residues in agricultural products, and provided with field equipment, audiovisual equipment, six sets of computer equipment (*), four vehicles (*), plus trained personnel (*). Two manuals of standardized technical laboratory procedures prepared and put to use.</li> </ul>	<p>10.- Evaluation</p> <ul style="list-style-type: none"> <li>- Documents produced</li> </ul> <p>11.- Inspection</p> <ul style="list-style-type: none"> <li>- Property control reports</li> </ul>	

**LOGICAL FRAMEWORK OF "FRUITFLY CONTROL, ELIMINATION AND ERADICATION" PROJECT**

OBJECTIVES	TARGETS	MEANS OF VERIFICATION	IMPORTANCE ASSUMPTIONS
<p>Control and maintenance of areas free of the fruitfly <i>Ceratitis capitata</i> and reduction of damage caused by fruitflies.</p>	<p><b>SITUATION AT END OF EXECUTION OF PROJECT</b></p> <ul style="list-style-type: none"> <li>- Eradication executed in eight fruit-growing valleys in the departments of Tacna, Moquegua, and Arequipa, which are declared free of the Mediterranean fruitfly, and 17 campaigns underway in the valleys of Lima, Ica, Lambayeque, and Piura.</li> <li>- Six valleys in the departments of Tacna and Moquegua in process of certification as free of <u>Anastrepha fraterculus</u>.</li> <li>- Damage caused by fruitflies reduced by 50%.</li> </ul>		
<p>Producers organized and trained</p> <p>Control system implemented</p>	<ol style="list-style-type: none"> <li>1. 42,700 producers organized and trained in 25 auxiliary plant health committees in the valleys of influence of the project (Years 1 to 5).</li> <li>2. - Installation of 56,700 Jackson traps, with a service of 2.5 million units in a five-year period covering 340,000 hectares (Years 1 to 5). - Installation of 56,700 McPhail traps, with a service of 2.5 million units in a five-year period covering 340,000 hectares (Years 1 to 5). - 260,000 samples of fruit evaluated in 340 hectares (Years 1 to 5).</li> </ol>	<ol style="list-style-type: none"> <li>1. - Coordination agreements</li> <li>2. - Periodic registrations of project populations</li> </ol>	<ul style="list-style-type: none"> <li>- The quarantine surveillance system, emergency preparedness, well and covered costs.</li> <li>- Producers, transporters, and haulers, and connected with business and authorities peacefully.</li> </ul>

**LOGICAL FRAMEWORK OF "FRUITFLY CONTROL, ELIMINATION AND ERADICATION" PROJECT**

OBJECTIVES	TARGETS	MEANS OF VERIFICATION	IMPORT ASSUMPTIONS
<p>laboratories rehabilitated, modernized and g</p> <p>ork performed</p> <p>s centers and reception and packing et up and implemented.</p>	<p>3. - Physical adaptation of 3,000 m2 of La Molina Laboratory, Year 1:</p> <ul style="list-style-type: none"> <li>- Equipment of La Molina Lab. for production and parasitoids, microbiology equipment, biological safety equipment, office equipment, power generators, small equipment items and materials for production, Year 2.</li> <li>- Construction and equipment of wastewater treatment plants, Year 2, and tubewell in Year 1.</li> <li>- Production of 265 million sterile Mediterranean fruitflies per annum as of Year 2, and 5,300 million as of Year 3.</li> <li>- Production of 200,000 parasitoids (Year 2), and 53 million per annum as of Year 3.</li> <li>- Production of 53 million Anastrepha fraterculus (Year 3) and 530 million per annum as of Year 4.</li> </ul> <p>4. - Pesticide applied to foliage and soil on 70,000 hectares in Years 2 and 3.</p> <ul style="list-style-type: none"> <li>- 212 million sterile Mediterranean fruitflies released (Year 2) and 4,770 million as of Year 3.</li> <li>- 37.7 million parasitoids released per annum (Year 4).</li> <li>- 450 million Anastrepha released per annum as of Year 4.</li> </ul> <p>5. - Construction and fitting out of five operations centers for directing execution and supervising the control, elimination, and eradication work in the San Lorenzo, Motupe, Cañete, Ica, and Arequipa valleys (Year 1).</p> <ul style="list-style-type: none"> <li>- Construction and fitting out of two operations centers in Alto Piura and Huaral and four packing centers for reception, emergence, and quality control of the sterile flies from the La Molina laboratory (Year 2).</li> </ul>	<p>3. - Inspection and technical reports</p> <ul style="list-style-type: none"> <li>- Inspection and technical reports</li> <li>- Inspection and technical reports</li> <li>- Production and release technical reports</li> <li>- Production and release technical reports</li> <li>- Production and release technical reports</li> </ul> <p>4. - Detection and control technical reports</p> <ul style="list-style-type: none"> <li>- on fruitflies</li> <li>- on detection of sterile and native flies</li> <li>- production and release report</li> </ul> <p>5. - Inspection and technical reports</p> <ul style="list-style-type: none"> <li>- Inspection and technical reports</li> </ul>	

OBJECTIVES	TARGETS	MEANS OF VERIFICATION	IMPORTANT ASSU
<p>of use of biological ps of economic or the country, thus application of agricultural</p>	<p><b>SITUATION AT END OF EXECUTION</b> Increase from 4% (40,000 hectares) to 24% (240,000 hectares) in the area covered by biocontrol agents, in crops such as corn, potatoes, cotton, sugarcane, rice, coffee, citrus and others, generating a 50% saving in the cost of use of agricultural chemicals.</p>	<p>Reports by regional and subregional coordinators</p>	
<p><b>TO BE COMPLETED EXECUTION</b></p> <p>ing studies, prepared and ervision, performed.</p> <p>thogen laboratory, built in</p> <p>breeding laboratory, built</p> <p>n and library, built in</p> <p>s and nurseries, built in</p> <p>se and tank, built in</p> <p>irrigation system, installed experimental fields.</p>	<p>1. Documents with plans, descriptions, works execution times, costs and supervision plan prepared. Works execution subsequently supervised. Years 1 and 2.</p> <p>2. An entomopathogen laboratory is built with a total area of 465 m2 for production of funguses, bacteria, and viruses for use as biocontrol agents. Years 1 and 2.</p> <p>3. A two-environment laboratory is built with an area of 88 m2 for breeding Sitotroga for use as hosts for Trichogramma and other beneficial species. Year 2.</p> <p>4. One auditorium and one library built, including one office and washroom, with a total area of 170 m2. For running courses and holding biocontrol events for professionals and technicians from Peru and neotropical countries. Years 1 and 2.</p> <p>5. 2 nurseries of 50 m2 each and two hothouses of 150 m2 each built. For breeding beneficial species to combat pests that only develop in their host plants. Years 1 and 2.</p> <p>6. One 20-m2 powerhouse and one 75 m3 tank built, to supply water and electricity for the facilities and fields. Year 2.</p> <p>7. Drip irrigation system installed for 2 hectares with crops raised by agroecological methods. Year 2.</p>	<p>1. Originals of documents prepared.</p> <p>2. Works inspection</p> <p>3. Works inspection</p> <p>4. Works inspection</p> <p>5. Works inspection</p> <p>6. Works inspection</p> <p>7. Inspection of installed system</p>	<p>- Social stability</p> <p>- No major adverse n phenomena occur.</p> <p>- Aggressive competi chemical control co promoting their pro not affect project</p> <p>- Economic incentive encouraging bioco specialists to remain</p>

OBJECTIVES	TARGETS	MEANS OF VERIFICATION	IMPORTANT ASSU
<p>nee accommodation, ed</p> <p>uipped</p> <p>operation, strengthened</p> <p>ation and promotion of l control and ation and operating ment of PCB labs, done.</p> <p>and professionals, trained cal control</p>	<p>8. Accommodations rehabilitated, including rooms, dining room and store, with an area of 609 m2. For housing professionals and technicians in training. Year 2.</p> <p>9. The center equipped with laboratory, audiovisual, communications, computer and office equipment, plus furniture, agricultural tools, machinery (a tractor and generator), and a vehicle. To optimize the activity of the biological control center. Years 1 to 5.</p> <p>10. Center operations strengthened by means of: (a) introduction of 10 exotic beneficial species; (b) improved supply of biocontrol agents to users; (c) shipment of beneficial species to other system labs; (d) systematized quality control in labor system; (e) development of 5 ecological management methodologies for corn, potatoes, beans and alfalfa; (f) optimization of production methods for 3 biocontrol agents; (g) technical assistance systematized through interinstitutional cooperation. Years 1 to 5.</p> <p>11. Use of biocontrol agents in agriculture disseminated and promoted and at same time the national system's production labs are evaluated, selected and consolidated to ensure the system has the required capacity, is technically, economically and financially self-sufficient, and produces biocontrol agents in sufficient quantity to cover the 240,000 hectares. Years 1 to 5.</p> <p>12. During the five years, 900 persons, comprising farmers and professionals, will be trained in biocontrol in the field, by means of courses and other methods. Years 1 to 5.</p>	<p>8. Works inspection</p> <p>9. Inspection of equipment procured</p> <p>10. Inspection of efficiency. Reports on progress and achievements.</p> <p>11. Inspection of laboratories in operation. Laboratory evaluation reports. Reports on operation.</p> <p>12. Training evaluation reports.</p>	

OBJECTIVES	TARGETS	MEANS OF VERIFICATION	IMPORTANT
	<b>SITUATION AT END OF EXECUTION</b>		
eradication of foot-and-mouth disease establishment and maintaining of the disease	<ul style="list-style-type: none"> <li>- 7 departments free of foot-and-mouth disease without requiring vaccination (Ucayali, Loreto, Madre de Dios, Amazonas, San Martín, Tacna, and Moquegua)</li> <li>- 17 departments free with vaccination (Puno, Arequipa, Cuzco, Ayacucho, Ica, Huancavelica, Apurímac, Cerro de Pasco, Huanuco, Junín, Lima, Tumbes, Piura, Lambayeque, La Libertad, Cajamarca, and Ancash)</li> </ul>	OIE report declaring Peru a country free of foot-and-mouth disease.	
<p><b>TO BE COMPLETED DURING</b></p> <p>epidemiological diagnosis, updated.</p> <p>foot-and-mouth disease control and eradication measures improved, put into effect and maintained.</p> <p>personnel involved in livestock activity, trained, and in service</p> <p>vector agents, accredited.</p> <p>surveillance and quarantine activities, carried out</p>	<ol style="list-style-type: none"> <li>1. Document prepared based on existing data, updating aspects of morbidity, mortality, attack rate, number of farms affected and characterization of population by ecosystem, for guidance for execution of project. Year 1.</li> <li>2. New foot-and-mouth disease regulations improved, put into effect and disseminated. Years 1 and 2.</li> <li>3. 8,000 farmers, 1,000 technicians, 500 professionals, and 1,000 persons from other sectors trained in epidemiological surveillance, prevention and control of foot-and-mouth disease. The persons trained will be deployed in the project. Years 1 to 5.</li> <li>4. 200 enterprises, 400 veterinarians and 500 technicians accredited in five years.</li> <li>5. Precise and timely detection of presence of risk and occurrence of the disease. <ul style="list-style-type: none"> <li>- Control of 100% of internal and external cattle movements</li> <li>- Control of 100% of fairs and agricultural events</li> <li>- Identification, notification, epidemiological study, and control of 100% of foci.</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>1. Diagnostic document updated</li> <li>2. Copy of regulations put into effect</li> <li>3. Register of participants <ul style="list-style-type: none"> <li>- Attendance rolls</li> <li>- Evaluation sheet</li> </ul> </li> <li>4. Accreditation registration pattern</li> <li>5. Epidemiological reports</li> </ol>	



OBJECTIVES	TARGETS	MEANS OF VERIFICATION	IMPORTANT
<p>unization, done</p> <p>of bovine population, done.</p>	<p>6. 12,250,000 head of cattle vaccinated in five years, with a total of 14,700,000 does applied, in areas with vaccination.</p> <p>7. ... of the bovine population in the areas without vaccination is monitored twice a year during the first two years; and 2% is monitored once a year during Years 3 to 5 to determine presence of viral activity.</p> <p>5% of the vaccinated bovine population is monitored once a year for five years to detect antigen-based immunity.</p>		

**LOGICAL FRAMEWORK OF PROJECT FOR "CONTROL AND ERADICATION OF BRUCELLOSIS AND BOVINE TUBERCULOSIS,  
GOAT BRUCELLOSIS AND SCABIES IN SOUTH AMERICAN CAMELOIDS AND SHEEP"**

OBJECTIVES	TARGETS	MEANS OF VERIFICATION	IMPORTANCE ASSUMPTIONS
<b>INITIAL SITUATION</b>	<b>SITUATION AT END OF EXECUTION</b>		
<p>Improvement in health conditions of cattle, goat, and sheep farming in South American cameloids and sheep farming</p>	<ul style="list-style-type: none"> <li>- Increase in production and productivity of the livestock in question</li> <li>- Improvement in farmers' socioeconomic position</li> <li>- Reduction of public health cases</li> <li>- Reduction of production costs</li> <li>- Potential increase in alpaca exports</li> <li>- Herds declared free of tuberculosis, brucellosis and scabies.</li> </ul>		
<p><b>RESULTS TO BE COMPLETED DURING EXECUTION</b></p> <p>1. Situation diagnosis documents, updated.</p> <p>2. Farmers and persons connected with these activities and livestock activity, trained.</p> <p>3. Regulations, prepared and/or approved.</p> <p>4. Stock farms, monitored.</p> <p>5. Accreditation of private sector agents, done.</p> <p>6. Diagnostic tests in cattle and goats and vaccinations in goats when needed, done.</p>	<ol style="list-style-type: none"> <li>Four situation diagnosis documents prepared on bovine tuberculosis, bovine brucellosis, goat brucellosis and scabies in South American cameloids and sheep. The information in the documents must make it possible to quantify the problems, determine the areas affected and estimate the level of effort required to resolve the problems. Year 1.</li> <li>Approximately 6,000 farmers and persons connected with livestock activity trained in public health, consumption habits and hygiene, prevention, and control of these diseases. Years 1 to 5.</li> <li>Bovine brucellosis control and eradication regulations improve and: <ul style="list-style-type: none"> <li>■ Bovine tuberculosis control and eradication regulations improved and approved. Year 1.</li> <li>■ Goat brucellosis control and eradication regulations improved and approved. Year 1.</li> <li>■ Regulations for control of scabies in South American cameloids and sheep prepared and approved. Year 1.</li> </ul> </li> <li>24,000 stock farms monitored in four years to detect pathologies under study and declare herds free of brucellosis and tuberculosis, and scabies under control.</li> <li>Approximately 600 private organizations and individual (20 enterprises, 180 professionals and 400 technicians) accredited. Years 2 to 5.</li> <li>293,000 head from 12 milksheds (85% of population) subjected to diagnostic tests for PPD and brucellosis, and 180,000 goats tested (brucellosis) and vaccinated when necessary. Years 2 to 5.</li> </ol>	<ol style="list-style-type: none"> <li>Originals of documents updated.</li> <li>Registers and certification</li> <li>Originals of documents prepared and/or approved.</li> <li>- Monitoring reports - Laboratory reports</li> <li>Accreditation certificates</li> <li>Reports and certificates of diagnostic tests and immunizations.</li> </ol>	<ol style="list-style-type: none"> <li>Amendment of regulations permit compensation when goats are sacrificed</li> </ol>

LOGICAL FRAMEWORK OF PROJECT FOR "CONTROL AND ERADICATION OF BRUCELLOSIS AND BOVINE TUBERCULOSIS,  
GOAT BRUCELLOSIS AND SCABIES IN SOUTH AMERICAN CAMELOIDS AND SHEEP"

OBJECTIVES	TARGETS	MEANS OF VERIFICATION	IMPOR ASSUMP
nic dosings in cameloids and sheep,	7. 5,050,000 antiscabies doses applied in cameloids and 3 million in sheep.	7. Reports and certificates of doses.	
nstration units, established.	8. 200 demonstration units with 200 head in each established in five years in each of the nine departments.	8. Inspections	

SCHEDULE OF TENDER CALLS AND COMPETITIVE BIDDING					
MAIN PROJECT PROCUREMENT	FINANCING (%)		METHOD	PREQUAL.	QUARTER YEAR
	IDB	LOCAL			
<b>A. GOODS PROCUREMENT</b>					
1. Laboratory and field equipment. Various packages \$3,422,350	73.7	26.3	IPB	No	IV 97
2. Various machinery. Various packages \$754,220	73.7	26.3	Shpg	No	IV 97
3. Computer equipment 1 package \$735,400	73.7	26.3	IPB	No	IV 97
4. Communications, audiovisuals and office equipment. Various packages \$1,052,860	73.7	26.3	PB/IPB	No	IV 97
5. Specialized software. Various packages \$371,700	84.7	15.3	Shpg	No	IV 97
6. Specialized vehicles. Various packages \$215,080	73.7	26.3	Shpg	No	IV 97
7. Vehicles (including light trucks and motorcycles). 2 packages \$2,345,030	73.7	26.3	IPB	No	IV 97
8. Lab inputs. Various packages \$3,255,440	73.7	26.3	IPB	No	IV 97
9. Other inputs (including vaccines). Various packages \$19,614,080 <u>1/</u>	84.7	15.3	IPB	No	IV 97
<b>B. CIVIL WORKS, LAB BUILDINGS AND CONTROL POSTS</b>					
1. Adaptation and La Molina, Fruitfly and Central Laboratories. Various packages \$1,192,744	84.7	15.3	Shpg	No	IV 97, II 98
2. La Molina hothouse. 1 package \$346,094	84.7	15.3	Shpg	No	IV 97, II 98
3. Hothouse, quarantine house, Ventanilla station and control posts (Livestock Defense). Various packages \$573,362.	84.7	15.3	Shpg	No	IV 97
4. Operations center. Fruitflies. 1 package \$413,000	84.7	15.3	Shpg	No	IV 97, II 98
5. Wastewater treatment plant and tubewell. Fruitflies. Various packages \$477,900	84.7	15.3	Shpg	No	II 98
6. Reception centers (4). Fruitflies. 1 package \$99,120	84.7	15.3	DP	No	IV 97

1/ Includes foot-and-mouth disease vaccine, scabies vaccine, and laboratory and field supplies.

SCHEDULE OF TENDER CALLS AND COMPETITIVE BIDDING					
MAIN PROJECT PROCUREMENT	FINANCING (%)		METHOD	PREQUAL.	QUARTER YEAR
	IDB	LOCAL			
<b>C. CONSULTANCIES</b>					
1. Technology transfers. Service contracts.					
A. Fruitflies (various, trapping, and sampling) \$8,213,100*	3.3	96.7	IPB/LPB	Yes	IV 97
B. Biological control (various packages) \$1,633,800*	3.3	96.7	IPB/LPB	Yes	IV 97
C. Foot-and-mouth disease (various packages) \$3,073,000*	3.3	96.7	IPB/LPB	Yes	IV 97
D. Other components (various packages)* \$2,477,400	20.0	80.0	IPB/LPB	Yes	IV 97
2. Consultancies. Various packages \$1,958,00	100.00	0.0	Shpg	Yes	IV 97

Peruvian legislation specifies that tender calls and competitive bidding below the thresholds shall be governed by the following:

Goods and services:

Public bidding (PB) – over S/ 700,000 (approximately \$300,000)

Shopping (Shpg) – between S/ 700,000 and 220,000 (\$300,000 and \$100,000)

Direct procurement (DP) – below S/ 220,000 (approximately \$100,000)

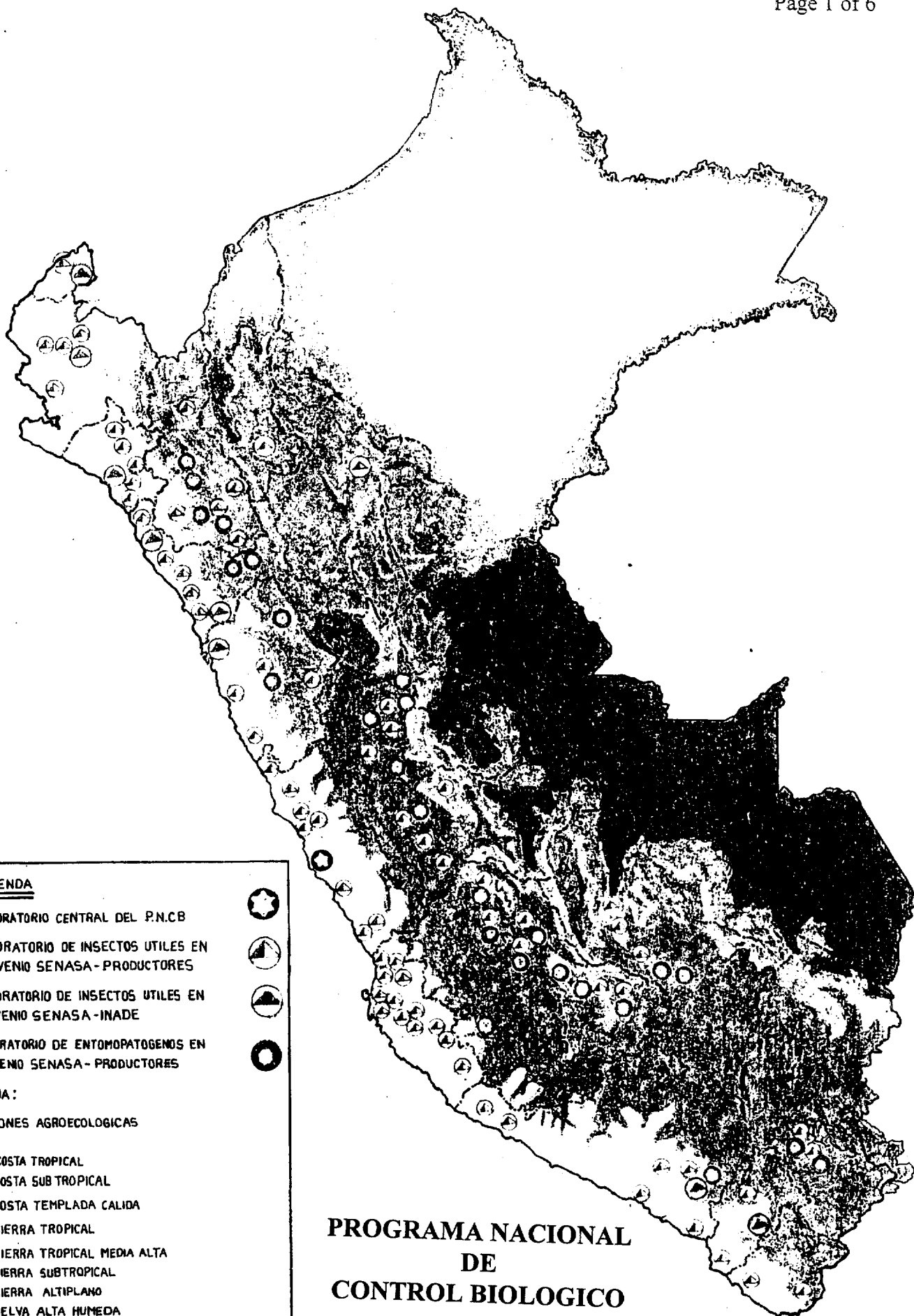
Civil works

Public bidding (PB) – over S/ 1,800,000 (approximately \$800,000)

Shopping (Shpg) – between S/ 1,800,000 and 600,000 (\$800,000 and \$275,000)

Direct procurement (DP) – less than S/ 600,000 (approximately \$275,000).

\* Owing to the technical nature of these services, there will be local bidding that will be grouped by specific areas of work (valleys, or regions or subregions) and by flexible contracting periods. The document specifies that in contracts for services the threshold above which international competitive bidding will be required will be US\$200,000, for the procurement of goods US\$250,000, and for works US\$1 million.



**LEYENDA**

LABORATORIO CENTRAL DEL P.N.C.B



LABORATORIO DE INSECTOS UTILES EN CONVENIO SENASA - PRODUCTORES



LABORATORIO DE INSECTOS UTILES EN CONVENIO SENASA - INADE



LABORATORIO DE ENTOMOPATOGENOS EN CONVENIO SENASA - PRODUCTORES

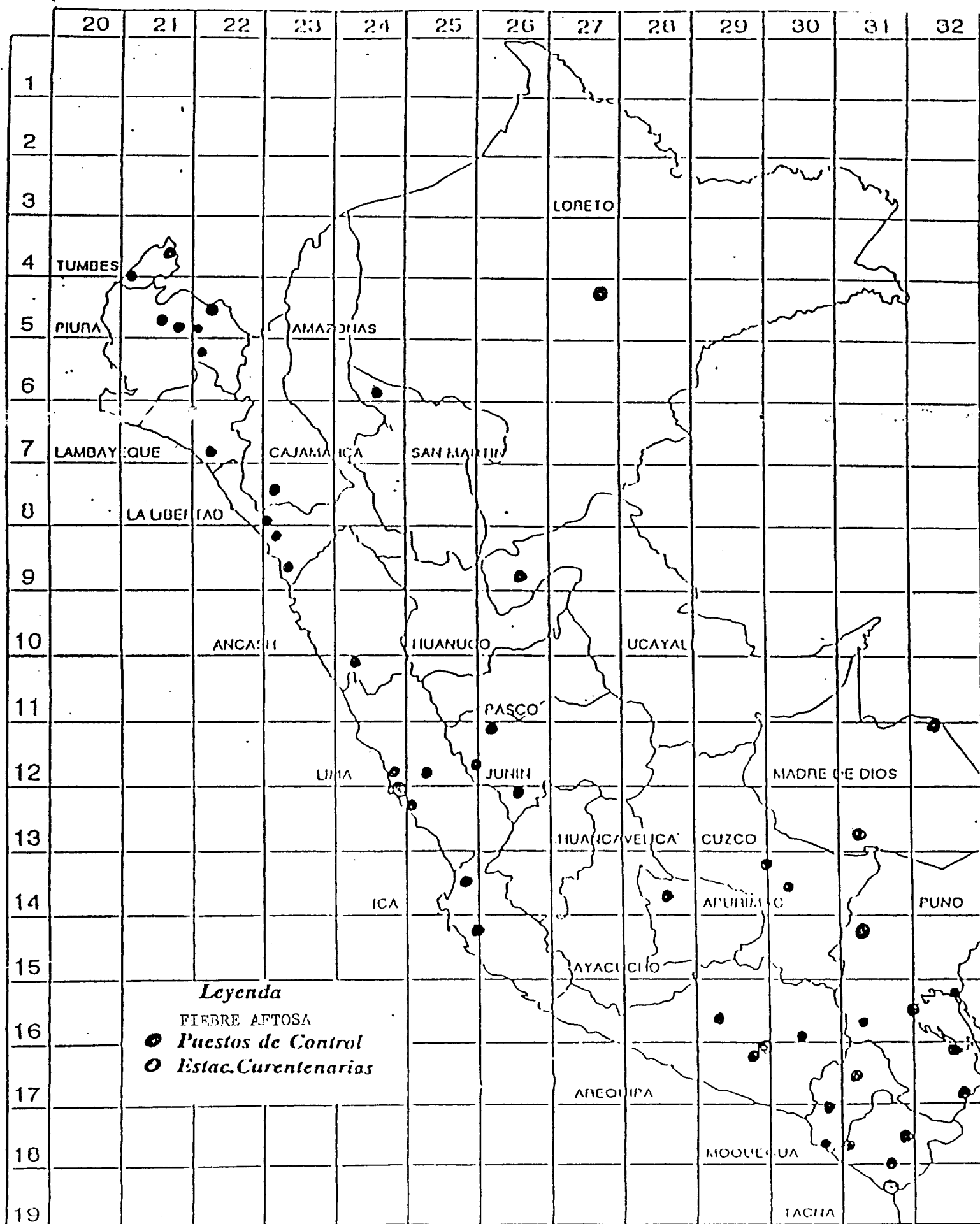


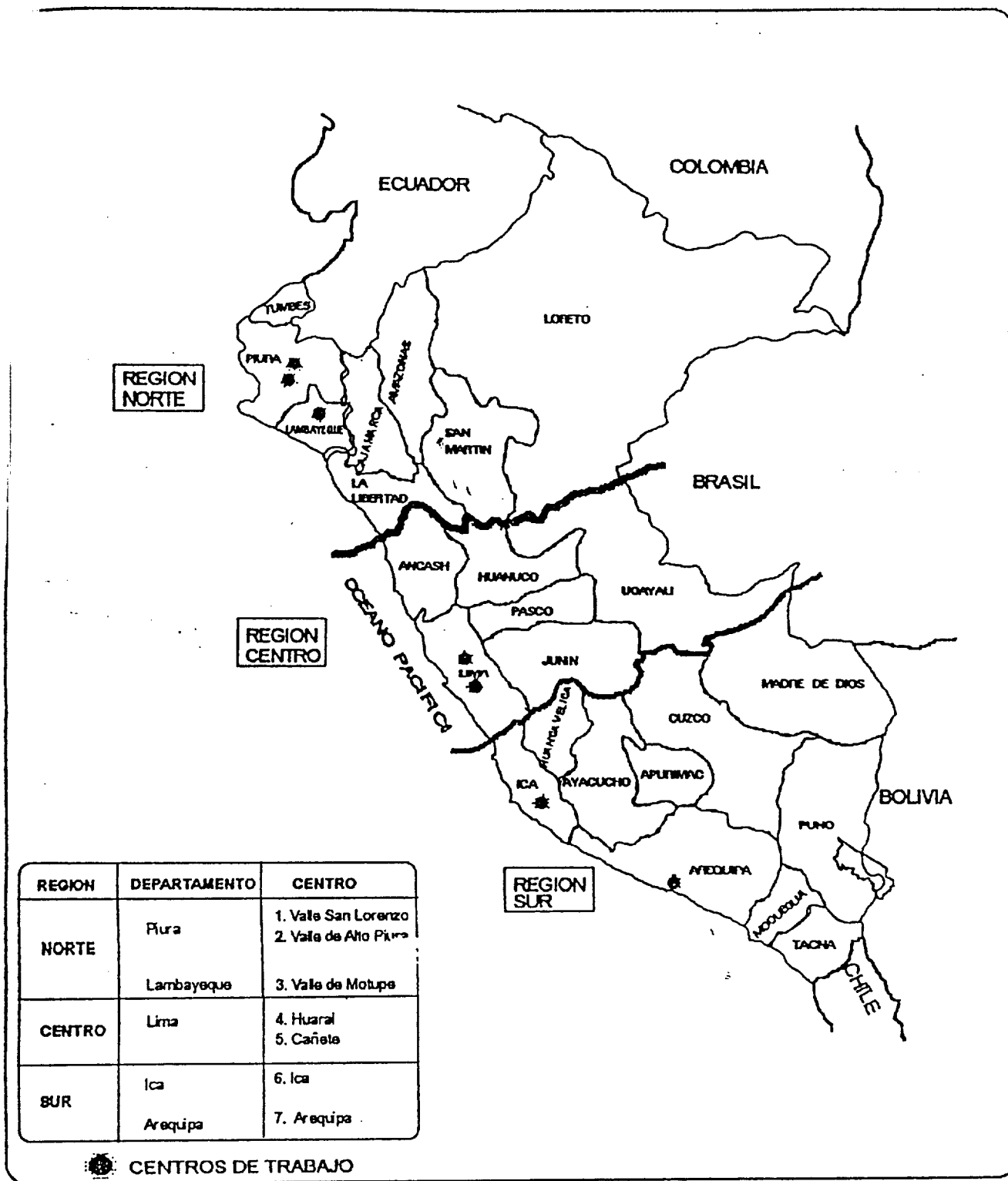
FECHA:

REGIONES AGROECOLOGICAS

- COSTA TROPICAL
- COSTA SUBTROPICAL
- COSTA TEMPLADA CALIDA
- SIERRA TROPICAL
- SIERRA TROPICAL MEDIA ALTA
- SIERRA SUBTROPICAL
- SIERRA ALTIPLANO
- SELVA ALTA HUMEDA
- SELVA ALTA MUY HUMEDA
- SELVA BAJA HUMEDA
- SELVA BAJA MUY HUMEDA

**PROGRAMA NACIONAL  
DE  
CONTROL BIOLOGICO**

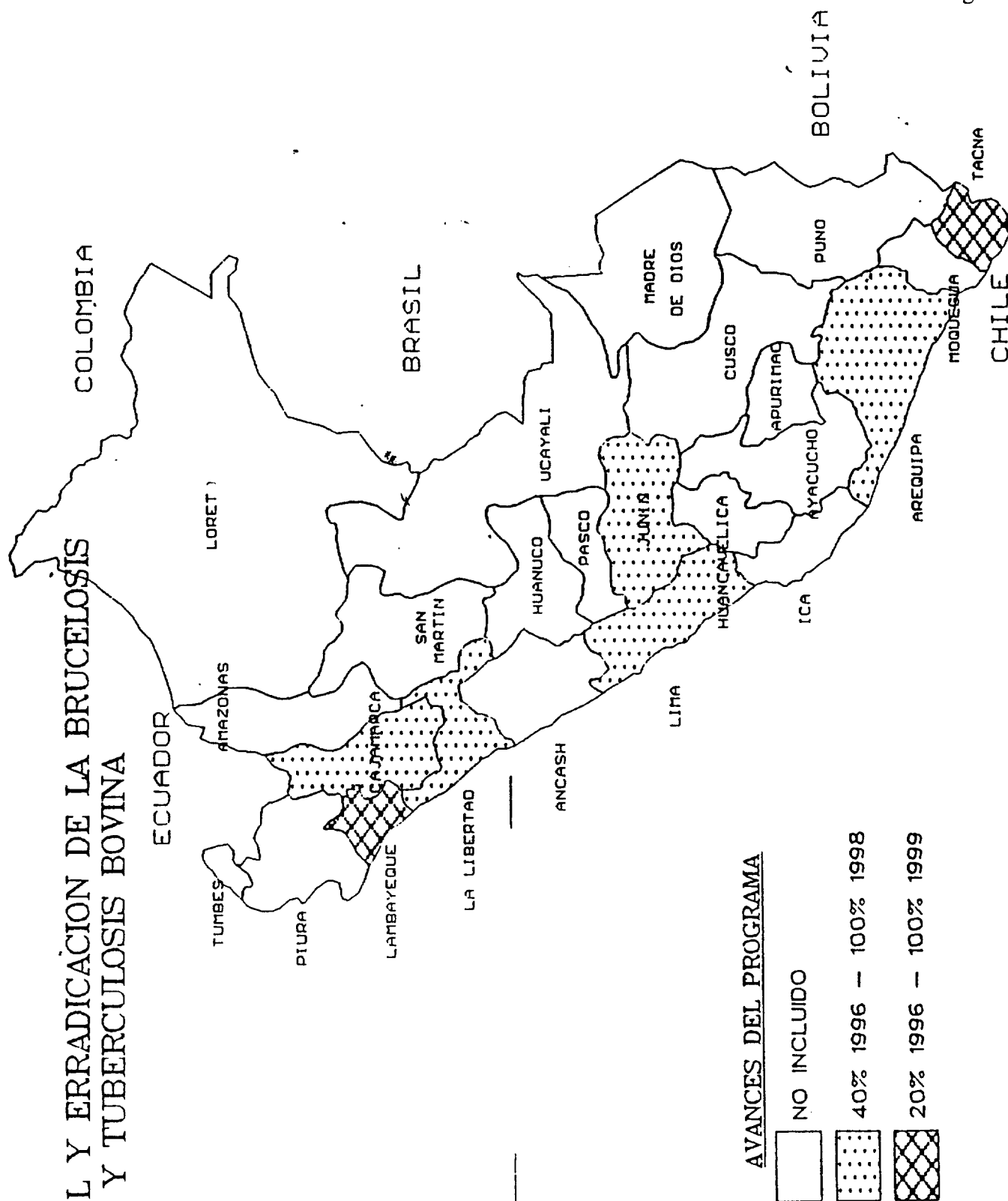


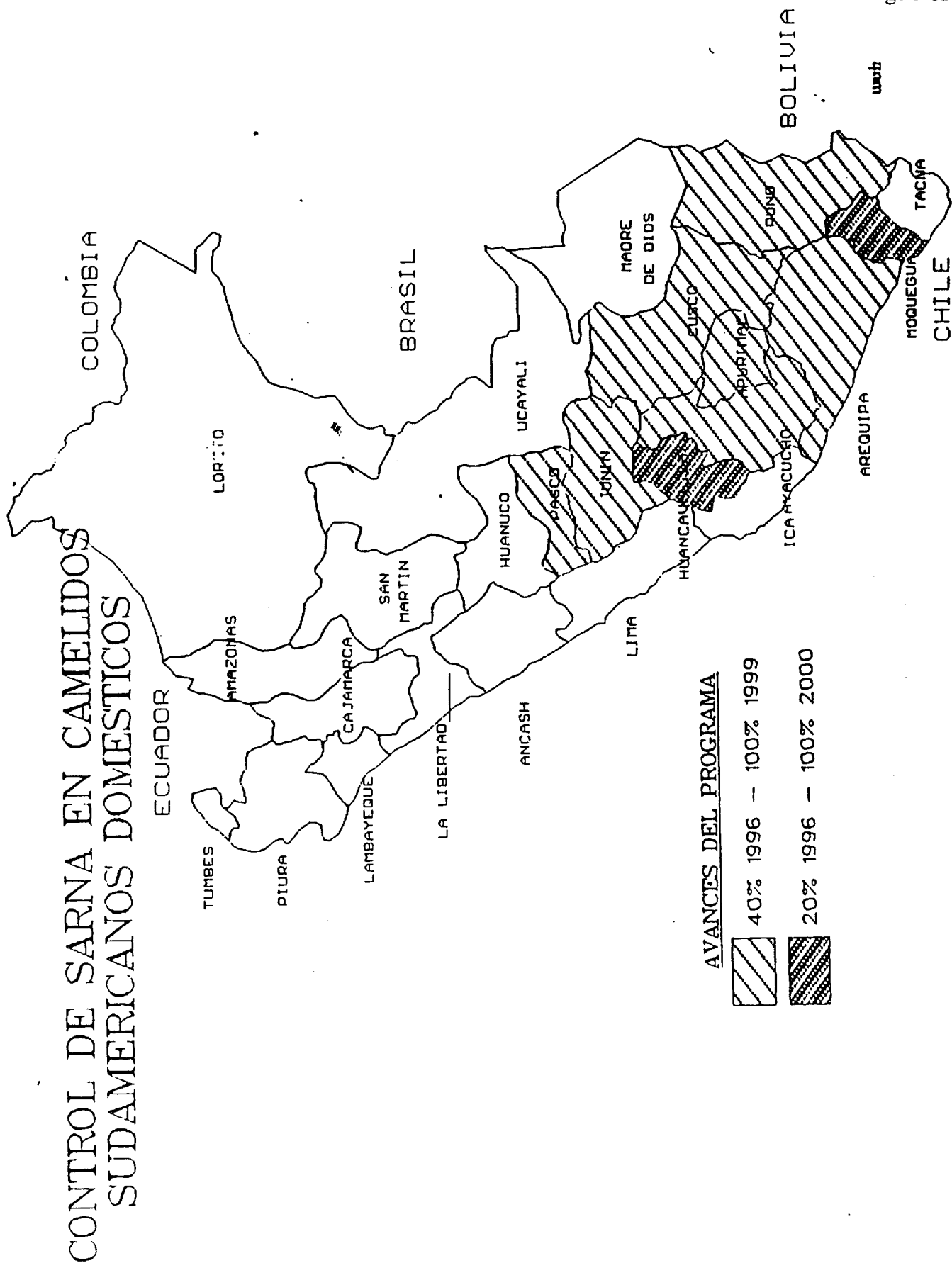


PERU: PROYECTO DE CONTROL Y ERRADICACION DE LA MOSCA DE LAS FRUTAS.



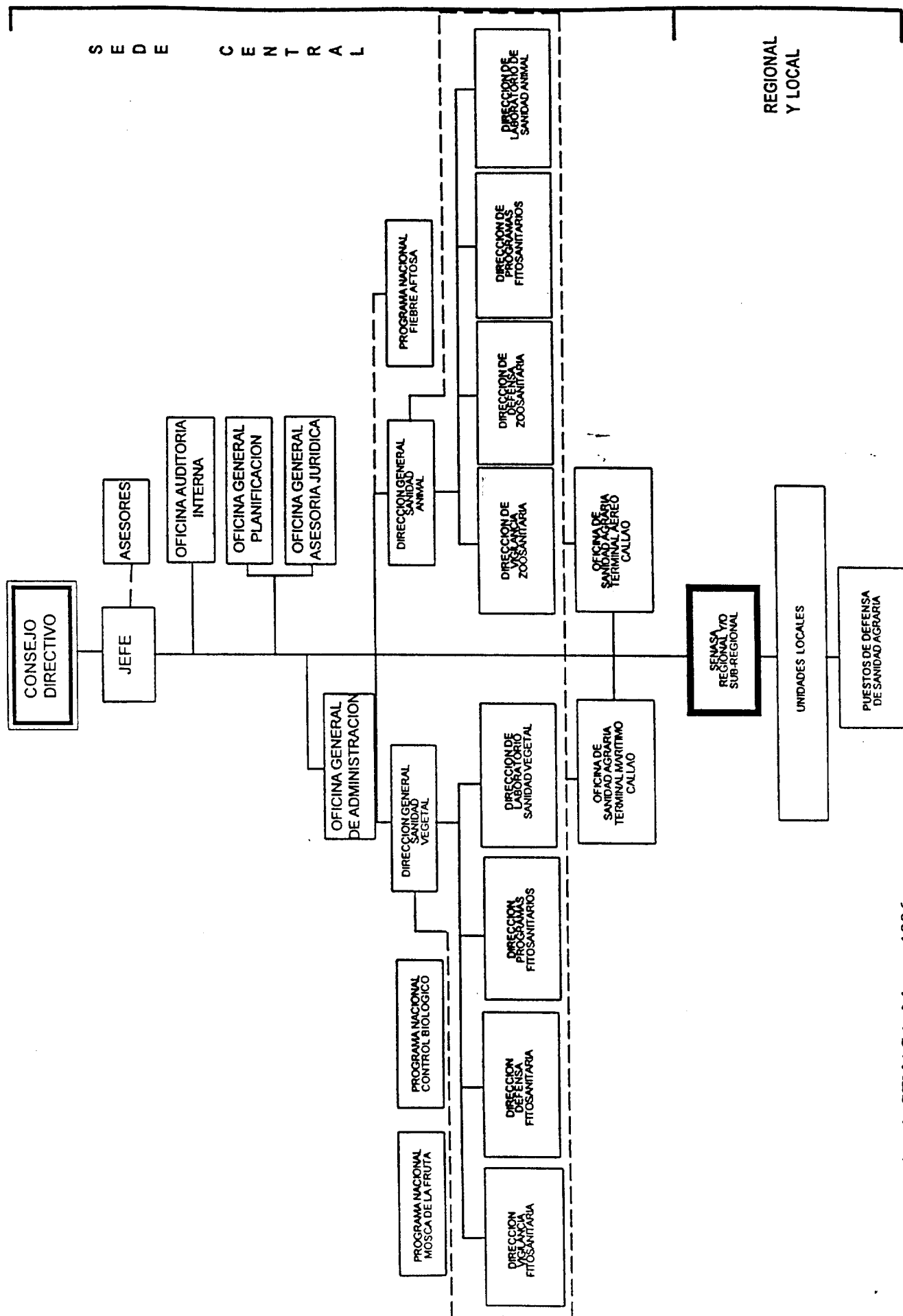
# CONTROL Y ERRADICACIÓN DE LA BRUCELOSIS Y TUBERCULOSIS BOVINA





ANEXO III

# ORGANIGRAMA ESTRUCTURAL DEL SENASA



PROPOSED RESOLUTION

PERU. LOAN \_\_\_\_ /OC-PE TO THE REPUBLICA DEL PERU  
(Agricultural Health Development Program)

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the República del Perú, as Borrower, for the purpose of granting it a financing to cooperate in the execution of an Agricultural Health Development Program. Such financing will be for the amount of up to forty-five million six hundred thousand United States of America Dollars (US\$45,600,000), from the Single Currency Facility resources of the Ordinary Capital of the Bank, and will be subject to the "Special Contractual Conditions" and the "Terms and Financial Conditions" set forth in the Executive Summary of the Loan Proposal.